Impact Assessment of aBi Trust Supported Interventions

Final Study Report

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Executive Summary

1. Introduction

The Agricultural Business Initiative Trust (aBi Trust) is multi-stakeholder corporate body founded jointly by the governments of Uganda (GOU) and Denmark in 2010, as one of the three components of the U-Growth programme aimed at creating a Competitive and Investment Climate Strategy (CICS). Using the Value Chain Approach, aBi Trust has since 2010 been undertaking initiatives aimed at supporting partnerships with Farmer Organizations (FOs), NGOs, and SMEs (also known as Implementing Partners—IPs) engaged in selected enterprises that include maize, pulses, coffee, oilseeds and horticulture. aBi Trust supports IPs with grants for providing technical support to farmers engaged in the supported value chains; and this support is channeled through three interrelated components, namely; (1) Value Chain Development (VCD), (2) Financial Service Development (FSD), and (3) Gender for Growth (G4G). Through these intervention components, aBi Trust aims to increase market competitiveness and land and labor productivity; and by so doing contribute to poverty reduction through economic growth, wealth and employment creation.

2. Objectives of the Impact Assessment Study.

The main objective of this IA study is to assess the extent to which aBi Trust-supported IP-implemented activities have contributed to change in the beneficiary communities over the past three years (2011-2013). Specifically, to:

1. Measure changes in income of the beneficiaries of aBi Trust-supported interventions
2. Determine the jobs created for the benefiting communities by the respective IPs
3. Determine the relevancy of the aBi Trust supported programs and inform next steps

3. Scope

The IA study was conducted at two levels. At the IP level, the study involved District Farmers Associations (DFAs) and Financial Institutions (FIs) supporting farmers engaged in the production of coffee, maize, beans, soybean, sunflower, and sesame. At the farmer level, the study involved a survey of both Treatment (beneficiary) and Control (non-beneficiary) farmers producing the above-listed commodities. The study used a multiple-stage sampling procedure. In the first stage, IPs were purposively selected by intervention component (VCD, G4G and FSD). The guiding principle was to choose IPs that had completed the intervention programs with no scale-ups in their areas of operation. Each of the selected IPs was then requested to provide a list of their members that benefited from aBi Trust-supported interventions, detailing the name of the lower-level farmers group to which they belong and their locations (sub-county, parish and village). It is from these IP-supplied beneficiary lists that 2-3 sub-counties with the highest number of beneficiaries were purposively selected for the survey. The final stage of sampling involved random selection from each of the sub-counties of two lower-level farmer groups from the IP list of beneficiaries, followed by a random selection of five beneficiaries from each group to serve as Treatment farmers. Control farmers were sampled from village-level household lists received from the LC1 Chairmen of the study villages. Control farmers are those growing the target commodities of aBi Trust within the same geographical location (village), production system, and weather conditions as the Treatment farmers, but are themselves not members of the aBi Trust-supported IP in the area, or another group receiving similar support from another source.

The survey plan involved having at least twice as many Treatment as Control farmers across the 6 commodities and 3 intervention components. However, because the beneficiary population is dominated by farmers involved in the coffee value chain (52%) followed by maize (19%), these two commodities were allocated larger sample sizes. A total of 564 farmers (360 Treatment and 204 Control) and 12 IPs were surveyed under the VCD and G4G intervention components. Out of the 564 farmers, 174 are farmers of coffee (119 Treatment and 55 Control), of which 52% grow Robusta coffee and for the rest (48%) it is Arabica; 120 are maize farmers (78 Treatment and 42 Control); 90 are for beans (60 Treatment and 30 Control); 72 for Sesame (40 Treatment and 32 Control); 60 for Sunflower (30 Treatment and 30 Control); and 48 for Soybeans (33 Treatment and 15 Control). For the FSD component, the sample size was set at 90 farmers, of which 60 are beneficiaries of agricultural loans from Financial Institutions (FIs) supported by aBi Trust; and the rest (30) are Control. The sample size (90) was distributed equally among the six FIs (4 banks and 2 SACCOs in the ratio of 10 beneficiaries and 5 Controls per FI). The selected FIs include Bank of Africa, Agago; Pride Microfinance, Gulu; Development Microfinance, Buyende; Opportunity Uganda, Kyenjojo; and Kashongi and Mateete SACCOs in Kiruhura and Sembabule districts, respectively. The survey plan involved sampling beneficiaries who received loans for investing in one of the 6 commodities supported by aBi Trust, to allow for use of the same survey tool to gather farmer-level data across the three intervention components (VCD, G4G and FSD), and for the comparison of impacts across the intervention components.

4.0 Methodology

The study used a two-pronged methodology involving descriptive analysis and a quasi experimental design. The descriptive methods were used to characterize Treatment and Control farmers; assess beneficiary perceptions of aBi supported interventions; and to reflect on the relevance of aBi Trust programs in the eyes of the beneficiaries. Statistical analysis of means and proportions was conducted to estimate farmers' income and employment levels, savings and loans and other key project performance indicators at farmer level, among other things. The quasi experimental design was used to estimate the cause-effect relationship (impact) between aBi interventions and the outcomes of interest.

The double difference (difference in difference) method was used to measure the impact of aBi Trust's interventions on the beneficiaries. This method compares participants and non-participants of development interventions in terms of changes in desired outcome indicators over time, before and after the interventions. Treatment and Control farmers were asked to answer questions about the "before" aBi Trust support scenario (which requires recall) and "after" (current situation). Farmers were first asked the last time *(Season and Year)* when they produced the target crop before aBi Trust-supported interventions and after; that is in 2010 or before *("before")*, and between 2011 and 2013 *("after")*. These farmer-reported seasons and years then became the reference for detailed interviews on area planted to the crop, quantities and costs of inputs, quantities harvested and sold, etc., before and after aBi Trust-supported interventions. To estimate the attributable changes to aBi Trust support, the difference between the before and after scenarios for an outcome indicator (e.g., yield) was computed separately for the Treatment and Control farmers. This is the first difference. The second difference (attributable change) was obtained by subtracting the first difference for the Control farmers from the first difference for the Treatment farmers.

5.0 Study Findings at the Farmer Level

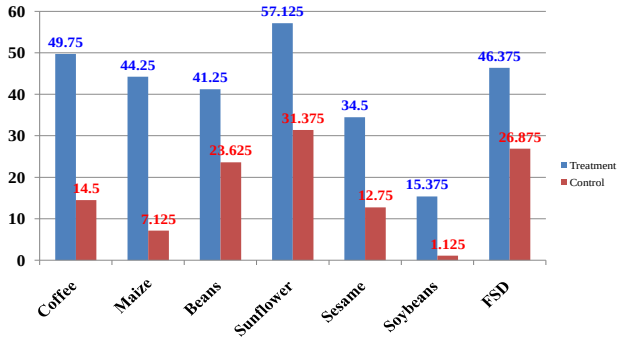
5.1 Job Creation at the Farmer Level.

-At the farmer level, only a few of coffee, beans and FSD farmers (mostly Treatment farmers) employed permanent workers. The rest of the farmers (maize, sunflower, sesame and soybean) employed workers on short-term basis.

-These short-term jobs were converted to fulltime equivalents (FTEs) by summing up the total number of days worked by the short-term workers and dividing it by 240—the number of days one must have worked to be considered fulltime.

-The total number of FTE jobs created by the sampled farmers was 289 for Treatment and 117 for Control farmers. Figure 1 shows that Treatment farmers created more than twice as many jobs as their cohorts in the Control group

Fig1. No. FullTime Equivalent (FTEs) Jobs Created at Farm level



5.2. Changes in Training and Application of Improved Technologies and GAPs for the Intervention Crops

Impact assessment of project supported interventions is commonly based on changes in application of key promoted practices by the beneficiaries and the ensuing changes in outcome indicators. For the six intervention crops surveyed in this study, the key aBi Trust-supported interventions include use of improved seed and fertilizers; use of correct spacing and seed rate; and use of pest and disease control methods. For Coffee, the list includes mulching and pruning but excludes seed rate. Figure 2a below shows that during the intervention period (2011-2013), the proportion of Treatment farmers who received training on improved sesame varieties increased by 85 percentage points (%pts) compared to the 3 %pts increase in the Control group during the same period. Thus, the change in prevalence of training on the use of improved sesame seed attributable to aBi Trust support is 82 %pts; while the attributable change in training on soil fertility improvement is 37.5 %pts for Chemical fertilizer use and 67.5 %pts for Animal manure use. However, not all the trained farmers applied the GAPs on their land. Whereas the change in prevalence of training on the use of improved sesame seed attributable to aBi Trust support is 82 %pts, the corresponding change in actual use of improved sesame seed is 55 %pts (see Figure 2b). A similar trend is observed for the other intervention crops and aBi Trust-supported interventions (see Figures 2a, 2b, 2c and 2d). Also noteworthy is the fact that besides aBi Trust-supported IPs, other NGOs and government agencies such as NAADS and NARO trained farmers on GAPs before and after aBi Trust intervention, which reduced the attributable impact of aBi Trust in prevalence of training on GAPs.

Fig 2a: Changes in Prevalence of Training in GAPs among Sesame, Sunflower and Soybean Farmers

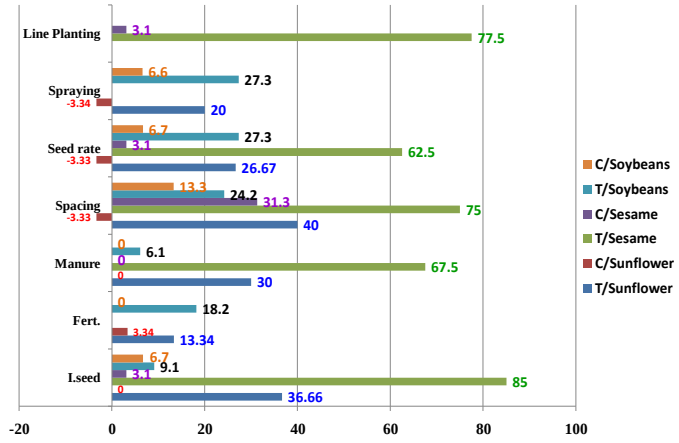


Fig 2b: Changes in Application of GAPs among Sesame, Sunflower and Soybean Farmers

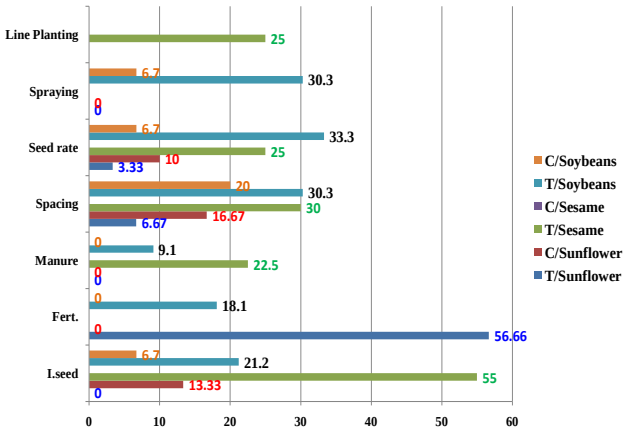


Fig 2c: Changes in Prevalence of Training in GAPs among Beans, Maize and Coffee Farmers

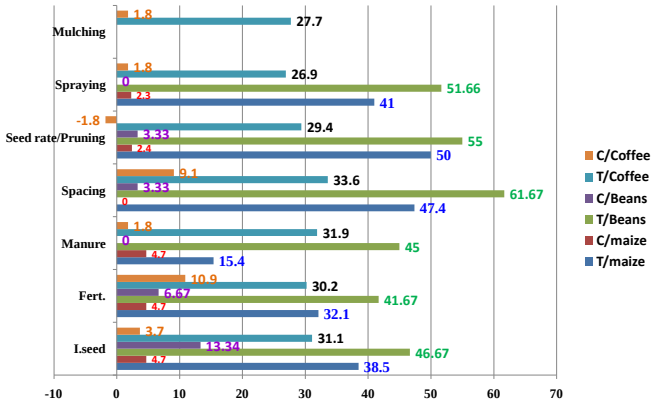
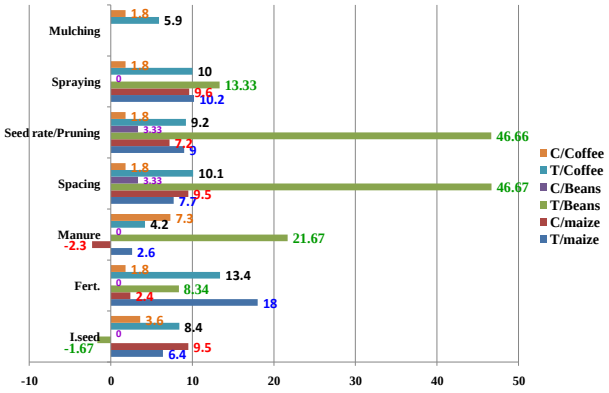


Fig 2d: Changes in Application of GAPs among Beans, Maize & Coffee Farmers



Another interesting finding is that for several GAPs promoted by aBi Trust-supported IPs, more farmers (both Treatment and Control) reported using these GAPs than those who reported receiving training in the same. As a result, the estimated changes in percentage of farmers applying these GAPs in 2011-2013 (new adopters) following aBi Trust-supported intervention were much lower than the changes in percentage of trained farmers. It is possible that several farmers did not directly participate in the demonstrations and training sessions conducted by the IPs and other agencies, but later on picked the good practices and technologies from their neighbors through farmer-to-farmer extension. **However, as shall be shown later, the resultant impact of use of the promoted technologies among Control farmers is inferior to that of Treatment farmers in terms of yield, per unit cost of production, production, sales and income.**

5.3. Changes in Area, Production, Sales and Selling Prices for the Intervention Crops

The area, production and sales for sesame increased among both Treatment and Control farmers, but by a greater magnitude among Control than Treatment farmers. As shown by the difference-in-difference **(DID)** results (figures 3a and 3c), this led to a decline in these indicators of 0.22Acres, 22kg and 27kg, respectively, during the intervention period. The selling price for both Treatment and Control farmers increased by about Ushs 760/kg. For Sunflower, the area for Treatment farmers increased by 0.3acres compared to a 0.2acre increment in the Control group. Production and sales increased by 334kg and 135kg, respectively among Treatment farmers; and by 63kg and 69kg, respectively in the Control group. This led to a large increase of 271kg in production and 66kg in sales attributed to aBi Trust's support. The selling price also increased by about 30Ush/kg among Treatment farmers, and by 4Ush/kg in the Control group.

Fig 3a.Area (Acres) and Production (Kgs) of supported Crops

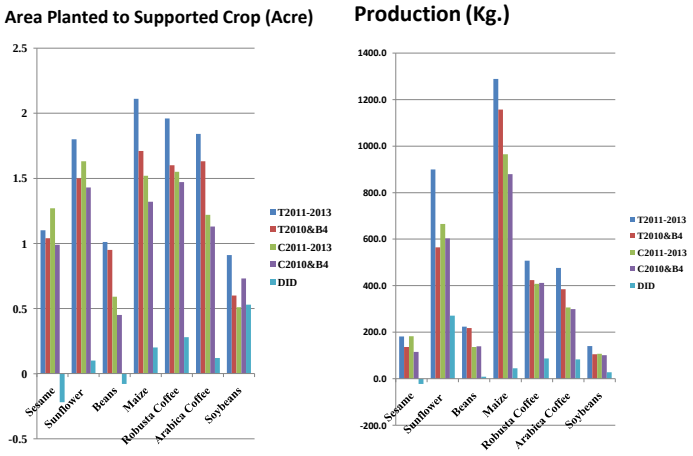


Fig 3b. Change in Area (Acres) and Production (Kgs) of supported Crops

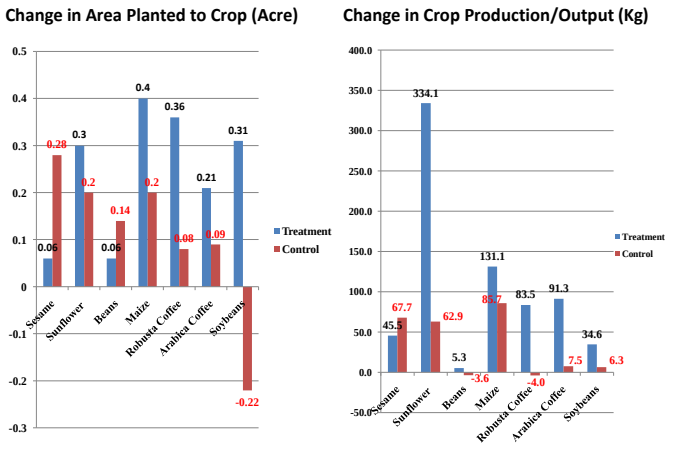


Fig 3c. Sales (Kg) and Selling Price (Ush/Kg) of supported Crops

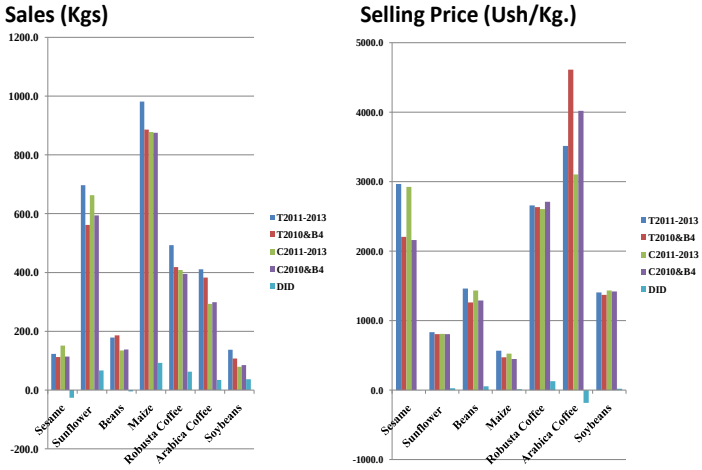
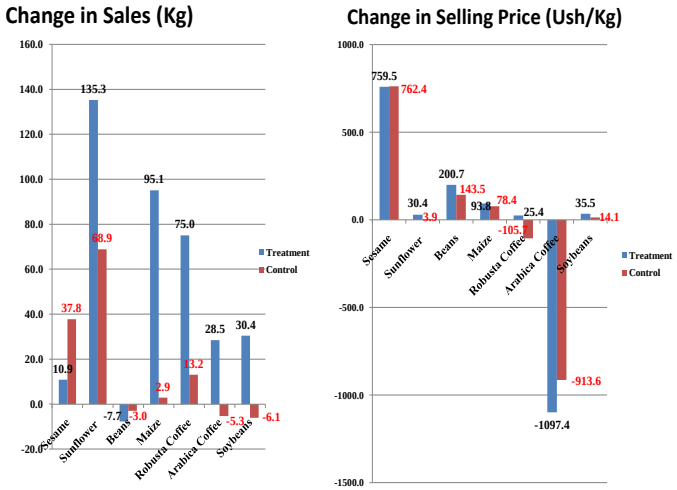


Fig 3d. Change in Sales (Kg) and Selling Price (Ush/Kg) of supported Crops



The area for beans increased in both farmer categories, but by a smaller margin among Treatment (0.06acres) than Control (0.14acres) farmers; while production increased marginally in the Treatment group by 5.3kg but dropped in the Control group by 3.6kg. Beans sales also fell among Treatment and Control farmers by an average of 7.7kg and 3kg, respectively. The selling price for beans increased in both farmer categories but by a greater margin among Treatment (201 Ush/kg) than Control (144 Ush/kg). The area under Maize increased in both farmer categories but by a greater margin among Treatment (0.4acres) than Control (0.2acres) farmers. Maize production also increased in both farmer categories, but by a bigger margin among Treatment (131kg) than Control (85.7kg) farmers. Thus, the average increase in maize production attributed to aBi Trust's support is 45.4kg. Maize sales also in both farmer categories, but by a bigger margin among Treatment (95kg) than Control (3kg) farmers; as did maize prices (increased by 93.8Ush/kg and 78.4Ush/kg in Treatment and Control categories, respectively).

For Robusta and Arabica coffee, the area increased in both farmer categories, but a by a bigger margin among Treatment (0.36 and 0.21acres, respectively) than Control farmers (0.08 and 0.09acres, respectively). Production of Arabica coffee also increased in both farmer categories but by a bigger margin among Treatment (91.3kg) than Control farmers (7.5kg); while for Robusta coffee, production rose among Treatment farmers by 83.5kg but dropped in the Control group by 4kg. Sales on the other hand increased in both categories of Robusta coffee farmers but by a bigger margin among Treatment (75kg) than Control farmers (13kg); while for Arabica coffee, sales increased in the Treatment category by 28.5kg but dropped among Control farmers by 5.3kg. Prices only rose among Treatment farmers of Robusta coffee by Ush 25.4/kg but dropped in the Control category by Ush 105.6/kg; and in both categories of Arabica coffee farmers (by Ush 1,097/kg and Ush 913.6/kg for Treatment and Control farmers, respectively). For Soybeans, the area increased in the Treatment group by 0.31Acres but declined in the Control group by 0.22Acres. However, Soybean production increased in both farmer categories but by a bigger margin among Treatment farmers (see Figures 3a and 3b); while sales rose among Treatment farmers by 30.4kg but

fell in the Control group by 6.1kg. The selling price also increased by a bigger margin among Treatment (Ush 35.5/kg) than Control (Ush 14.2/kg) farmers.

5.4. Changes in Yield and Production Costs for the Intervention Crops

The IA study findings show that during the period of intervention by aBi Trust, Treatment farmers of sunflower invested more in production (production costs increased by Ush 7,474/acre) relative to their cohorts in the in the Control group who reduced the per acre production cost by Ush 3,096. For Arabica coffee, both farmer categories registered increased total production costs per acre, but the increment was higher in the Control (Ush 39,220/acre) than the Treatment group (Ush 12,960/acre); and for Robusta coffee, Treatment farmers reduced production costs by Ush 483/acre, while Control farmers increased by Ush 72,758/acre. For Soybeans, there was a bigger reduction in production costs per acre among Control (Ush 7,324) than Treatment farmers (Ush 5,369). For other value chains (maize, beans, and sesame), Control farmers reported larger increase in production costs per acre relative to their cohorts in the Treatment category

Fig 4a. Yield and Production Costs for Supported Crops

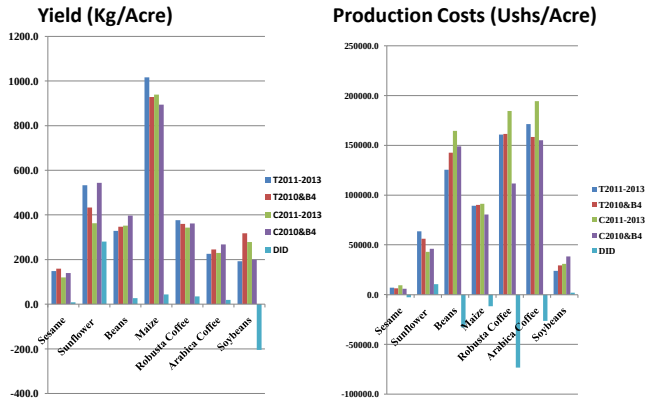


Fig 4b. Change in Yield and Production Costs for Supported Crops

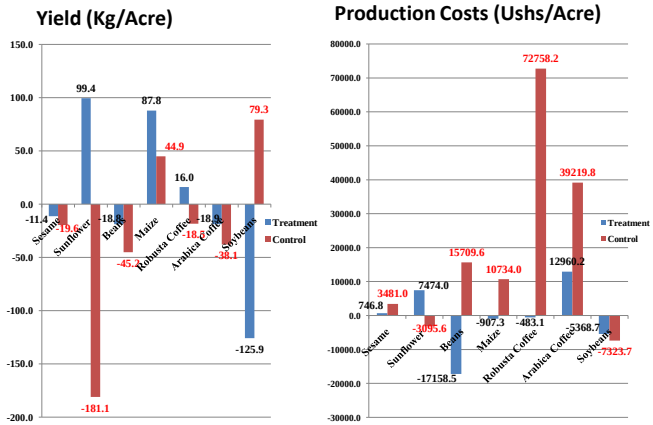
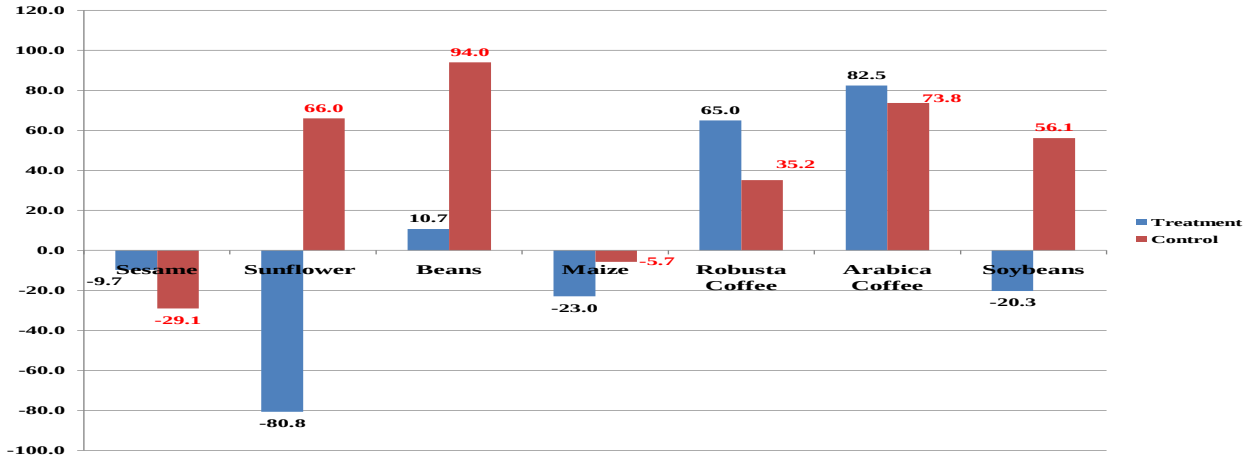


Fig 4c. Change in Per Unit Cost of Production (Ush/kg) by Value Chain



Despite the reduced investment in production of the two coffee types, maize, beans and sesame by Treatment farmers relative to their cohorts in the control group; and because of increased investment in sunflower production, Treatment farmers increased their yields by a bigger magnitude than those in the Control group, or at worst suffered lower drop in yield (see Figures 4a&b). With the exception of sesame and coffee, Treatment farmers for the rest of the crops were able to reduce the per kilogram cost of production (Ush/kg) relative to their cohorts in the Control group because of the yield increment. It is only soybeans for which Control farmers reported a higher increment in production costs and registered a higher yield increment (and higher yields) than Treatment farmers. **Thus, there was an overall increase yield and a reduction in per unit cost of production attributable to aBi Trust's support for most value chains.**

5.5 *Average income (GM per farmer) and income growth by Intervention Crop*

The findings on income (measured as Gross Margin) show that with the exception of Soybean, average income (GM) per farmer increased among Treatment farmers following aBi Trust-supported interventions (see Figure 5b). Among Control farmers, however, GMs either increased by a lower margin than for Treatment farmers or dropped by a greater margin for all commodities except Soybeans. **Thus, with the exception of soybeans, there was a significant increase in farmer income attributed to aBi Trust's support.** Also, under the FSD intervention component, income dropped in both farmer categories but by a bigger margin among Control farmers (see Fig.5b). The reduction in average income among FSD beneficiaries could be attributed to loan diversion to other enterprises (as was reported during the survey), and the ensuing diversion of attention away from the target commodity.

Fig 5a. Average Income in USh (GM Per Farmer) by Value Chain

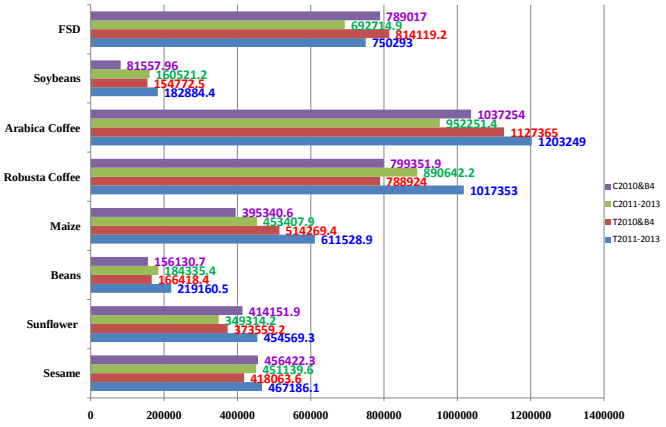
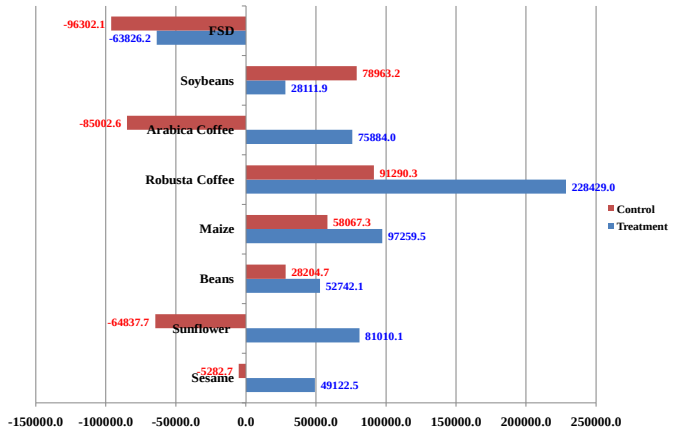


Fig 5b. Change in Average Income in USh (GM Per Farmer) by Value Chain



As indicated in Figures 5c and 5d below, the proportion of farmers showing income growth following support from aBi Trust was 24.4% for FSD; 52.5% for sesame; 53.9% for Robusta coffee, 38.9% for Arabica coffee; 38.3% for beans; 49.4% for maize; and 66.7% for both sunflower and soybeans. The corresponding average income growth was Ush 907,000 for FSD; Ush 528,490 for Sesame; Ush 756,523 for Robusta Coffee; Ush 292,485 for Arabica coffee; Ush 167,319 for Beans; Ush 526,090 for Maize; Ush 351,343 for Sunflower and Ush 162,187 for Soybeans.

Fig 5c. %Treatment Farmers Showing Income Growth by Value Chain

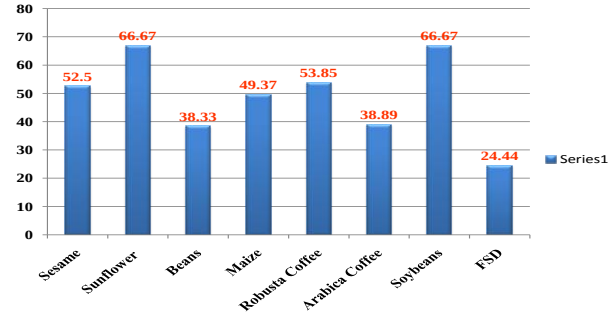
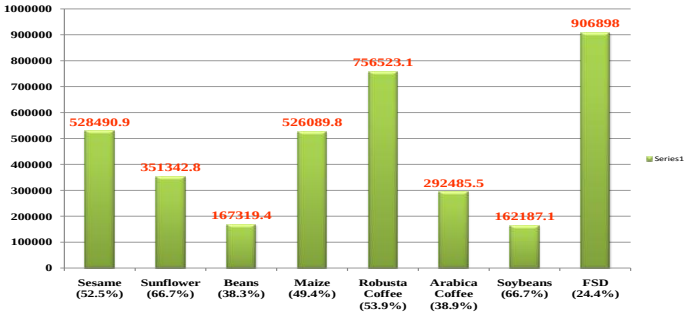


Fig 5d. Average Income Growth (Ush) for Farmers with +ve Change in Income by Value Chain



5.6 *Relevance of aBi Trust-supported Interventions*

To assess the relevance of aBi Trust-supported interventions, farmers were asked to give their opinion on the impact of the adopted GAPs on the performance of their enterprises. Figures 6a, 6b and 6c below show the opinion of surveyed Coffee, Maize and Beans farmers. The majority of farmers **(50-100%)** who applied key promoted GAPs said they had a large and positive impact on the performance of their enterprises, which suggests that the aBi Trust-supported intervention programs are highly relevant to the farmers' needs. The exception is the use of soil fertility management practices (chemical fertilizer and manure), which are used by a few and, thus, fewer farmers report positive and large impacts from their use. **The large proportions of Treatment farmers whose incomes grew during the intervention period as well as the magnitude of income growth presented in section 5.5 above are further testimony to the relevance of aBi Trust-supported intervention programs.**

Fig 6a: % Coffee Farmers Reporting Large and Positive Impact of GAPs

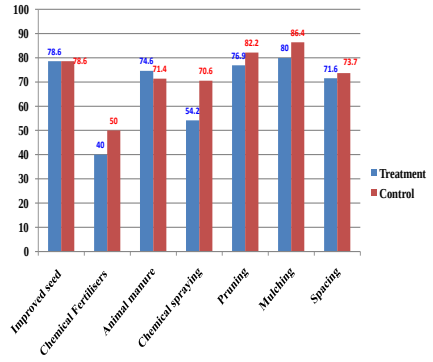


Fig 6b: % Maize Farmers Reporting Large and Positive Impact of GAPs

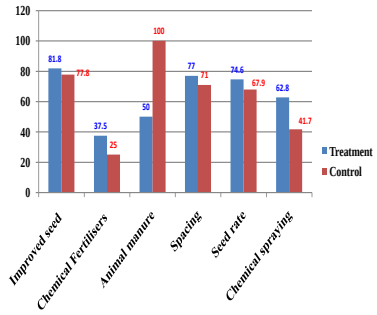
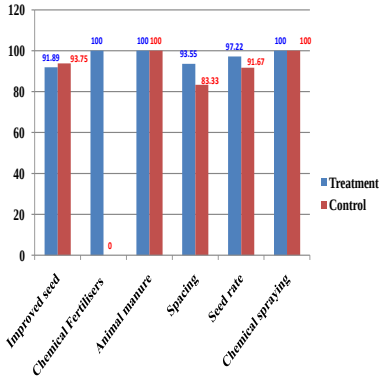


Fig 6c: % Beans Farmers Reporting Large and Positive Impact of GAPs



5.7 Change in Use of Financial Services (Credit and Savings) By Intervention Crop

For most value chains, the proportion of Treatment farmers receiving loans increased by between 23 and 53 percentage points; but was lower among farmers in the Control group (0 to 33 percentage points).The average value of loans received by Treatment farmers in 2010-2013 decreased for all crops except sesame, but increased among Control farmers for all crops except coffee and sunflower (see Figure 7a). For those that acquired loans, the most commonly reported purpose was investment in agriculture and education (school fees); and agricultural loan money was mainly spent on hiring labor and purchasing farm tools and inputs. The average distance from the homes of the sampled farmers to the nearest banking institution also decreased by a bigger magnitude among Treatment than Control farmers, **implying that financial services were brought closer to the farmers during this period—thanks to aBi Trust support to financial institutions.**The percentage of farmers saving money in their homes reduced, while the percentage of those saving with institutions, particularly VSLAs, FGs and SACCOs increased substantially (see Figure 7b). **The proportions of farmers saving with institutions was much higher in the Treatment than Control category, which should be credited to aBi Trust-supported interventions.**

Fig 7a: Changes in Credit Access and Loan Values Received by Farmers

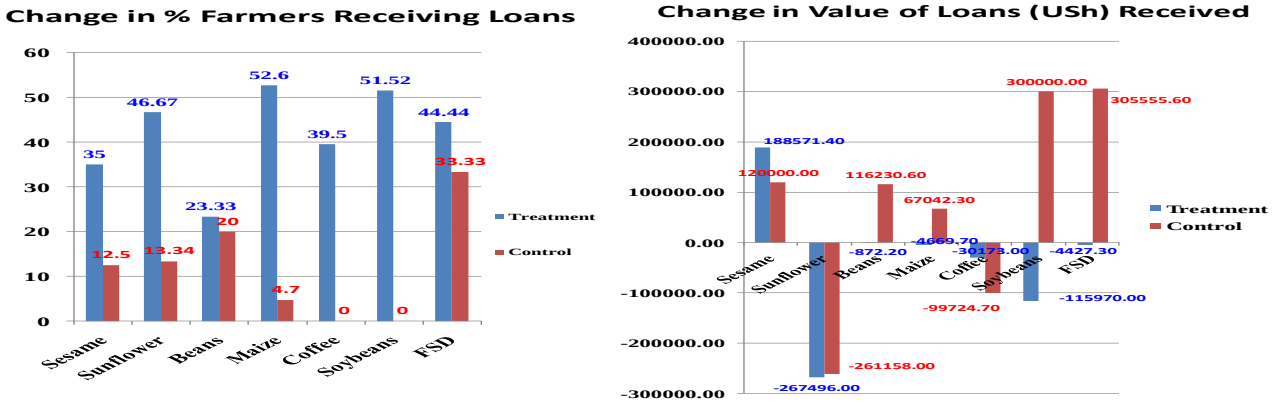
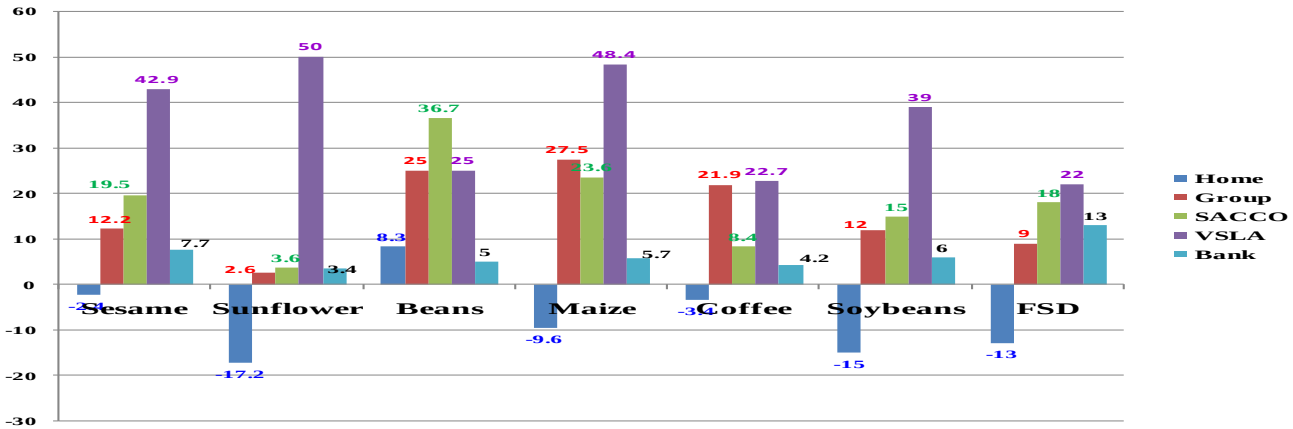


Fig 7b: % Change in Use of Different Means of Saving by Treatment Farmers



6.0 Study Findings at the Implementing Partner (IP) Level

A total of 18 IPs participated in the IA study; one third of which were FIs and the rest are FOs, but the results presented in this report are based on 15 IPs. The main areas of partnership between aBi Trust and the IPs include training in VCD, G4G and financial management skills (FMS); and provision of PHH equipment, marketing and financial services, and agricultural inputs.

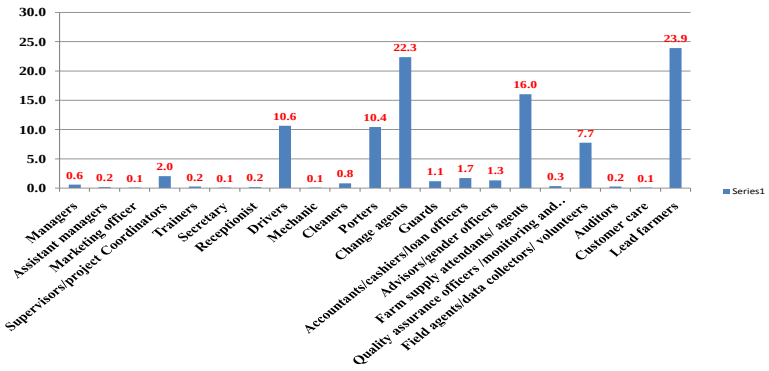
6.1 Job Creation at the IP Level

A cumulative total of 1,231 new jobs were created at the IP level during the period of intervention by aBi Trust (2011-2013). The number of new jobs created increased by 90% from 240 in 2011 to 456 in 2012, and by an additional 17% to 535 in 2013.

-Out of the 1,231 new jobs created at the IP level, the majority were at lower ranks, including:
(1) Lead farmers (23.9%),
(2) Change agents (22.3%),
(3) Farm supply attendants/agents (16%),
(4) Drivers (10.6%), and
(5)Porters (10.4%).

-At the managerial level, only 9 new jobs were created (7 managers and 2 assistant managers).

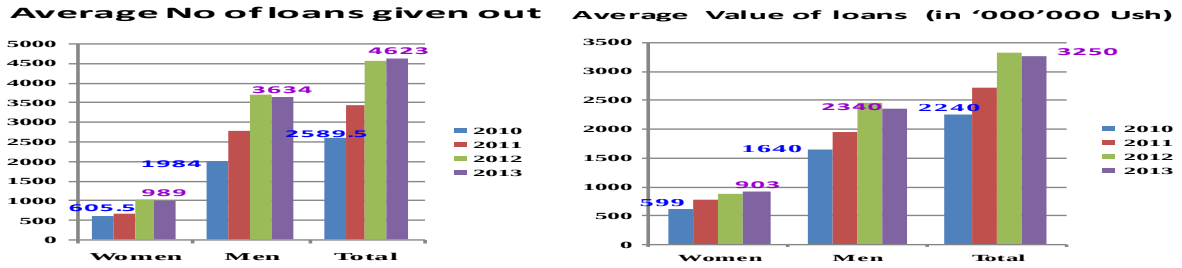
Fig 8: %Fulltime Jobs Created at IP level (2011-2013) (N=1,231 for 2011-2013; 240 for 2011; 456 for 2012 and 535 for 2013)



6.2. Financial Services (Loans and Savings) offered by IPs to Value Chain Actors

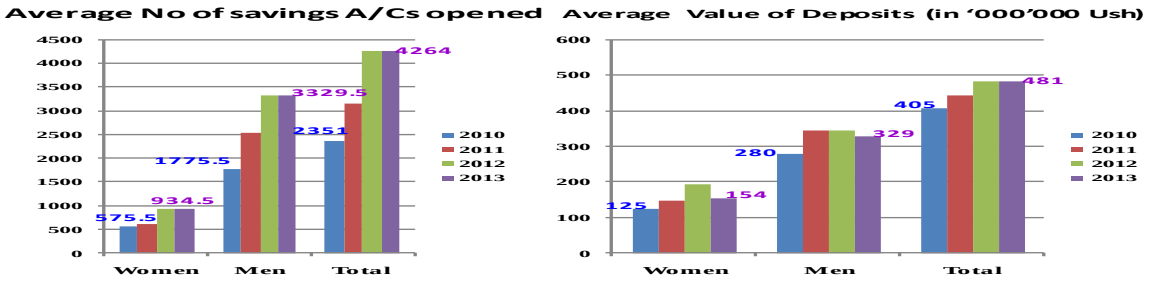
On average, the total number of loans given out by the FIs partnering with aBi Trust increased from 2,589.5 (23.4% to women and 76.6% to men) in 2010 to 4,623 (21.4% to women and 78.6% to men) in 2013. This represents an increase of 78.5% of the total loans given out between 2010 and 2013 by the aBi Trust-supported FIs; with the increment favoring men (83% increment) over women (63% increment). The average value of the loans given out by the IPs increased from Ush 2.24 billion (26.7% to women and 73.3% to men) in 2010 to Ush 3.32 billion (26.2% to women and 73.8% to men) in 2012; before reducing slightly to Ush 3.25 billion (27.8% to women and 72.2% to men) in 2013. However, women beneficiaries received just above one quarter of the total value of loans given out during the period of intervention by aBi Trust (2010-2013).

Fig 9: Loan Portfolio of sampled IPs between 2010 and 2013



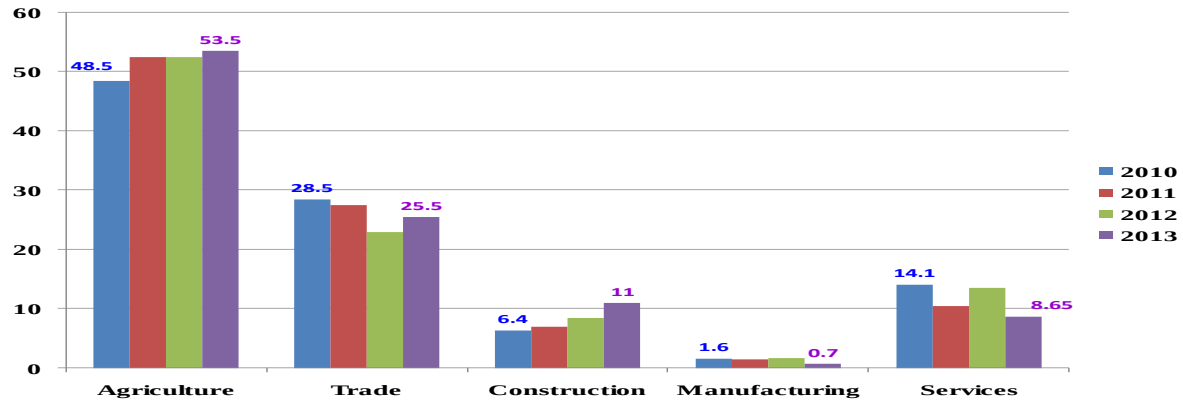
The average number of new clients opening savings accounts with the sampled IPs increased from 2,351 to 4,264 between 2010 and 2013; representing an increase of 81.4%. The average number of new savings accounts opened by men increased by 87.5% from 1,775.5 in 2010 to 3,329.5 in 2013; while the number of new savings accounts opened by women increased by a lower margin of 62.4% from 575.5 in 2010 to 934.5 in 2013. The average value of savings deposits with the FIs also increased from Ush 0.405 billion in 2010 (30.9% for women and 69.1% for men) to Ush 0.481 billion (32% for women 68% for men) in 2013; with women accounting for just below one third of the total value of savings.

Fig 10: Savings Deposits with IPs between 2010 and 2013



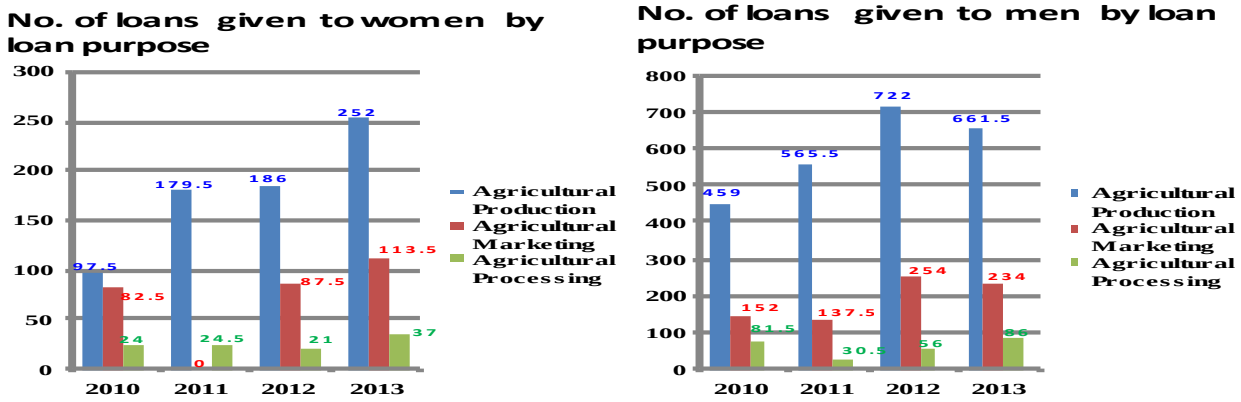
Half of the loans given out by the FIs between 2010 and 2013 were for purposes of investing in agriculture; and the share of agricultural loans increase from 48.5% in 2010 to 53.5% in 2013. The second most prevalent purpose of loan acquisition is trade, but it's share dropped from 28.5% in 2010 to 25.5% in 2013.

Fig. 11: Average share of different purposes for which IPs gave out loans



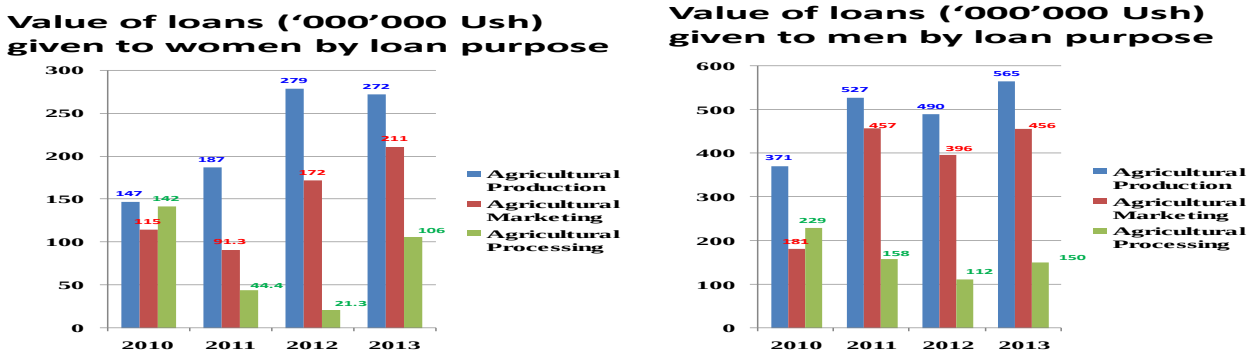
The majority of the agricultural loans given out in 2010 (97.5 to women and 459 to men) went into primary agricultural production, but with 3-4 times more men getting loans for agricultural production than women. A similar pattern is observed in 2011, 2012 and 2013. Agricultural processing received the lowest number of loans (lower than production and marketing) for the entire intervention period.

Fig 12: Purpose of agricultural loans given out between 2010 and 2013



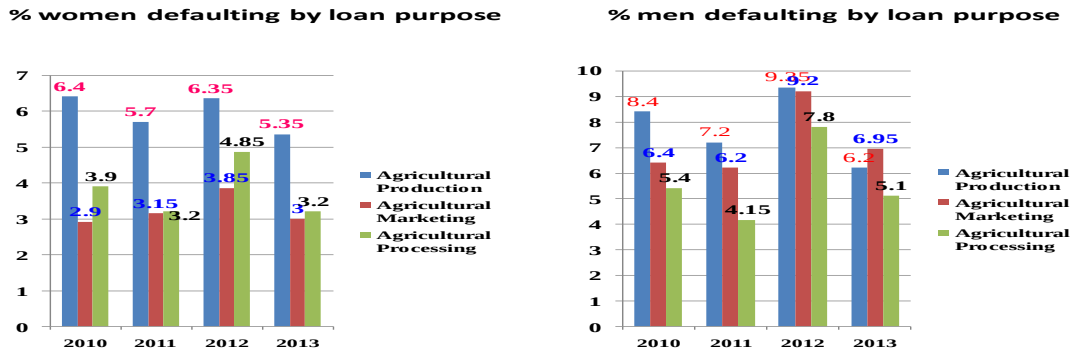
However, although the average value of loans given out for primary agricultural production were still higher compared to loan values given out for other purposes, they were comparable to those given out for agricultural marketing. Unlike agricultural processing, both the share and value of agricultural loans given for primary agricultural production and marketing increased significantly between 2010 and 2013.

Fig 13: Value of agricultural loans given out between 2010 and 2011



During the intervention period (2010-2013), a higher proportion of men than women defaulted on the loans they took out. For example, the default rates on loans given out to women for primary agricultural production were 6.4% and 5.35% in 2010 and 2013, respectively; compared to the corresponding rates for men of 8.4% and 6.2%, respectively. For both women and men, higher default rates were observed for loans taken out for primary agricultural production than marketing and processing, likely because of the higher risks involved in primary agricultural production than marketing and processing.

Fig 14: Default Rates (%) on agricultural loans given out 2010-2013



7.0 Concluding Remarks and Recommendations

Since 2010, aBi Trust has supported IPs with grants to enable them to provide technical support to farmers in the areas of training in GAPs under VCD; G4G and FSD; and provision of PHH equipment, marketing and financial services, and agricultural inputs. The IA study shows that:

(1) The majority of Treatment farmers who received training in these areas between 2011 and 2013 were trained by the IPs of aBi Trust. However, not all the trained farmers applied the GAPs on their land, which means that the change in application of the promoted practices attributable to aBi Trust is smaller than the attributable change in prevalence of training in these practices.

(2) Besides aBi Trust-supported IPs, other NGOs and government agencies such as NAADS and NARO trained farmers (both Treatment and Control) in GAPs before and after aBi Trust intervention, which reduced the attributable impact of aBi Trust in prevalence of training in these areas.

(3) For several GAPs promoted by aBi Trust-supported IPs, more farmers (both Treatment and Control) reported using these GAPs than those who reported receiving training in the same. As a result, the estimated changes in percentage of farmers applying these GAPs in 2011-2013 (proportion of new adopters) following aBi Trust-supported intervention were much lower than the changes in trained farmers. It is possible that several farmers did not directly participate in the demonstrations and training sessions conducted by the IPs and other agencies, but later on picked the good practices and technologies from their neighbors through farmer-to-farmer extension.

However, the findings of this study show that, on average, Treatment farmers of most intervention crops performed better than Control farmers (some of whom applied similar practices before and after intervention by aBi Trust) with respect to various outcome indicators, including yield, production and production costs, sales and most importantly, income. This suggests that it matters who did the training and when the training was done. The fact that the average Treatment farmer trained (or retrained) by aBi Trust performed better than his/her cohort trained earlier by other organizations (or not trained at all) suggests that aBi Trust-supported training and subsequent application of the promoted practices made the difference and, thus, had an impact on the outcome indicators.

Furthermore, the majority of farmers for who applied key promoted GAPs **(50-100%)** said they had a large and positive impact on the performance of their enterprises, which suggests that the aBi Trust-supported intervention programs are highly relevant to the farmers' needs. **The large proportions of Treatment farmers whose incomes grew during the intervention period as well as the large magnitude of income growth is further testimony to the relevance of aBi Trust-supported intervention programs.**

Also two important facts affected the magnitude of the estimated impact on outcome indicators attributable to aBi Trust. First due to absence of well documented baseline information, this study largely depended on recall for information on respondents farming practices and outcomes before intervention by aBi Trust (2010 or before). Although various means were used to help farmers to recall the events as they happened before intervention (for example by using the last presidential election period as a reference for the pre-intervention period), the memories of some could have been stretched beyond their capacity to recall. **It is important therefore, that future interventions by aBi Trust are preceded by carefully done baseline studies to enable more accurate measurement of impact in the future.**

Second, the IA survey gathered information on the period "before" aBi Trust intervention (2010 or before) and "after" (2011- 2013). For the "after" scenario, the reference point for most farmers **(74% for coffee, 85% for maize, 88% for beans and 66.7% for FSD)** was the first cropping season of 2013, characterized by drought conditions and poor yields in most parts of the country. This likely had a negative effect on the observed impact on yield, production and income, among other indicators. **It is important to build the capacity of IPs to continuously track and report changes in performance indicators, to provide credible data for assessing impact over time, rather than relying on cross-sectional IA studies that are prone to seasonality bias.**

The original plan for this study was to measure impact of aBi Trust-supported interventions using changes in application of promoted practices by the beneficiaries and the ensuing changes in outcome indicators. This would require prior categorization of farmers as adopters versus non-adopters, based on a set of key practices that a farmer must have applied to qualify as an adopter. However, it was not possible to group beneficiary farmers into the adopter and non-adopter categories before the survey because the IPs do not keep track of farmers implementing the different practices that they promote. **In addition to supporting IPs to build their capacities to train, monitor and track changes in performance indicators, it is also critical that aBi Trust puts more effort into monitoring the IPs to ensure that they follow the procedures, guidelines and practices as agreed upon in the partnership contracts. This of course will depend on the resource envelope of aBi Trust, which, if limited would require meticulous screening of potential IPs to choose only those that have sufficient capacity to implement what is agreed upon in the partnership contracts. Since the performance of aBi Trust vis-à-vis outcome indicators largely depends on the performance of the IPs in implementing and tracking progress of the intervention programs, it is only wise that aBi Trust chooses its IPs very carefully.**

The introduction of the interventions could have been better guided to make it easier to measure the impact of the different intervention components. For example, in most areas that received support from aBi Trust, the first interventions were in the VCD component. During the promotion of VCD practices; it was realized that there were gender issues that could hamper the impact of promoted practices; and it was at this stage that a case was made for implementation of G4G practices. To enable measurement of the impact of G4G practices, it would have been wise to phase the introduction of G4G interventions, by introducing it in a few areas first and waiting until impact measurement has been done in those areas before rolling it out to the rest of the areas. This would have made it easier to apportion impact to the different intervention components, i.e., VCD alone and a combination of VCD and G4G. Unfortunately, this was not possible in this study because both VCD and G4G interventions had already been completed in the study areas, making it hard to isolate their individual impacts**. It is therefore important for** t**he introduction of future interventions by aBi Trust to be better guided, giving thought to how impact will be measured in future before introducing and implementing the interventions.**

Finally, the FSD component appears not to be well integrated with VCD and G4G even in areas where all intervention components are being implemented. For example, where FIs gave out agricultural loans under FSD for investing in the intervention crops covered in this study, no deliberate effort was made to ensure that the loan beneficiaries receive supporting services in extension advice and training in GAPs as well as modern inputs to boost their earnings from the enterprises for which they received loans and increase their ability to pay back. **It is important for aBi Trust to make extra effort beyond just introducing FSD interventions in areas where aBi Trust-supported DFAs are operating, to ensure that the beneficiaries of agricultural loans under FSD also receive technical support on their agricultural enterprises of choice.**

1. Introduction

The Agricultural Business Initiative (aBi) Trust is one of the three components of DANIDA's U-Growth 1 Programme supporting agribusiness development in the private and agricultural sector to achieve the objective of the Government of Uganda's (GOU) Competitive and Investment Climate Strategy (CICS). Using the Value Chain Approach, aBi Trust has since 2010 engaged in partnerships with various stakeholders that include Farmer Organizations (FOs), NGOs, Small and Medium enterprises (SMEs) involved in selected enterprises, namely; maize, pulses, coffee, oilseeds and horticulture. The Trust supports these partners (Implementing Partners or IPs) with grants for implementing various interventions and providing technical support to farming households engaged in the supported value chains. aBi Trust's support is channeled through three interrelated components, namely;

(1) Value Chain Development (VCD) that includes trade-related Sanitary and Phytosanitary (SPS) and Quality Management Systems (QMS);

(2) Financial Service Development (FSD) to support agribusiness development; and

(3) Gender for Growth (G4G) component that fully integrates gender equality in each of the sub-components.

Through these intervention components, aBi Trust aims to increase market competitiveness and the productivity of land and labor; and by so doing contribute to poverty reduction through economic growth, wealth and employment creation. Thus, aBi Trust's support to IPs is geared towards achieving the impact level indicators of increasing farmers' incomes and job creation—which indicators are deduced from lower level indicators of production, productivity, and cost of production, marketing and adoption among others.

2. Objectives of the Impact Assessment (IA) Study.

The aBi Trust is in its third year of support to IPs under the VCD, FSD and G4G components. Several progress reports from the partners indicate good progress at the output level and some outcomes. By September 2013, the Value Chain Development component had supported 103 partners who had reached out to about 168,970 farming households with activities on Good Agricultural Practices (GAP), marketing, Sanitary & Phytosanitary and Quality Management Systems (SPS/QMS), Village Savings and Loan Association (VSLA) across supported value chains. Under Gender for Growth component, 61,580 women beneficiaries have been supported in various activities to increase their income[1].

[1] However, just about 30 percent of this population of beneficiaries had completed the project cycle at the time of the IA in October 2013 and were, thus, ready for impact assessment; while the majority were not ready for assessment and were, therefore, excluded from the IA study.

Higher level performance indicators of changes in income and employment, as well as the scale of the above-listed self-reported outputs need to be assessed through an impact assessment (IA) study for purposes of objectivity of aBi Trust's stakeholders. The impact assessment is also important for purposes of accountability and transparency, to inform stakeholders regarding the progress so far made towards achieving the program objectives; and the impact the program is having on the beneficiaries, in terms of change in their livelihoods. Besides, it is also important to know which strategies are working and which ones are not, as this would provide useful insights and lessons for improving future performance of aBi Trust's intervention programs. Thus, the IA study is also intended to provide information to support decision-making on next-step investments in interventions by aBi Trust.

This IA study sought to achieve three (3) main interrelated objectives, which include to:

1. Measure changes in income of the benefiting farmers as a result of the aBi Trust Supported interventions
2. Measure the Fulltime Equivalent (FTE) Jobs created (both at IP and Farmer levels) for the benefiting communities as a result of the aBi Trust Supported projects
3. Determine the relevancy of aBi Trust supported programs and informing next steps

3. Key Research Questions

At the Implementing Partner (IP) level, the study involved District Farmers Associations (DFAs) and Financial Institutions (FIs) supporting farmers involved in the production of the 6 commodities (coffee, maize, beans, soybean, sunflower, and sesame[2]) targeted by aBi Trust. At the farmer level, the study involved a survey of both Treatment (beneficiary) and Control (non-beneficiary) categories of farmers producing the above-listed commodities drawn from the same geographical location (village) and production system, and sharing similar weather conditions. The survey was designed to gather data at the IP and Farmer levels for answering the following key research questions:

1. What is the performance change in production, productivity, acreage, cost of production, average price, quality, sales of the supported beneficiaries and adoption rates of Good Agricultural Practices (GAP), Post-Harvest Handling (PHH), Collective Marketing and Farming as a Family Business (FaaFB)?
2. What is the performance change in the savings and the loans of the (Village Savings and Loans Association (VSLA) methodology at the IP and Farmer levels?

[2] Soybean, Sunflower and Sesame constitute the oilseeds value chain

3. What are the additional types and number Fulltime Equivalent (FTE) jobs created at the IP and Farmer levels?
4. What are the effects of the household approach (associated with G4G interventions) on performance changes in production, productivity, acreage, cost of production, average price, quality, sales and adoption rates of GAP, PHH, Collective Marketing and FaaFB among the beneficiary households?[3]
5. What are the perceptions of the beneficiary farmers and IPs on the impact of aBi Trust supported interventions?
6. What Institutional performance changes in governance, monitoring, evaluation, reporting, fundraising have the aBi supported partners (IPs) realized as an institution?

4.0 Geographical Coverage of the Surveyed Population (Households)

The study used a multiple-stage sampling procedure. At the IP level, institutions (District Farmers Associations, Financial Institutions and SACCOs) were purposively selected by intervention component (i.e. VCD, G4G and FSD) in the first stage. The guiding principle as defined by aBi Trust was to choose IPs that had completed the intervention activities in the project cycle and had no scale-ups in their areas of operation. Each of the selected IPs was then requested to provide a list of their members that benefited from aBi Trust-supported interventions, detailing the name of the lower-level farmers group to which they belong and their locations (sub-county, parish and village). It is from these IP-supplied beneficiary lists that 2-3 sub-counties with the highest number of beneficiaries were purposively selected. The purposive choice of sub-counties as opposed to random selection was done to increase the chances of finding sufficiently large numbers of beneficiaries in close proximity so as to minimize the distances between sampled beneficiary farmers for better management of the cost of the survey. The final stage of sampling involved random selection from each of the sub-counties of two lower-level farmer groups from the IP list of beneficiaries, followed by a random selection of five beneficiary farmers from each group to serve as Treatment farmers (see Table 1 below).

Table 1: Districts, IPs and Households covered by the Impact Assessment Study (VCD &G4G)

District	Name of Implementing Partner	Value Chains						Number of Sampled Households (N)	
		MAIZE	COFFEE	SOY-BEAN	SUN-FLOWER	BEANS	SESAME	Treatment	Control
Mbale	Mbale DFA		x					20	11
Rukungiri	Rukungiri DFA		x					20	10

[3] Unfortunately, it was not possible to answer this question because of the way G4G interventions were introduced to the communities that had already been treated to VCD interventions. At the time of the survey, both VCD and G4G interventions had already been completed in the study areas, making it hard to isolate their individual impacts.

District	Name of Implementing Partner	Value Chains						Number of Sampled Households (N)	
		MAIZE	COFFEE	SOY-BEAN	SUN-FLOWER	BEANS	SESAME	Treatment	Control
Luwero	Hanns R. Neumann Stiftung (HRNS)		x					20	12
Sembabule	Sembabule DFA		x					30	12
Kasese	Kasese DFA		x					30	12
Masindi/ Kiryandongo	Masindi DFA	x						37	20
Iganga	Iganga DFA	x						20	10
Mubende/ Mityana	Mubende DFA	x						20	10
Mbarara	Mbarara DFA					x		60	30
Mayuge	Mayuge DFA			x				33	15
Apac	Apac DFA				x			30	30
Gulu	Gulu Agricultural Development Company Limited (GADC)						x	40	32
Number of **Implementing Partners** Per Value Chain		3	5	1	1	1	1		
Number of **Treatment Households** Per Value Chain		78	119	33	30	60	40	**360 (Total)**	
Number of **Control Households** Per Value Chain		42	55	15	30	30	32		**204 (Total)**
Total Number of Implementing Partners									**12**
Total Number of Households (Treatment + Control)									**564**

As mentioned earlier, the study involved a survey of both Treatment (beneficiary) and Control (non-beneficiary) categories of farmers producing the target commodities of aBi Trust in the same geographical location (village), production system and weather conditions. While the lists of IPs and their corresponding beneficiary lower-level organizations formed the sampling frames for the Treatment farmers, Control farmers were sampled from village-level household lists received from the LC1 Chairmen of the study villages. Control farmers are those growing the target commodities of aBi Trust but are not members of the aBi Trust-supported IP in the area, or any other group receiving similar support from another organization. To ensure that the selected samples of Treatment and Control farmers are representative of the farmer populations from which they were drawn, the surveyed farmer groups as well as beneficiary and non-beneficiary farmers were randomly selected from IP-supplied and Community Leader-supplied farmers lists, respectively.

Determination of the sample size of IPs to participate in the study under each component, as well as the corresponding sample sizes for Treatment and Control farmers was guided by a number of factors including the number of the beneficiaries in each value chain, as well as the time and budget constraints to the study. The plan was to have at least twice as many Treatment farmers as Control farmers across the 6 commodities and intervention

components. However, because the beneficiary population is dominated by farmers involved in the coffee value chain (52%) followed by maize (19%), these two commodities were allocated larger sample sizes than the others.

A total of 564 farmers (360 Treatment and 204 Control) and 12 IPs were surveyed under the VCD and G4G intervention components. Out of the 564 farmers, 174 are farmers of coffee (119 Treatment and 55 Control); 120 are maize farmers (78 Treatment and 42 Control); 90 are for beans (60 Treatment and 30 Control); 72 for Sesame (40 Treatment and 32 Control); 60 for Sunflower (30 Treatment and 30 Control); and 48 for Soybeans (33 Treatment and 15 Control). Besides differences in number of beneficiaries, the differences in sample sizes also reflect the variation in the number of IPs per commodity selected for the study, with coffee having the largest number of IPs (5) followed by maize (3) and the rest of the commodities having one IP each.

Among the commodities with one IP, beans had the largest number of surveyed farmers (90) and soybeans had the least (48). The reason why beans was allocated a larger sample size is because of the impression given prior to the survey that different beans beneficiaries were assigned to two different Treatments (some VCD alone and others a combination of VCD and G4G). So the original plan was to sample an equal number of farmers per Treatment (30 for VCD alone and 30 for the combination of VCD and G4G) and the Control (30), hence the sample size of 90 beans farmers[4]. For the rest of the commodities with one IP and whose beneficiaries were considered to have been subjected to one Treatment, the plan was to sample 30 Treatment and 30 Control farmers. However, for soybeans, the field team experienced some challenges locating farmers (both Treatment and Control) who had grown soybeans during the aBi Trust intervention period (2011-2013). As a result 48 farmers (33 Treatment and 15 Control) were interviewed instead of the targeted 60 (30 Treatment and 30 Control). For sesame on the other hand, the field team failed to get Control farmers (growing sesame without aBi Trust support or similar support from another organization) in Anaka sub-county[5], but managed to find non-beneficiary farmers in another sub-county (Kokigoma) that borders with Anaka in which Gulu Agricultural Development Company Limited (GADC—the official IP on the sesame value chain) doesn't operate, and it is from here that they drew Control farmers to match with the Treatment farmers from Anaka.

[4] However, as the survey progressed, the survey team discovered that all beneficiary farmers had been treated to both VCD and G4G interventions, leaving one Treatment group (VCD&G4G) and one Control.

[5] This is because most households in the sub-county belong to groups supported by the IP (Gulu Agricultural Development Company Limited--GADC) or other organizations in sesame production. The reason behind high group membership in this area is because most of the farmers previously lived in Internally Displaced People's (IDP) camps and on returning to this area, they were mobilized to form groups through which support from government and its development partners would be channeled. In the absence of Control farmers, the field team interviewed more Treatment farmers from Anaka than originally planned.

This explains why 72 sesame farmers (42 Treatment and 30 Control) were interviewed instead of the targeted 60 (30 Treatment and 30 Control). Being adjacent sub-counties, it was presumed that there are no major agro-ecological differences between Kokigoma and Anaka to raise concern about the Control households drawn from Kokigoma.

Financial Services Development (FSD) is one of the three intervention components through which aBi Trust channels its support for strengthening the competitiveness of the Agricultural and Agro-processing sectors in Uganda. The immediate objective of FSD is to increase the availability and use of financial services needed for wealth creation in various sectors (agriculture, trade, manufacturing, etc) through wider and deeper delivery mechanisms. For the FSD component, the sample size was set at 90 farmers, of which 60 farmers are beneficiaries of agricultural loans from Financial Institutions (FI) supported by aBi Trust; and the rest (30) are Control. The guiding principle for choice of FIs to participate in the IA study was maturity of the interventions for purposes of measuring impact. That is, completion of the project cycle by the FI as demonstrated by the opening up of a new branch to increase availability and use of financial services in the target communities. The emphasis on branch expansion was for purposes of measuring impact of the new financial products on beneficiary performance. The sample size (90) was distributed equally among six FIs (4 banks and 2 SACCOs) that were deemed ready for impact assessment, based on the above-described criterion. The selected FIs include Bank of Africa, Agago; Pride Microfinance, Gulu; Development Microfinance, Buyende; Opportunity Uganda, Kyenjojo; and Kashongi and Mateete SACCOs in Kiruhura and Sembabule districts, respectively. Thus, a sample size of 10 beneficiaries of agricultural loans and 5 Controls was allocated to each of the six selected IPs (4 FIs and 2 SACCOs), giving a total sample size of 90 farmers (60 Treatment and 30 Control) for the FSD intervention component.

Although the FSD is a stand-alone intervention component (not directly tied to the other intervention components (VCD and G4G)) with the mandate is to increase availability and use of financial services in various sectors (not limited to agribusiness), the IA survey purposed to sample FSD loan beneficiaries who received loans for investing in agriculture, and specifically, in the production of one of the six commodities (coffee, maize, beans, soybean, sunflower, and sesame) covered in the IA study. This was done to allow for use of the same survey tool to gather farmer-level data across the three intervention components (VCD, G4G and FSD); and to assess impacts and level of integration between FSD on the one hand and VCD and G4G on the other. However, after the start of the survey, it was observed that this objective could not be realized for all the IPs under FSD. Loan beneficiaries from the Kashongi SACCO, for example, received loans for cattle fattening,

which doesn't fit among the target enterprises for VCD and G4G, for which the survey tool was designed. For other IPs, many of the beneficiaries of agricultural loans appear to have used the money on non-agricultural purposes (home improvement, business, payment of school fees), while others invested in processing non-target commodities such as rice. Therefore, information for assessing the impact of FSD interventions was better captured at the IP level than the farmer level.

Only 69 farmers (45 Treatment and 24 Control) out of the planned 90 for the FSD component were interviewed (see Table 2 below). Out of these, 15 were from Opportunity Uganda (10 Treatment and 5 Control); 15 from Mateete SACCO (10 Treatment and 5 Control); 14 from Development Microfinance (10 Treatment and 4 Control); 13 from Bank of Africa (08 Treatment and 05 Control); 12 from Pride Microfinance (07 Treatment and 05 Control)

Table 2: Regions, Districts and Households covered by the Impact Assessment Study (FSD)

Region	**District**	**Name of Implementing Partner**	**Number of Sampled Households (N)**	
			Treatment	**Control**
Eastern	Buyende	Development Microfinance	**10**	**04**
Central	Sembabule	Mateete SACCO	**10**	**05**
Western	Kiruhura	Kashongi SACCO	**0**	**0**
Western	Kyenjojo	Opportunity Uganda	**10**	**05**
Northern	Agago	Bank of Africa	**08**	**05**
Northern	Gulu	Pride Microfinance	**07**	**05**
Total Number of **Treatment Households**			**45**	
Total Number of **Control Households**				**24**
Total Number of All Surveyed Households (Treatment + Control)				**69**
Number of Implementing Partners				**06**

5.0 Methodology

The study used a two-pronged methodology involving descriptive study and quasi experimental designs, targeting Treatment and Control categories of farmers as earlier mentioned. The descriptive methods were used to characterize the study sample in terms of demographic composition of the sample farmers, income sources and capital endowment (human, natural, physical, etc); assess beneficiary perceptions of aBi supported interventions in light of the anticipated outputs and outcomes; and to reflect on the relevance of aBi Trust programs in the eyes of the beneficiaries. Descriptive statistical analysis (means, frequencies, proportions) was conducted for all variables generated from the gathered data to estimate farmers' income and employment levels, savings and loans and other key project performance indicators at household/farmer level; and the changes therein. Descriptive statistics were also generated for other variables including production, productivity, cost of production, collective marketing, adoption rates for GAP, PHH and FaaFB and the perceived impacts of these on the beneficiaries. The quasi experimental design was used to show

evidence for cause-effect relationship (attribution) between aBi interventions and the outcomes of interest, as outlined in the study objectives.

5.1 Data Gathering and Quality Control

5.1.1 Questionnaire Preparation

Preparation of the questionnaires used to gather data for this study was guided by the Terms of Reference (TOR) given to the Consultants by aBi Trust. Based on the TOR, key modules were defined and questions formulated around each module. All the questions in the questionnaire were designed in light of the study objectives and research questions; that is, for gathering information needed to meet the study objectives and answer the research questions. The draft questionnaires were shared with aBi Trust for their input; and were appropriately revised after getting feedback from aBi Trust.

5.1.2 Interviewer Training and Supervision

The enumerators involved in data collection received in-class and in-field training. In-class training involved going through the questionnaires, section by section and question by question to ensure that they fully understood the meaning of each question; the information that the question was intended to capture; how to ask the questions; and how to probe for accurate information. During in-class training, several methods of probing for accurate information were shared with the trainees, especially where recall is involved as was the case in this study. In class training also involved "role playing" in the local languages, where one of the trainees would act as a respondent while another acts as the interviewer; and roles would then be switched and after each session. This was deliberately done in order to sharpen the enumerators' probing skills, perfect their interview skills, build their confidence to conduct interviews in the local languages; and to build consensus on the wording of the questions on the local languages.

Field training was combined with pre-testing of the questionnaire; and this involved assessing the competencies of the enumerators to conduct quality interviews. Each interviewer, particularly those with lower experience conducting interviews, was assigned a supervisor on the consultancy team who was primarily responsible for monitoring the quality of the interview during the pre-test. Some of the issues the supervisors looked out for include how the enumerator introduces the study and builds rapport with the respondent, ability of the enumerator to take charge of the interview and ask the questions correctly in the local language; and ability to probe for accurate information and help the respondent to answer questions that require recall. After the pre-test interviews, the enumerators were given time to

edit their questionnaires before submission to the supervisors for review. This was done to check the ability of enumerators to correctly record information collected from the respondents. After this process, the best performing enumerators were retained and re-trained for two additional days before deploying them in the field to conduct the actual survey. Retraining was done based on the common errors and challenges identified in the field during the pretest, with the aim of refining the questions and polishing the interview skills of the enumerators. The training was conducted by the Team of Consultant and the Survey Team Leaders who were selected from the pool of experienced research assistants that have worked with the consultants for the past 10 years. The main role of the Team Leaders during the training was to share their field experiences with the enumerators and to oversee the role-play sessions.

Supervision of the field survey was done by the Team of Consultants, Survey Team Leaders and M&E staff from aBi Trust to ensure the gathering of quality data. The sampling of IPs, farmer groups, and beneficiary farmers was done by the Consultants using the IP supplied sampling frames in liaison with M&E staff from aBi Trust. However, on realizing that not all the IPs would be able to provide the sampling frames ahead of the survey, the Team Leaders were trained to use the beneficiaries lists supplied in the field by the IPs to draw random samples of farmer groups and beneficiary farmers. For the non-beneficiary (Control) farmers, the Survey Team Leaders did the sampling using household lists supplied by the community leaders. The Survey Team Leaders performed the primary role of supervising field interviews and reviewing the questionnaires to ensure that the gathered information gather was of high quality with no gaps in the questionnaires before moving on to the next study location.

5.1.3 Measures for Quality Control.

As mentioned above; a substantial amount of time was invested in the training of enumerators to ensure that highly competent enumerators are deployed to the collect data and adequately supervised to ensure the collection of high quality data. During the survey, Team Leaders reviewed every completed questionnaire on a daily basis to ensure that the enumerators were performing to expectation; and to enable corrective action to be taken in a timely manner. Beyond that, Team Leaders conducted call backs on selected households to validate the data gathered by the enumerators. The Consultants carried out spot checks on completed questionnaires as a quality control measure; and M&E staff of aBi Trust made random visits to the field to observe the interview process and review completed questionnaires.

In absence of well-documented baseline information, the only available option was to ask respondents to recall events that occurred up to three years back; and this was one of the key challenges of the study. To overcome this challenge, a number of strategies were employed including training enumerators to probe for accurate information that requires recall; breaking down long time periods into shorter time periods; and using major calendar events to facilitate recall. For example, the period just before aBi Trust intervention coincided with the 2011 presidential election period in Uganda, and this was used as a major calendar event to facilitate recall of what farmers did prior to intervention by aBi Trust. The challenges of finding respondents in the Soybean case and how they were dealt with was explained earlier.

To ensure that the respondents do not give biased, "desirable" responses to the interview, Field Team Leaders were cautioned at the training and reminded time and again not to promise respondents any form of payment or benefits in return for their participation in the study. The purpose of study was stated up front before the start of the interview; and respondents were given an opportunity to accept or decline the interview based on understanding that their participation was voluntary with no direct private benefits from participation or penalties from non-participation. No mention was made of past or future support from aBi Trust; and farmers were not told anything about the organization that commissioned the IA study to avoid biasing their responses.

5.2 Data Processing and Analysis

The gathered data was entered by a team of experienced data entry clerks using a template prepared in MS Access. To minimize data entry errors, some of the enumerators with good data entry skills also participated in data entry, making sure that no enumerator entered the data they collected. After data entry, data cleaning was done by the data entrants under the supervision of the Consultants before the datasets were transferred and merged in STATA. Further data cleaning was done in STATA using a STATA syntax developed to identify errors and outliers in the dataset in the data. Data analysis was then performed using a clean dataset to generate statistics that were summarized in table form and compiled into a study report. The tasks of data analysis and report-writing was led by the Lead Consultant in collaboration with one member of the Consultancy Team.

5.3 Attribution Strategy

To measure the impact of aBi's interventions on the beneficiaries, the original plan was to use (1) the potential outcome framework (Wooldridge, 2002) in which every household faces two potential outcomes (one arising from participation in aBi supported

interventions $\left(\mathrm{I}_i^1\right)$ and one arising from non-participation $\left(\mathrm{I}_i^0\right)$); and (2) the Propensity Score Matching (PSM) method (Rosembaum and Rubin, 1983) to match participants with non-participants having similar scores and estimate the average population Treatment Effect (ATE) as defined below:

$$ATE_1 = \frac{1}{N}\sum_{i \in N_1}\left(\mathrm{I}_{1i} - \mathrm{I}_j\right)$$

where N is the number of treated households, I_{1i} is the income of the participating household of interest, and I_{j} is the income of the "counterfactual" or Control household matched to the participant.

However, effective use of the PSM method would require a large enough sample of non-participants (Control) to match with the participants through Nearest Neighbor Matching (NNM), which the limited budget for this study could not allow. Due to lack of adequate sample size for PSM, an alternative method of impact analysis, known as the double difference was adopted. The double difference or difference-in-difference **(DID)** method compares participants and non-participants of development interventions in terms of changes in desired outcome indicators over time, before and after the interventions. The double difference methods are superior to the single difference methods because they help to resolve the selection bias in single difference comparisons through the matching of two comparable groups—those who participate and those who do not. Nevertheless, using the difference-in-difference approach does not eliminate all unobserved heterogeneity of individuals who participate and those who do not, nor the selection bias that may arise out of a program's decision on whom to allocate the intervention within a particular village as does the PSM method.

To enable use of the difference-in-difference method in this study, Treatment and Control farmers were asked to answer questions about the "before" aBi Trust support scenario (which requires recall) and "after" (current situation). Farmers were first asked the last time *(Season and Year)* when they produced the target crop before aBi Trust-supported interventions and after; that is in 2010 or before *("before")*, and between 2011 and 2013 *("after")*. These farmer-reported seasons and years then became the reference for detailed interviews on area planted to the crop, quantities and costs of inputs used, quantities of the crop harvested and sold, etc (see appendix for survey tool) before and after aBi Trust-supported interventions. To estimate the attributable changes to aBi Trust support, the difference between the before and after scenarios for an outcome indicator (e.g., yield) is computed separately for the Treatment and Control farmers. This is the first difference. The second difference (attributable change) is obtained by subtracting the first difference for the

Control farmers from the first difference for the Treatment farmers. For example: Consider a maize farmer who adopted GAPs as a result of aBi Trust's support. For such a farmer, the attributable impact of aBi Trust's support is in the form of productivity gains and reduction in production costs arising from the yield increase. So after computing the average yields and production costs for Treatment and Control farmers, the attributable impact to aBi Trust supported interventions would be estimated as illustrated below:

Figure 1: Methodology for Measuring Difference in Difference

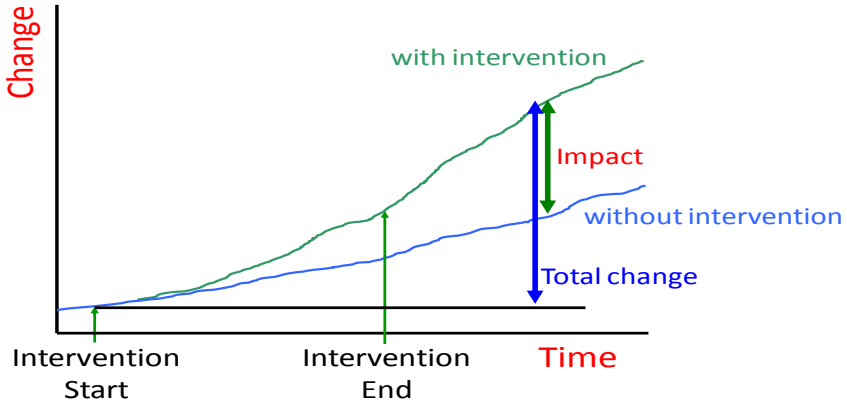


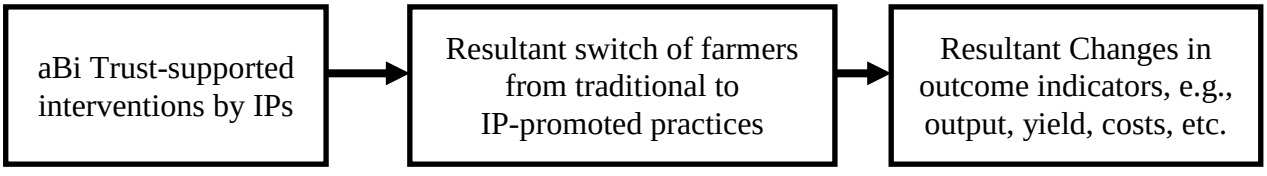
Table 3: Example for Computation of intervention impact using difference-in-difference method

	Treatment			Control			Attributable Changes
Mean Values	**Before**	**After**	**Diff.**	**Before**	**After**	**Diff.**	**DID (Impact)**
Productivity (Kg/Acre/)	180	300	120	180	200	20	**100**
Production Costs (Ush/Kg)	110	75	35	120	110	10	**25**

5.4 Impact Assessment

As mentioned in section 5.3 above, the difference-in-difference method was used to assess the impact of aBi Trust-supported interventions through comparison of changes in desired outcome indicators (production, yield, acreage, cost of production, price, sales, types and number jobs created, etc.) between project beneficiaries and non-beneficiaries. Usually, impact assessment of project supported interventions is based on changes in application of promoted practices by the beneficiaries and the ensuing changes in outcome indicators, as illustrated in Figure 2 below. This method of impact assessment uses a sub-sample of beneficiary farmers who switched from their previous practices to the newly promoted practices (adopters) and treats beneficiary farmers who do not change their practices (non-adopters) in the same way as non-beneficiaries.

Figure 2: Conceptual framework for impact analysis



Effective use of this method requires prior definition of adopters based on a set of key practices (such as use of improved seed and fertilizer) that a farmer must have applied to qualify as an adopter. However, in this study, it was not possible to group beneficiary farmers into the adopter and non-adopter categories before the survey because the IPs do not keep track of farmers implementing the different practices that they promote. The idea of categorizing farmers after the survey based on changes in implemented practices was considered but the major drawback to post-survey categorization of the farmers is that the key practices used to characterize adopters were implemented to varying degrees by the sampled farmers. Using the example of maize and beans, the key practices used by aBi Trust to define adopters include use of (1) Improved seed; (2) Chemical fertilizers or Organic fertilizers (e.g., animal manure); (3) Correct spacing; (4) Correct seed rate; (5) Pest and disease control methods. As will be shown later in sections of this report, the corresponding percentages of beneficiary (Treatment) farmers using the above-listed practices after aBi Trust-supported interventions (2011-2013) are 84.6%, 30.8%, 15.4%, 94.9%, 80.8% and 55.1%, respectively for maize; and 88.3%, 11.7%, 35%, 66.7%, 73.3% and 23.3%, respectively for beans. That is, while over 80% of the Treatment farmers used improved seed for maize (84.6%) and beans (88.3%) after intervention, much smaller proportions of farmers used chemical fertilizer on maize (30.8%) and beans (11.7%), the complimentarity of these two technologies notwithstanding. The same is true for use of organic fertilizers and pest and disease control practices.

Therefore, going by these two commodities, impact assessment of aBi Trust-supported interventions would have to be based on no more than 30.8% (N=72) of the Treatment farmers for maize categorized as adopters, and no more than 11.7% (N=60) of the Treatment farmers for beans categorized as adopters; assuming that all those who used fertilizer also used improved seed. Moreover, some Treatment farmers (12.8%-87.2% of maize farmers and 3.3%-90% of beans farmers) were already using these practices prior to intervention by aBi Trust, suggesting that much smaller proportions of Treatment farmers switched from traditional to improved practices following aBi Trust-supported interventions by IPs; and therefore qualify to be categorized as adopters for impact assessment. In addition, some Control farmers also reported using these practices both before and after aBi Trust interventions, which reduces further the attributable impact of aBi Trust's support as measured by the difference in difference method.

It is because of the above-listed drawbacks that impact analysis in this study is based on comparison of changes in desired outcome indicators between project beneficiaries (Treatment) and non-beneficiaries (Control), bearing in mind that not all Treatment farmers are "new" trainees or adopters of the practices and technologies promoted by the IPs using support from aBi Trust. As a matter of fact, expecting to measure impact based on farmers who had never used the promoted practices before aBi Trust-supported interventions (but used them thereafter) would be asking for the impossible, given that there are several development organizations and government agencies that started promoting improved agricultural practices and technologies in Uganda well before the inception of aBi Trust.

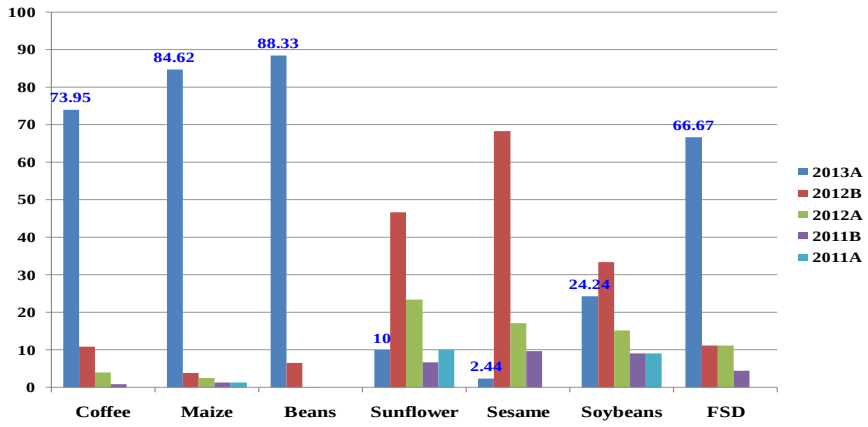
However, as the findings of this study will later show, on average, the beneficiaries of aBi Trust-supported interventions in many of the target commodities performed better than non-beneficiaries some of whom applied similar practices before and after intervention by aBi Trust. This suggests that it matters who did the training and when the training was done. The fact that the average beneficiary farmer trained (or retrained) by aBi Trust performed better than his/her cohort trained earlier by other organizations (non-beneficiary of aBi Trust's support) suggests that aBi Trust-supported training and subsequent application of the promoted practices made the difference and, thus, had an impact on the outcome indicators.

6.0 Study Findings

Some of the study findings presented in this report, particularly the quantitative results need to be interpreted with caution because:

(1) As intimated in Section 5.1 above, farmers were asked questions about the "before" aBi Trust support scenario (2010 or before) and "after" (between 2011 and 2013). For the "after" scenario, the reference point for most farmers was the first cropping season of 2013, which was characterized by drought conditions and poor yields in most parts of the country. Figure 3 below shows that three quarters and above (74-88%) of the Treatment farmers for coffee, maize and beans last produced these crops in the first cropping season of 2013. Thus, the interpretation of changes in production and productivity (yield) figures for these crops before and after aBi Trust-supported interventions needs to recognize this fact.

Figure 3: % Treatment Farmers by Season Last Produced Supported Crop between 2011 and 2013



(2) The second reason for caution is related to farmers' ability (or lack of it) to recall with accuracy quantitative information (area planted, harvests and sales, etc.) about the target crop in 2010 or before—three years before the interview. The accuracy of the reported figures for 2010 or before and the changes computed based on these figures depends on farmers' ability to recall and should be treated with caution.

6.1 Sesame

6.1.1 General Characteristics of the Sampled Sesame Farmers

Before reporting results of the analysis on impact of aBi Trust-supported interventions on the livelihoods of sampled households, the general socio-demographic characteristics of these households are briefly examined for differences between Treatment and Control farmers, because other things being equal, these differences affect decision-making and the outcomes of the decisions made at the household level. A total of 72 sesame farmers (40 Treatment and 32 Control) drawn from the sub-counties of Alero, Anaka and Kokigoma in Nwoya district and Pabo sub-county in Amuru district participated in this study. These districts are part of the three districts (the third being Gulu) served by Gulu Agricultural Development Company Limited (GADC), the Implementing Partner of aBi Trust-supported interventions in the sesame value chain.

Table 4: Characteristics of the Sesame Farmers/Household Heads and their households#

Variable	Entire Sample (N=72)	Treatment (N=40)	Control (N=32)
% Male Farmers/Headed-Households	79.17	82.93	74.19
Main Occupation of Farmer/HH Head (% Households/Farmers Reporting….)			
No occupation	4.17	2.5	6.45
Production of crops	94.44	95.12	93.55
Salary employment	1.39	2.5	0
Average age (years) of Farmer/HH Head	39.46 (13.76)	41.00 (13.38)	37.42 (14.21)
Highest school grade completed by Farmer/HH Head	6.97 (2.90)	7.15 (3.20)	6.72 (2.46)
Marital status of Farmer/HH Head (% Households/Farmers Reporting ….)			
Single	4.17	4.88	3.23
Married	88.89	90.24	87.10
Widowed	5.56	2.44	9.68
Divorced	1.39	2.44	-
Average family size	6.65 (2.63)	6.78 (2.57)	6.48 (2.74)
Dependency Ratio	0.57 (0.43)	0.49 (0.43)	0.67 (0.42)

#Numbers in parentheses are standard deviations (Measure of dispersion from the mean)

The study findings show that the head of a typical sesame-growing household (or typical sesame farmer) is male (79% of the sampled farmers/households are male-headed), about 40 years of age and with seven years of schooling. Household heads/farmers among the Treatment group are older (41 years) than those in the Control Group (37 years). The education level (years of schooling) of the household head/farmer is slightly higher in the Treatment group (7.2) than the Control group (6.7). The main occupation for nearly all the sampled households/farmers (94%) is crop farming, which also doubles as the main source of cash income for the households/farmers. The average household has 6.7 family members, although this is slightly higher in Treatment (6.8) than Control (6.5) households. However,

the dependency ratio (No. of productive/No. of unproductive family members) is significantly higher in the Control (0.67) than the Treatment (0.49) category of farmers.

6.1.2 Asset Accumulation

Both Treatment and Control households accumulated farm and transport equipment (assets) during the project period; with the Treatment households doing better than those in the Control category. For communication assets (radio, mobile phones), their value increased marginally in the Treatment group but declined in the Control group. For livestock assets, the value declined significantly in both categories; with the decline being more pronounced in the Control group.

Table 5: Household Asset Endowment in 2010 (Before Intervention) and 2013

	Treatment		**Control**		**Attributable Changes (DID)**
	Now(2013)	***2010***	***Now(2013)***	***2010***	
Total value of Farm Equipment (Ush)	66,075.17 (52,345.36)	29,479.8 (22,570.79)	57,528.89 (40,537.00)	39,979.69 (34,168.03)	19,046
Total value of Transport Equipment (Ush)	146,263.1 (70,547.31)	118,019.1 (41,977.01)	121,154.4 (52,957.95)	116,656.5 (47,719.85)	23,746
Total value of Communication Equipment (TV, Radio, Mobile Phone) (Ush)	60,734.82 (33,369.77)	51,830.7 (31,804.18)	46,772.82 (26,785.92)	56,664.13 28,746.07)	18,795
Total value of Livestock (Ush)	621,307.9 (620565.5)	712,402.2 (624,622.1)	345,995.2 (277,572.90)	781,685.7 (694,064.90)	344,596

6.1.3. Job Creation at the Household/Farmer Level

None of the sampled sesame farmers employed farm workers on permanent terms. The number of temporary/short-term employees working with the farmers decreased from an average of ten to eight during the project period. Nothwithstanding the decline in average number of short-term workers, some farmers employed more workers in 2013 than in 2010; and thus created new additional jobs which are attributed to the intervetion by aBi Trust.

Table 6: Number of Farm Empoyees and Expenditure on Labor in 2010 and 2013

	Treatment		**Control**		**Attributable Changes (DID)**
	2013	**2010**	**2013**	**2010**	
Number of Temporary/short-term workers currently employed	8.48 (5.64)	10.29 (7.87)	8.76 (5.63)	10.79 (9.72)	0.22
Number of Months the farmer uses Temporary/short-term workers	2.52 (1.0)	3.00 (1.29)	2.40 (0.84)	2.88 (0.64)	0
Additional Fulltime Equivalent (FTE) Jobs Created		34.5		12.75	21.75
Total annual payment to Temporary/short-term workers **(Total in Ush)**	160,957.3 (151,818.9)	114,571.4 (93,236.00)	174,777.8 (174,299.9)	188,750 (119,454.5)	60,358.1

For these farmers, the additional short-term jobs created were converted to fulltime equivalents (FTEs) by summing up the total number of days worked by the additional short-

term workers and dividing it by 240—the number of days one must have worked to be considered fulltime. Treatment farmers created more FTE jobs (34.5) than their cohorts in the Control group (12.75); and this is reflected in the increase in the annual wage-bill for farmers in the Treatment group relative to that of their cohorts in the Control group.

6.14. Production and Sales of Sesame in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

Both Treatment and Control farmers grew an average of one plot of sesame the last time they grew it before and after aBi Trust-supported interventions; and the area allocated to sesame only increased marginally—with the increase being slightly higher in the Control (0.28Acres) than Treatment (0.06Acres) category. This is also reflected in the total quantity and value of sesame seed planted, which increased more in the Control than the Treatment group. Use of own seed for planting reduced significantly in the Treatment category but remained the same in the Control group; while the sourcing of seed from market vendors in the local market increased significantly among Treatment farmers but declined in the Control category. More than one tenth (10.8%) of the Treatment farmers (and none in the Control category) reported sourcing seed from GADC (the IP of aBi Trust-supported interventions in the sesame value chain) and from Farmers Organizations before the aBi Trust program, but this reduced after the intervention period to below 10%. None of the sampled sesame farmers reported using fertilizer, pesticides or herbicides in sesame production, because sesame production is supported by aBi Trust under the organic farming sector.

The total quantity of sesame harvested as well as the sales increased in both farmer categories but by a bigger margin among Control (67.7kg and 37.8kg, respectively) than Treatment farmers (45.5kg and 10.9kg, respectively). This is partly because of the larger increase in the area planted to sesame in the Control (0.28Acres) than Treatment (0.06Acres) as reported earlier.

Table 7: Land Allocation and Input Use in Sesame Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Separate plots/gardens of sesame grown	1.08 (0.27)	1.03 (0.17)	1.07 (0.26)	1.08 (0.27)	0.06
Total land area (acres) planted to sesame	1.10 (0.47)	1.04 (0.51)	1.27 (0.72)	0.99 (0.44)	-0.22
Total quantity of sesame seed planted (kgs)	2.06 (1.01)	2.09 (1.32)	2.37 (0.96)	1.95 (0.85)	-0.45
Total Value of sesame seed planted (Ush)	6779.30 (3414.14)	6038.10 (4286.08)	7598.70 (3777.21)	4709.619 (2381.11)	-2147.88
Total quantity of main fertilizer applied (kg)	0	0	0	0	0
Total Cost of pesticides applied (Ush)	0	0	0	0	0
Total Cost of Herbicides applied (Ush)	0	0	0	0	0
Main Source of Seed (% HHds/Farmers Reporting….)					
own seed,	23.26	32.43	25.81	25.00	-9.98
input trader	11.63	16.22	22.58	21.43	-5.74
District or Lower-Level Farmers organization	6.98	10.81	0	0	-3.83
Market vendor /local market	41.86	24.32	48.39	53.57	22.72

Export company (GADC)	9.30	10.81	0	0	-1.51
Fellow farmer	6.98	2.70	3.23	0	1.05
Perceived quality of seed (% HHds/Farmers Reporting….)					
Very good	40.48	48.65	22.58	25.00	-5.75
Good	52.38	48.65	67.74	75.00	10.99
Poor	0	0	9.68	0	-9.68
Very poor	7.14	2.70	0	0	4.44

Both Control and Treatment farmers reported an increase in the price at which they sold sesame between 2010 and 2013 of about Ush 760/kg. However, the average sales price received by Treatment farmers was higher than that of the Control group by over Ush 40/kg both before and after intervention by aBi Trust. The percentage of farmers selling sesame collectively increased both among Treatment and Control farmers, with the increase being slightly higher in the Treatment than the Control group. The majority of farmers (both Treatment and Control) sold to traders, but the proportion of farmers selling to an exporter (most likely GADC) is higher among Treatment than Control farmers. This could partly explain why the average distance from the farmers home to the main buyer they sold to is reported to have increased by an average of 0.5 kms among the Treatment farmers between 2010 and 2013; yet it decreased by 1.3 kms in the Control category. This is because exporters are usually located in bigger towns further away from the farmers than the common traders to whom most of the Control farmers (75%) sold their sesame.

Table 8: Harvest and Sales of Sesame

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Total quantity of sesame harvested (kgs)	182.34 (107.01)	136.82 (67.90)	183.52 (121.50)	115.81 (68.22)	-22.19
Total quantity of sesame sold (kgs)	123.10 (90.22)	112.22 (64.27)	151.38 (60.29)	113.58 (49.42)	-26.92
Selling Price (Ush/kg)	2967.30 (877.29)	2207.79 (699.06)	2924.87 (669.61)	2162.49 (686.66)	-2.87
Main Mode of Sale (% HHds/Farmers Reporting….)					
Collectively through group	31.25	25.00	5.88	0	0.37
Individually	68.75	75.00	94.12	100.00	-0.37
Main Buyer Type (% HHds/Farmers Reporting….)					
1=Consumer,	9.38	15.63	23.53	18.75	-11.03
2=Trader,	56.25	53.13	76.47	75.00	1.65
3=NGO	0	6.25	0	0	-6.25
5=Exporter	21.88	18.75	0	6.25	9.38
6=Processor	3.13	3.13	0	0	0
7=Broker	9.38	3.13	0	0	6.25
Average distance to main buyer (km)	4.61 (3.67)	4.05 (2.69)	4.01 (3.50)	5.31 (4.76)	1.86
Mode of transport to point of sale (% HHds/Farmers Reporting….)					

1=foot,	25.00	10.71	7.14	23.08	30.23
2=bicycle,	50.00	67.86	64.29	30.77	-51.38
3=motorbike,	10.71	14.29	7.14	30.77	20.05
4=Vehicle,	14.29	7.14	21.43	15.38	1.1
Average Transport Cost (Ush)	6133.86 (5315.28)	4870.37 (3950.64)	5604.32 (3547.46)	5291.67 (3732.28)	950.84
Who made sales decisions (when and how much to sell)? (% HHds/Farmers Reporting….)					
1=Husband;	25.81	19.35	5.88	26.67	27.25
2=Wife;	3.23	3.23	0	6.67	6.67
3=Both Husband& Wife;	70.97	77.42	94.12	66.67	-33.9
Who made decisions on the use of revenue from this crop? (% HHds/Farmers Reporting….)					
1=Husband;	9.68	9.68	5.88	25.00	19.12
2=Wife;	3.23	3.23		6.25	6.25
3=Both Husband& Wife;	87.10	87.10	94.12	68.75	-25.37
How was the revenue from this crop used? (List the top three) (% HHds/Farmers Reporting….)					
1=Consumption;	3.23	6.45	5.88	18.75	9.65
2=Investment in Agricultural enterprise	19.35	12.90	23.53	12.50	-4.58
3=Investment in non-agricultural enterprise;	6.45	9.68	5.88		-9.11
4=Medical expenses;	22.58	12.90	11.76	18.75	16.67
5=Household durables;	3.23	3.23	5.88	6.25	0.37
7=School fees	45.16	51.61	47.06	37.50	-16.01

Sesame yield (kgs/Acre) declined in both farmer categories but by a bigger margin among farmers in the Control (20kg/Acre) than the Treatment group (12kg/Acre), possibly due to unfavorable weather conditions. However, much as both farmer categories registered lower yields, the decline in yield among Control farmers (20 kgs) was almost twice that of their cohorts in the Treatment category (12 kgs), suggesting that without aBi Trust supported interventions, the drop in yield experienced by Treatment farmers would have been greater. The change in sesame yield attributable to aBi Trust support is 8.3 kgs/Acre. On the other hand, the input costs per kilogram (Ush/kg) and Acre of sesame produced (Ush/Acre), as well as the input costs per farmer increased for both Treatment and Control farmers, with the cost increment being greater in the Control than Treatment category. This suggests that Control farmers increased their investment in inputs by a greater magnitude than their cohorts in the Treatment group. Because of this, there was a substantial reduction in input costs during the period of aBi Trust's support, meaning that although Treatment farmers spent more on sesame inputs after aBi Trust intervention than before, Control farmers out-spent them.

Table 9: Costs and Returns to Sesame Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Productivity of sesame/Yield (Kg/Acre)	147.73 (60.45)	159.08 (75.15)	119.47 (72.40)	139.09 (80.10)	8.27
Input Costs per Kg (Ush/Kg)	51.85 (36.42)	48.08 (40.14)	66.12 (45.79)	44.13 (36.76)	-18.22
Input Costs per Acre(Ush/Acre)	6426.35 (2883.76)	6014.13 (3946.82)	6266.23 (2568.73)	5132.21 (2586.61)	-721.8
Input Costs per Farmer (Ush/Farmer)	6908.80	6185.11	7598.70	4709.62	-2165.39

	(3305.60)	(4200.92)	(3777.21)	(2381.11)	
Hired Labor costs of sesame Production per Kg (Ush/Kg)	801.77 (562.92)	590.13 (619.57)	573.07 (458.46)	479.96 (281.81)	118.53
Hired Labor costs of sesame Production per Acre (Ush/Acre)	90591.67 (48467.89)	74266.67 (63558.05)	63603.7 (55915.16)	77633.33 (21234.33)	30354.63
Hired Labor costs sesame Production per Farmer (Ush/Farmer)	59636.36 (25995.40)	70716.25 (40739.54)	62084.18 (31584.29)	79428.57 (18419.71)	6264.5
Total Cost of Production per Kg (Ush/Kg)	113.09 (91.12)	122.82 (82.39)	119.42 (81.76)	148.50 (104.16)	19.35
Total Cost of Production per Acre (Ush/Acre)	7005.6 (2488.59)	6258.79 (3646.68)	9381.08 (7012.27)	5900.07 (2509.14)	-2734.2
Total Cost of Production per Farmer (Ush/Farmer)	25522.46 (22583.12)	28334.59 (19453.58)	25253.50 (19987.15)	34030.04 (27037.34)	5964.41
Gross Margin per farmer (Ush)	467186.1 (268014.2)	418063.6 (275797.9)	451139.6 (157729.3)	456422.3 (304262.4)	54405.2
Gross Margin per acre (Ush)	450218.5 (231727.9)	438016.8 (327904.3)	456176.1 (296322.9)	572602.6 (437588.7)	128628.2
% of Treatment HHs with positive Gross Margins			**(21/40)*100=52.5**		
Average income growth for Treatment Farmers with positive Gross Margins			**528490.9 (424756.9)**		

The hired labor costs per kilogram of sesame produced increased in both farmer categories but by a greater magnitude among Treatment than Control farmers; while hired labor costs per Acre increased substantially in the Treatment group but declined among Control farmers; and hired labor costs farmer decreased in both farmer categories but by a smaller magnitude among Treatment than Control farmers. Because of this, there was a net increase in hired labor costs per kilogram, Acre and farmer attributable to aBi Trust's support.

The total cost of production per Acre of sesame produced increased in both the Treatment and Control categories, with the cost increment being greater in the Control (Ush 3,481) than the Treatment category (Ush 747). Thus, there was a net reduction in the per Acre cost of sesame production of Ush 2,734 per Acre attributable to aBi Trust's support because much as the production costs per Acre increased among Treatment farmers, the cost increment would have been higher without intervention. However, the total cost of production per farmer decreased by a smaller margin among Treatment (Ush 2,800) than Control farmers (close to Ush 9,000) to equalize the total investment in sesame production by both farmer categories to just above Ush 25,000 in the after intervention period. The per kilogram cost of production also declined in both farmer categories but by a bigger margin among Control (Ush 30/kg) than Treatment farmers (about Ush 10/kg), leading to a net increase in production costs of close to Ush 20/kg attributable to aBi Trust's support.

Income from sesame production (measured by Gross Margin per Acre) increased among Treatment farmers by an average of Ush 12,202 per Acre but declined among Control farmers by an average of Ush 116,427 per Acre; leading to an increase in income attributable to aBi Trust support of Ush 128,628 per Acre. This is true despite the fact that the Gross Margin per Acre among Control farmers was higher than that of the Treatment group both

before and after aBi Trust interventions. Income (Gross Margin) per farmer also increased among farmers in the Treatment group by Ush 49,123 but fell among Control farmers by Ush 5,283, leading to a net increase in income per farmer of Ush 54,405 attributable to support from aBi Trust. More than half (52.5%) of the Treatment farmers (N=40) registered positive income growth following intervention by aBi Trust, estimated at an average of Ush 528,491 per farmer.

6.1.5 Training and Application of Improved Sesame Technologies and Agronomic practices in 2010 or Before ("Before") and Between 2011 and 2013 ("After")

The proportion of Treatment farmers who received training on improved sesame varieties increased from 5% in 2010 or before to 90% between 2011 and 2013—an increase of 85 percentage points compared to the 3 percentage point increase in the Control group during the same period. Thus, the change in prevalence of training on the use of improved sesame seed attributable to aBi Trust support is 82 percentage points. The change in prevalence of training in soil fertility improvement attributed to aBi Trust support is 65 percentage points for Compost/Manure use and 67.5 percentage points for Animal manure use.

Higher proportions of Treatment farmers reported receiving training in crop husbandry practices, such as timely planting and weeding, crop rotation, line planting and spacing and the changes in prevalence of training in these areas attributed to aBi Trust-supported interventions are much higher (ranging from 59 to 85 percentage points). Attributable changes to aBi Trust support are however much smaller (ranging from 10 to 27.5 percentage points) for most soil and water conservation practices (grass bands, trenches, trash lines, contour planting, etc.). Changes in the prevalence of training in post-harvest handling practices attributable to aBi Trust support are more modest than those in crop husbandry (below 50 percentage points), save for the use of tarpaulins for drying (67 percentage points), use of weighing scales (60 percentage points), and use of improved storage facilities such as cribs and granaries (62.5 percentage points).

Table 10: Prevalence of Training on Improved Sesame Technologies and Agronomic practices.

Type of technology/practices	**% HHs/Farmers Trained to Use 2011-2013**		**% HHs/Farmers Trained to use in 2010 or before**		**Attributable Changes (DID)**
	Treatment (N=40)	**Control (N=32)**	**Treatment (N=40)**	**Control (N=32)**	
Improved varieties of seeds/seedlings					
01 Improved seed for sesame	90.0	3.1	5.0	0.0	81.9
Soil fertility improvement					
02 Compost/ Manure	70.0	0.0	5.0	0.0	65.0
04 Animal manure	77.5	0.0	10.0	0.0	67.5
Crop husbandry practices					
01 Timely planting	95.0	0.0	10.0	0.0	85.0

02 Timely weeding	95.0	0.0	12.5	0.0	82.5
03 Crop rotation	80.0	0.0	12.5	0.0	67.5
05 Line planting	82.5	3.1	5.0	0.0	74.4
06 Spacing	80.0	31.3	5.0	0.0	43.8
Soil and water conservation					
01 Grass bands	27.5	0.0	0.0	0.0	27.5
02 Trenches	17.5	0.0	0.0	0.0	17.5
03 Trash lines	12.5	0.0	0.0	0.0	12.5
05 Hedge rows	10.0	0.0	0.0	0.0	10.0
06 Contour planting	20.0	0.0	5.0	0.0	15.0
07 Soil conservation basins	17.5	0.0	5.0	0.0	12.5
Post harvest handling					
1 Use of Improved Storage facility such as Cribs, Granaries	62.5	3.1	12.5	15.6	62.5
2 Use of Tarpaulins for drying	80.0	3.1	10.0	0.0	66.9
4 Use of drying shade/platform	45.0	0.0	5.0	3.1	43.1
5 Use of drying and grading racks	22.5	3.1	5.0	0.0	14.4
6 Storage pest Control	50.0	3.1	7.5	0.0	39.4
7 Threshing equipment	15.0	0.0	5.0	0.0	10.0
14 Use of weighing scales	62.5	0.0	2.5	0.0	60.0
15 Quality Mgt Standards	25.0	3.1	2.5	0.0	19.4
16 Certification	15.0	3.1	2.5	0.0	9.4
17 Training and mentoring in PHH	50.0	3.1	5.0	3.1	45.0
Farming as business					
1 Collective Marketing	90.0	3.1	5.0	0.0	81.9
2 Record keeping	72.5	3.1	2.5	0.0	66.9
3 Business planning	45.0	3.1	2.5	0.0	39.4
4 Information boards	37.5	3.1	2.5	0.0	31.9
Gender for growth					
1. Training on gender mainstreaming	47.5	0.0	2.5	3.1	48.1
2. Entrepreneurship training	30.0	0.0	0.0	3.1	33.1
3. Training in VSLA ***(Village Savings and Loans Association)***	80.0	31.3	7.5	6.3	47.5
Financial service Dev't					
1.Training on Savings & Loans	60.0	12.5	10.0	6.3	43.8

The proportion of Treatment farmers who received training on collective marketing of sesame increased from 5% in 2010 or before to 90% between 2011 and 2013—an increase of 85 percentage points compared to the 3 percentage point increase in the Control group during the same period. Thus, the attributable change to aBi Trust-supported training in collective marketing is 82 percentage points. The proportion of Treatment farmers trained in record-keeping and business planning increased from 2.5% in 2010 or before to 72.5% and 45%, respectively between 2011 and 2013; and the increase in prevalence of training in these areas attributed to aBi Trust support is 67 and 39 percentage points, respectively.

Under the Gender for Growth (G4G) intervention component, nearly half (47.5%) of farmers in the Treatment category received training in gender mainstreaming between 2011 and 2013; 30% received entrepreneurship training; while 80% received training in village savings and loans associations (VSLA). The increase in prevalence of training in these areas attributed to aBi Trust support is 48 percentage points for gender mainstreaming and VSLA; and 33 percentage points for entrepreneurship training. The proportion of Treatment farmers

who received training on savings and loans under the financial service development (FSD) component increased from 10% in 2010 or before to 60% between 2011 and 2013—an increase of 50 percentage points compared to the 6 percentage point increase in the Control group during the same period. Thus, the attributable change to aBi Trust-supported training on loans and savings is 44 percentage points.

The majority of those who received training in the above-listed areas between 2011 and 2013 were trained by GADC (the IP of aBi Trust-supported interventions in the sesame value chain), and only a few (10% or below) reported receiving training from NAADS and other NGOs. However, receiving training is one thing and applying the lessons learned in the training is another. Training in itself, however good, has no impact unless the trainees apply the acquired knowledge to mitigate the factors that constrain their development efforts. Although not all farmers can be expected to adopt and sustain productivity-enhancing technologies and practices, increased agricultural growth must be achieved by a large enough proportion of farmers and on a sufficiently large share of cultivated land in order to achieve multiplier effects and demographic shifts in the economy (Crawford et al., 2005) needed to jump-start the process of structural transformation. For sesame, for example, whereas the change in prevalence of training on the use of improved sesame seed attributable to aBi Trust support is 82 percentage points, the corresponding change in actual use of improved sesame seed is 55 percentage points.

Table 11: Institutions Involved in Farmer Training on Sesame Technologies and Practices

Type of technology/practice	**% HHs reporting GDAC**		**% HHs reporting NAADS**		**% HHs reporting Other NGO**	
	Treatment	**Control**	**Treatment**	**Control**	**Treatment**	**Control**
Improved varieties of seeds						
01 Improved seed for sesame	88. 9	100	5.6	0	0	0
Soil fertility improvement						
02 Compost/ Manure	89.3	0	3.6	0	7.1	0
04 Animal manure	87.1	0	3.2	0	6.5	0
Crop husbandry practices						
01 Timely planting	92.1	0	2.6	0	2.6	0
02 Timely weeding	92.1	0	2.6	0	2.6	0
03 Crop rotation	90.6	0	6.3	0	3.1	0
04 Chemical spraying	92.3	0	7.7	0	0	0
05 Line planting	93.9	100	3.0	0	3.0	0
06 Spacing	93.8	100	3.1	0	3.1	0
Soil and water conservation						
01 Grass bands	81.8	0	18.2	0	0	0
02 Trenches	100	0	0	0	0	0
03 Trash lines	100	0	0	0	0	0
05 Hedge rows	100	0	0	0	0	0
Post harvest handling						
1 Use of Improved Storage facility such as Cribs, Granaries	88.0	100	4.0	0	8.0	0
2 Use of Tarpaulins for drying	93.8	100	3.1	0	3.1	0
4 Use of drying shade/platform	88. 9	0	5.5	0	5.5	0
5 Use of drying and grading racks (works	88. 9	100	0	0	01	0

like sieve)						
6 Storage pest Control	85	100	7.5	0	7.5	0
7 Threshing equipment	83.3	0	0	0	16.7	0
14 Use of weighing scales	92	0	0	0	8.0	0
15 Quality Mgt Standards	70	100	0	0	30	0
16 Certification	66.7	100	0	0	33.3	0
17 Training and mentoring in PHH	85	100	5.0	0	10.0	0
Farming as a business						
1 Collective Marketing	88. 9	100	2.8	0	8.3	0
2 Record keeping	89. 7	100	6.9	0	3.4	0
3 Business planning	83.3	100	5.6	0	11.1	0
4 Information boards	73.3	100	6.7	0	20.0	0
Gender for growth						
1. Training on gender mainstreaming	57.9	0	5.3	0	26.3	0
2. Entrepreneurship training	83.3	0	8.3	0	8.3	0
3. Training in VSLA	50	0	0	0	43.8	6.2
Financial services Dev't						
1.Training on Savings & Loans	41.67	0	4.2	0	11	45.8

While the change in prevalence of training in soil fertility improvement attributed to aBi Trust support is 65 percentage points for Compost/Manure use and 67.5 percentage points for Animal manure use; the corresponding changes in actual use are 12.5 and 22.5 percentage points, respectively. The changes in application of improved crop husbandry practices such as timely planting and weeding and crop rotation attributed to aBi Trust support are much higher (68-83 percentage points) than for the other practices of line planting and spacing.

Table 12: Application of Improved Sesame Technologies and Agronomic Practices

Type of technology/practices	**% HHs/Farmers that applied in 2011-2013**		**% HHs/Farmers that applied in 2010 or before**		**Attributable Changes (DID)**
	Treatment (N=40)	**Control (N=32)**	**Treatment (N=40)**	**Control (N=32)**	
Improved varieties of seeds/seedling					
01 Improved seed for sesame	72.5	40.6	17.5	40.6	55.0
Soil fertility improvement					
02 Compost/ Manure	12.5	0	0	0	12.5
04 Animal manure	25	0	2.5	0	22.5
Crop husbandry					
01 Timely planting	92.5	0	10	0	82.5
02 Timely weeding	95	0	12.5	0	82.5
03 Crop rotation	80	0	12.5	0	67.5
05 Line planting	25	0	0	0	25
06 Spacing	30	0	0	0	30
Soil and water conservation					
01 Grass bands	10	0	0	0	10
03 Trash lines	2.5	0	0	0	2.5
Post harvest handling					
1 Use of Improved Storage facility such as Cribs, Granaries	32.5	3.125	10	3.125	22.5
2 Use of Tarpaulins for drying	52.5	3.125	10	0	39.375
4 Use of drying shade/platform	35	0	2.5	3.125	35.625
5 Use of drying and grading racks (works like sieve)	7.5	3.125	2.5	0	1.875
6 Storage pest Control	45	3.125	5	0	36.875
7 Threshing equipment	2.5	0	0	0	2.5

14 Use of weighing scales	55	0	2.5	0	52.5
15 Quality Mgt Standards	10	3.125	2.5	0	4.375
16 Certification	7.5	3.125	2.5	0	1.875
17 Training and mentoring in PHH	45	3.125	2.5	3.125	42.5
Farming as a business					
1 Collective Marketing	50	0	0	0	50
2 Record keeping	40	0	2.5	0	37.5
3 Business planning	20	0	2.5	0	17.5
4 Information boards	22.5	0	2.5	0	20
Gender for growth					
1. Training on gender mainstreaming	47.5	0	2.5	3.125	48.125
2. Entrepreneurship training	20	0	0	3.125	23.125
3. Training in VSLA	75	21.875	7.5	6.25	51.875
Financial service dev't					
1.Training on Savings & Loans	47.5	9.375	10	6.25	34.375

Changes in the use of soil and water conservation practices of grass bands and trash lines attributed to aBi Trust support are in the range of 10 and 2.5 percentage points, respectively. However, for post-harvest practices, the attributable changes to aBi Trust support are much higher in the use of tarpaulins for drying (39 percentage points), weighing scales (53 percentage points), storage pest Control (37 percentage points), drying shades or platforms (36 percentage points) and improved storage facilities such as cribs and granaries (23 percentage points), as well as use of the knowledge acquired in training and mentoring in post-harvest handling (43 percentage points). Change in the use of the principles of farming as a business attributed to aBi Trust support is also higher, ranging from 50 percentage points for collective marketing; 38 percentage points for record keeping; 20 percentage points for use of information boards; and 18 percentage points for use of business planning techniques. The magnitude of change in use of G4G practices attributed to aBi Trust support is 48 percentage points for gender mainstreaming; 23 percentage points for entrepreneurship training; and 52 percentage points for VSLA; while for savings and loans under the FSD component, it is 34 percentage points.

Table 13: Reasons for Non-Application of Sesame Technologies and Agronomic Practices

Reason	**% Households Reporting Reason**		
	Entire sample	**Treatment**	**Control**
1= Not available	15.50	16.99	13.31
2=Difficult to use/apply	14.19	16.71	10.48
3=Not allowed in organic practices	1.14	1.64	0.40
4= Lack of ability	3.26	4.38	1.61
5= Not trained	9.46	4.11	17.34
6= Expensive	9.62	9.59	9.68
10=Not interested	18.43	19.73	16.53
11=Fertile land	7.99	7.95	8.06
13=Not necessary	7.83	10.14	4.44

For Households/farmers that did not apply the aBi Trust-supported technologies and practices, the major reasons cited for not applying include the technologies (particularly

improved seed) being unavailable; difficult to use/apply or expensive and lack of training or interest. Reasons for non-use of soil fertility improving practices include the perception that this is unncecessary because of the land being fertile; and some of the practices are inadmissible in organic farming.

6.1.6: Farmer Perceptions on Impact of Applied Sesame Technologies and Practices

Nearly a quarter of the Treatment farmers (24.1%) and more than a third of the Control farmers (38.5%) who used improved sesame seed said it had a positive and large impact. Higher proportions of farmers (between 55% and 100%) who applied timely planting and weeding, crop rotation, line planting and spacing, and recommended seed rate also reported a positive and large impact arising from the use of these practices. For the few farmers that used soil and water conservation practices (trenches, trash lines and mulching), all or most of them said this had a positive and large impact. Among post-harvest handling practices and technologies, those with fairly large proportions of farmers reporting a large and positive impact from their use include the use of weighing scales (87.5% Treatment and 52.4% Control); use of tarpaulins for drying (58.3% Treatment and 33.3% Control); storage and pest Control (68.2% Treatment and 36.3% Control); use of drying shades or platforms (57.1% Treatment and 62.5% Control); use improved storage facilities (78.6% Treatment and 45.5% Control); quality management standards (50% Treatment and 100% Control); certification (33.3% Treatment and 100% Control); and training and mentoring in PHH (22.2% Treatment and 50% Control)

Table 14: Perceived Impact of the Applied Sesame Technologies and Practices

Type of technology/practice	**% HHs reporting *Positive & Large***		**% HHs reporting *Positive but Small***	
	Treatment	**Control**	**Treatment**	**Control**
Improved varieties of seeds/seedlings				
01 Improved seed for sesame	24.1	38.5	0.00	15.4
Soil fertility improvement				
02 Compost/ Manure	60.0	100.0	0.00	0.00
04 Animal manure	45.5	0.00	0.00	0.00
Crop husbandry				
01 Timely planting	76.3	55.6	0.00	3.7
02 Timely weeding	80.0	65.4	0.00	0.00
03 Crop rotation	75.7	57.7	5.4	11.5
04 Chemical spraying	57.1	100.0	0.00	0.00
05 Line planting	84.6	66.7	0.00	0.00
06 Spacing	85.7	80.0	0.00	20.0
07 Seed rate	58.3	100.0	0.00	0.00
Soil and water conservation				
03 Trash lines	100.0	0.00	0.00	0.00
Post harvest handling				
1 Use of Improved Storage facility such as Cribs, Granaries	78.6	45.5	0.00	0.00
2 Use of Tarpaulins for drying	58.3	33.3	0.00	0.00
4 Use of drying shade/platform	57.1	62.5	0.00	0.00
5 Use of drying and grading racks (works like sieve)	33.3	0.00	0.00	0.00

6 Storage pest Control	68.2	36.4	4.5	0.00
7 Threshing equipment	100.0	0.00	0.00	0.00
14 Use of weighing scales	87.5	52.4	0.00	0.00
15 Quality Mgt Standards	50.0	100.0	0.00	0.00
16 Certification	33.3	100.0	0.00	0.00
17 Training and mentoring in PHH	22.2	50.0	0.00	0.00
Farming as a business				
1 Collective Marketing	5.0	0.0	5	0.00
2 Record keeping	47.1	37.5	11.8	0.00
3 Business planning	25.0	66.7	0.00	0.00
4 Information boards	22.2	100.0	0.00	0.00
Gender for growth				
1. Training on gender mainstreaming	35.0	25.0	0.00	0.00
2. Entrepreneurship training	25.0	0.0	0.00	0.00
3. Training in VSLA ***(Village Savings and Loans Association)***	26.7	0.0	0.00	15.4
Financial service dev't				
1.Training on Savings & Loans	28.6	50.0	9.5	0.00

Under farming as a business, record keeping, business planning and information boards had high to moderate proportions of farmers reporting a positive and large impact; but only 5% of the Treatment farmers who marketed collectively said it had a positive and large impact. Gender for Growth practices also had low proportions of farmers reporting a large and positive impact, with training in gender mainstreaming (35% Treatment and 25% Control) performing better than entrepreneurship training (25% Treatment and 0% Control) and VSLA (26.7% Treatment and 0% Control). Over one quarter of the Treatment farmers (28.6%) and half (50%) of the Control farmers who applied the knowledge acquired in training on savings and loans under the FSD component said this had a large and positive impact.

6.1.7: Participation in Sesame Production and Marketing Farmer Groups

Due to market imperfections, there are several constraints limiting the distribution and use of modern agricultural inputs in Uganda that require collective action to overcome. Constraints such as high transactions costs of trading and accessing inputs, lack of access to credit and information on prices, markets and extension services may be difficult to solve individually but are much easier through group effort. For example, smallholder credit constrained farmers lacking collateral can use social capital in the form of a strong association to access credit because most micro-finance providers prefer lending to groups. Through such associations, pooling transport is possible or one group member may transact business on behalf of others in the group, thereby reducing transactions costs. The need for social capital is even more important to the poor in general, since they do not have access to other forms of capital, namely financial and human capital, land and other forms of assets. The logic behind the association-building approach is that collective action has the capacity

to reduce farm-level transaction costs of both input and credit acquisition while simultaneously reducing transaction costs for potential input suppliers and output buyers (Kelly et al., 2003).

The findings of this study show that the percentage of farmers/households in organizations involved in the production and/or marketing of sesame increased from 22% in 2010 to 98% in 2013, an increase of 76 percentage points. No farmers in the Control category belonged to organizations involved in the production and/or marketing of sesame. Based on the figures in Table15 below, group marketing of sesame is more popular than group production; while sesame processing as a major group activity is not only rare but also declined from 12.5% of the Treatment farmers in 2010 to 2% in 2013. Thus, supporting investment sesame processing and value-addition is highly recommended.

Table 15: Major Group Activities of Sesame Producing and Marketing Groups

	Treatment		**Control**	
	2013	**2010**	**2013**	**2010**
% Households/Farmers belonging to organizations involved in production and/or marketing of sesame	97.56	21.95	0.00	0.00
Main activities/enterprises that group members engage in collectively (% HHds/Farmers Reporting…)				
Production of ***sesame***	21.57	0.00	0.00	0.00
Production of ***other crop***	23.53	0.00	0.00	0.00
Marketing of ***sesame***	31.37	25.00	0.00	0.00
Marketing of ***other crop***	7.84	37.70	0.00	0.00
Processing of ***sesame***	1.96	12.50	0.00	0.00
Processing of ***other crop***	13.23	25.00	0.00	0.00

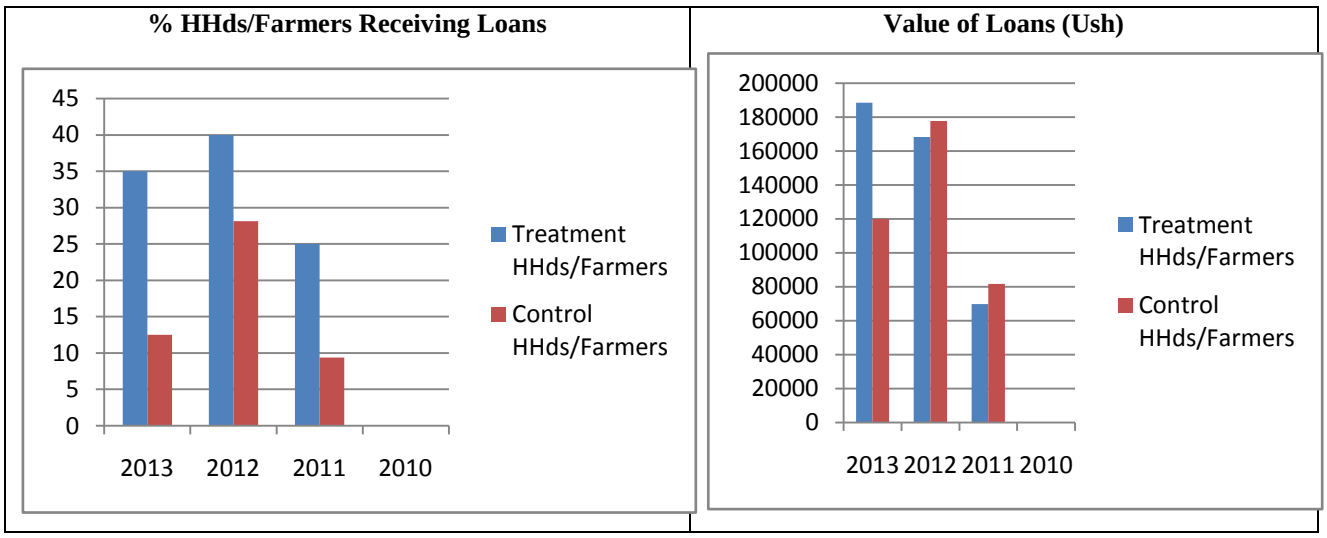
6.1.8. Financial Services (Credit and Savings) in Sesame Production

Lack of credit deters poor farmers from using purchased inputs needed for sustainable agricultural development (Larson and Frisvold, 1996) even if they are aware that the returns from doing so are high. It also contributes to a short-term perspective of farmers—which fuels over-exploitation and degradation of the natural resource base (Pender, 1996; Holden et. al., 1998). Access to credit may, therefore, enable farmers to purchase inputs to increase crop yields, profitability and market participation. Credit may also facilitate labor hiring and thus promote labor intensification. On the other hand, credit availability may enable households to invest in other activities besides farming if they are perceived to be more profitable than farming, and may, thus, negatively affect agricultural production and the ensuing returns.

Where credit services are unavailable, farmers may rely on their own savings as a source of investment capital for agriculture. Also income from off-farm sources can serve to generate funds for agricultural investments where credit availability is low (Reardon et. al., 1996). However, off-farm employment opportunities may compete for labor with agricultural activities, and thus tend to reduce the time allocated to agriculture, with negative implications

for agricultural productivity and market participation. Stephens and Barrett (2006) show that households with access to credit transact more in food grains markets. They argue that while the pathways through which this effect emerges are not entirely clear, it seems likely that part of this effect emerges because liquidity permits households to invest in higher-yielding, improved production technologies that require some initial sunk costs.

Figure 4: Trends in Credit Access and Loan Values among Sesame Farmers

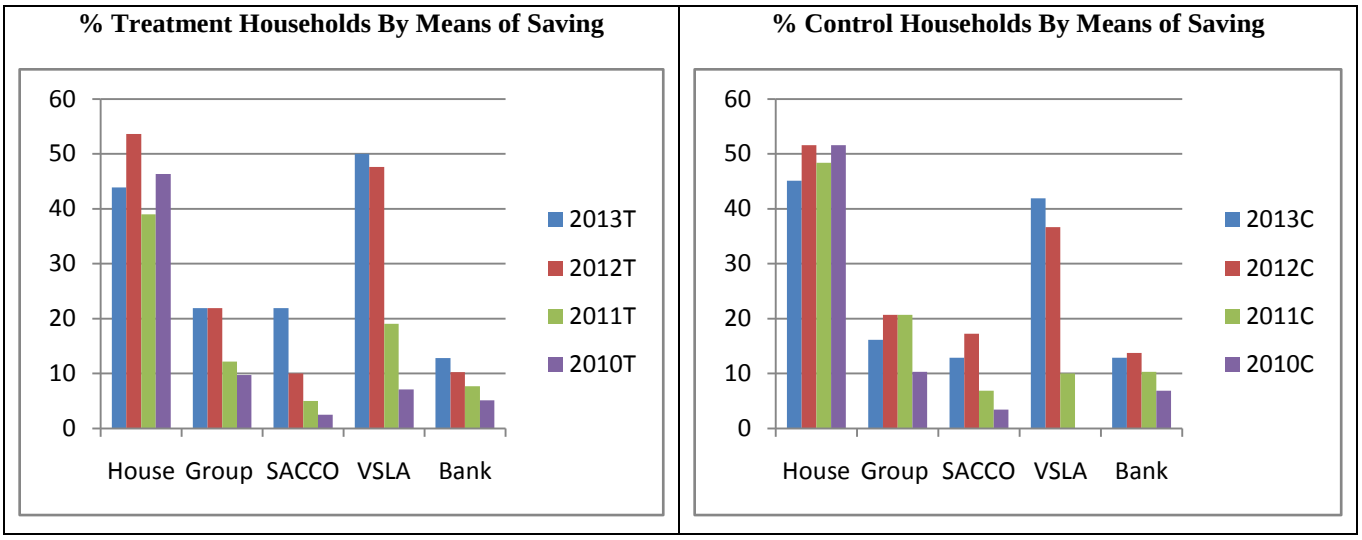


The proportion of Treatment farmers receiving loans increased from 0% in 2010 to 40% in 2012 and 35% in 2013. Loan seeking among farmers in the Control category also increased between 2010 and 2013, but the increment was lower than that of the Treatment group. The average value of loans received by both Treatment and Control farmers also increased between 2010 and 2013, with the Treatment farmers out-performing those in the Control category in 2013 but not in 2011 and 2012. These results corroborate those presented earlier, which show a large change in application of VSLA and FSD practices attributed to aBi Trust support.

For those that acquired loans, the most commonly reported purpose was investment in agriculture and education (school fees). Those who received loans for investing in agriculture mainly invested in the sesame and soybean enterprises—on hiring labor and purchasing farm tools. Most farmers obtained loans from farmer groups/organizations and SACCOs; and the impact of the acquired loans was reported to be moderate to major by the majority of the Treatment and Control farmers who acquired loans *(See Table SA11, Statistical Appendix for Sesame)*. Those who didn't acquire loans either feared borrowing, had no security or felt they didn't need credit. In general, there was a significant improvement in the satisfaction/rating of credit services in the surveyed communities in terms of services availability, interest rates charged, application procedures and stringency of the terms and conditions of the credit *(See Table SA12, Statistical Appendix for Sesame)*. The average distance from the homes of the sampled farmers to the nearest banking institution also decreased by 16.6 kms for Treatment

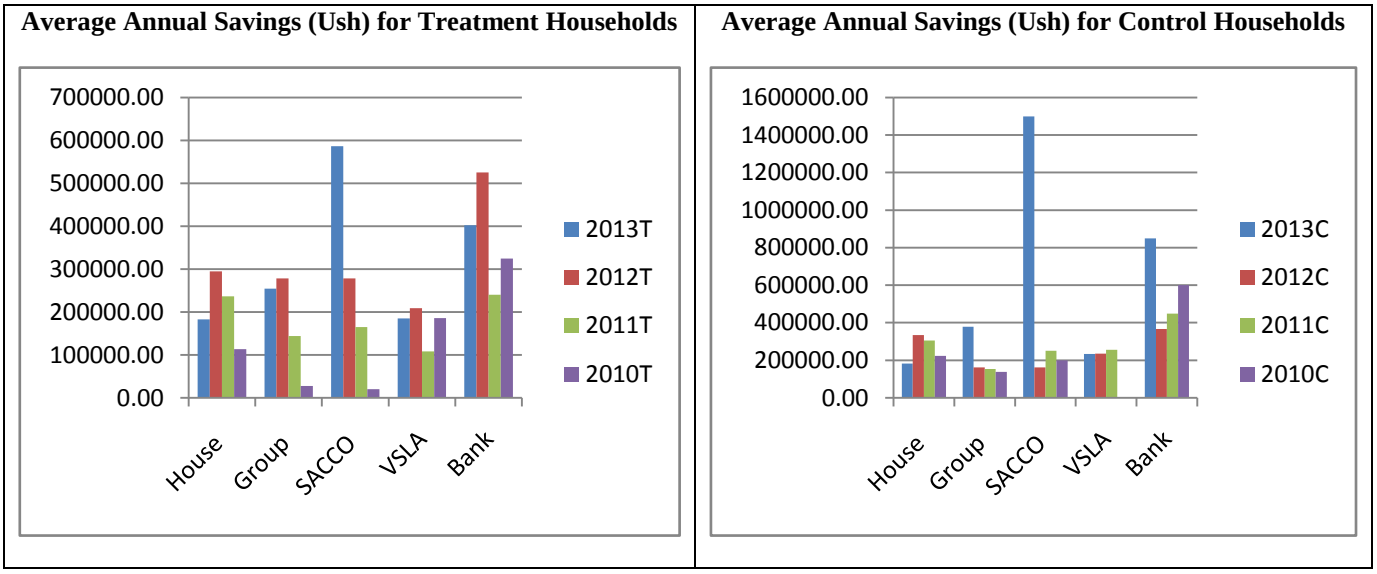
farmers and 9.2 kms for Control farmers between 2010 and 2013, implying that financial services were brought closer to the farmers during this period—thanks to aBi Trust support to financial institutions

Figure 5: Trends in the Use of Different Means of Saving among Sesame Farmers



The percentage of farmers (both Treatment and Control) saving money in their homes reduced slightly between 2010 and 2013, while the percentage of those saving with institutions, particularly VSLAs and SACCOs increased substantially between 2010 and 2013. The proportions of farmers saving with institutions, particularly VSLA and SACCOs are much higher in the Treatment than Control category, which is also partly credited to aBi Trust-supported interventions in VSLA and FSD.

Figure 6: Trends in Values of Savings among Sesame Farmers



The use of Farmers Groups and Banks to save money also increased but by a lower magnitude than SACCOs and VSLAs. The amount of money saved with VSLAs did not change much for both farmer categories, except in 2011 when it dropped sharply among

Treatment farmers before rising again in 2012. However, the amount of money saved with SACCOs between 2010 and 2013 grew exponentially among Treatment farmers but didn't change much in the Control group, except in 2013 when it rose sharply. For both farmer categories, the amount of money saved at home increased from 2010 to 2012 but dropped in 2013; while that saved with banks generally increased among Treatment farmers (albeit intermitently) but decreased among Control farmers between 2010 and 2012 before sharply increasing in 2013. The amount saved with groups rose steadily among Treatment farmers between 2010 and 2013 but remained stable in the Control group, except in 2013 when it increased*(Also See Table SA13, Statistical Appendix for Sesame).*

6.1.9. Status of Performance Indicators for the Sesame Value Chain in 2012 and 2013

Table SA9 in the Statistical Appendix #8 shows the Status of Performance Indicators for aBi Trust supported Value Chains, based on the 2012 Annual Report of aBi Trust and the findings of this impact assessment (IA) study conducted in October to November of 2013. The 2012 annual report shows that 17.9% of the sesame farmers who benefited from aBi Trust's support adopted the recommended practices. The AI study findings, however, show significantly higher percentages of beneficiary farmers applying key practices in 2013, which include use of improved sesame seed (72.5%), correct spacing (30%) and seed rate (25%) and line planting (25%). The reported figures for acreage and sales price in the 2012 Annual report are also lower than those in this IA study report by 0.3acres and Ush 567, respectively; while the IA study report figures on average income per farmer and yield are lower than those of the 2012 Annual report by Ush 252,814 and 152kg/acre, respectively. So where as the AI report shows improvement in some performance indicators for the sesame value chain (adoption of GAPs, acreage and prices), there appears to be regression in the income and yield indicators.

6.2 Sunflower

6.2.1 General Characteristics of the Sampled Sunflower Farmers

A total of 60 sunflower farmers (30 Treatment and 30 Control) from Nambieso, Abongomola and Inomo sub-counties in Apac district were sampled for participation in this study. The Treatment farmers are members of Apac District Farmers Association (ADFA)—the Implementing Partner of aBi Trust-supported interventions in the sunflower value chain.

Table 16: Characteristics of the Sunflower Farmers/Household Heads and their households

Variable	Entire Sample (N=60)	Treatment (N=30)	Control (N=30)
% Male Farmers/Headed-Households	75.00	66.67	83.33
Main Occupation of Farmer/HH Head (% Households/Farmers Reporting….)			
Production of crops	95.00	100.00	90.00
Salary employment	5.00	0.00	10.00
Average age (years) of Farmer/HH Head	38.37 (13.98)	39.33 (12.78)	37.4 (15.24)
Highest school grade completed by Farmer/HH Head	8.13 (3.45)	7.53 (3.38)	8.73 (3.47)
Marital status of Farmer/HH Head (% Households/Farmers Reporting ….)			
Single	6.67	3.33	10.00
Married	93.33	96.67	90.00
Average family size	6.42 (2.33)	6.43 (2.08)	6.4 (2.59)
Dependency Ratio	0.69 (0.44)	0.59 (0.40)	0.78 (0.45)

Three quarters (75%) of the sampled households are male-headed, but the proportion of male-headed households is significantly higher among Control (83%) than Treatment (66.7%) farmers. There is no significant difference in the average age of Household heads/farmers between the Treatment (39 years) and Control (37 years) groups. The education level (years of schooling) of the household head/farmer is slightly lower in the Treatment group (7.5) than the Control group (8.7), but this difference is not significantly different. The main occupation for all the sampled households/farmers (100%) in the Treatment group is crop farming, while the corresponding proportion in the Control category, though still very high (90%) is lower. The average household has 6.4 family members in both Treatment and Control groups; but the dependency ratio (No. of productive/No. of unproductive family members) is significantly higher in the Control (0.78) than the Treatment (0.59) group.

6.2.2 Asset Accumulation

Both Treatment and Control households accumulated farm and communication equipment (assets) as well as livestock during the project period (2011-2013); but the Control households performed better than those in the Treatment category. However, during the same period, the value of transport equipment increased in the Treatment group but declined in the Control group.

Table 17: Household Asset Endowment in 2010 (Before Intervention) and 2013

	Treatment		Control		Attributable Changes (DID)
	Now(2013)	*2010*	*Now(2013)*	*2010*	
Total value of Farm Equipment (Ush)	154,883 (99,265.74)	110,410 (105,929.4)	197,098.5 (130,223.2)	101,272.8 (94,526.84)	-51,352.7
Total value of Transport Equipment (Ush)	179,657.2 (96,383.15)	155,770.9 (61,998.52)	161,119.2 (91,390.98)	183,042.6 (108,523.1)	45,809.7
Total value of Communication Equipment (TV, Radio, Mobile Phone) (Ush)	118,267.1 (89,786.31)	68,551.36 (40,589.86)	143,448.9 (149,118)	84,069.77 (54,523.06)	-9,663.4
Total value of Livestock (Ush)	1,494,595 (1,197,254)	1,095,268 (1,083,693)	1,977,412 (1,647,022)	1,231,499 (1,195,453)	-346,586.0

6.2.3. Job Creation at the Household/Farmer Level

Similar to sesame, none of the sampled sunflower farmers employed farm workers on permanent terms. The number of temporary/short-term employees working with the Control farmers remained the same but increased among the Treatment farmers from an average of 8.2 in 2010 to 10.4 in 2013. In terms of Fulltime Equivalents of the short-term jobs, Treatment farmers created more FTE jobs (57.125) than their cohorts in the Control group (31.375); and this is reflected in the increase in the annual wage-bill for farmers in the Treatment group relative to that of their cohorts in the Control group.

Table 18: Number of Farm Empoyees and Expenditure on Labor in 2010 and 2013

	Treatment		Control		Attributable Changes (DID)
	2013	**2010**	**2013**	**2010**	
Number of Temporary/short-term workers currently employed	10.40 (5.73)	8.17 (6.62)	9.57 (7.18)	9.75 (5.86)	2.41
Number of Months the farmer uses Temporary/short-term workers	2.50 (1.05)	2.14 (0.69)	2.24 (1.09)	2.46 (1.20)	0.58
Additional Fulltime Equivalent (FTE) Jobs Created		57.125		31.375	25.75
Total annual payment to Temporary/short-term workers **(Total in Ush)**	106,490.9 (72,522.38)	63,333.33 (40,207.79)	106,016 (90,915.51)	115,000 (78,218.81)	52,141.57

6.2.4. Production and Sales of Sunflower in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

Among Treatment farmers, the average number of sunflower plots planted per season increased from 1 to 1.2 after aBi Trust-supported interventions (2011-2013) but remained the same among Control farmers at an average of 1.13. However, the average area allocated to sunflower increased by 20% (from 1.5 acres to 1.8 acres) among the Treatment farmers and by 14% (from 1.43 to 1.63 acres in the Control group. Most farmers (both Treatment and Control) sourced seed from input traders and export companies (Mukwano and Mount Meru) both before and after aBi Trust-supported interventions. Sourcing of seed from market vendors in the local market increased by 5.7 percentage points among Control farmers but

declined by 3.5 percentage points in the Treatment category. Only 5% of the Treatment farmers (and none in the Control category) reported sourcing seed from ADFA (the IP of aBi Trust-supported interventions in the sunflower value chain) and this was only after the aBi Trust program (2011-2013).

Table 19: Land Allocation and Input Use in Sunflower Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Separate plots/gardens of sunflower grown	1.24 (0.51)	1.04 (0.19)	1.13 (0.43)	1.13 (0.46)	0.2
Total land area (acres) planted to sunflower	1.80 (0.83)	1.50 (0.62)	1.63 (0.76)	1.43 (0.82)	0.1
Total quantity of sunflower seed planted (kgs)	2.62 (1.60)	2.08 (1.11)	2.28 (1.36)	1.68 (1.13)	-0.06
Total Value of sunflower seed planted (Ush)	33209.64 (15530.69)	30586.47 (15550.24)	25824.5 (15312)	20456.07 (14369.15)	-2745.26
Total quantity of main fertilizer applied (kg)	0	0	20 (N=1)	15 (N=1)	-
Total value of main fertilizer applied (Ush)	0	0	45,000(N=1)	9,000 (N=1)	-
Total Cost of pesticides applied (Ush)	0	0	0	0	0
Total Cost of Herbicides applied (Ush)	0	0	0	0	0
Main Source of Seed (% HHds/Farmers Reporting….)					
own seed,	2.70	0.00	2.86	4.00	3.84
input trader	40.54	39.29	65.71	64.00	-0.46
District or Lower-Level Farmers organization	5.41	0.00	0.00	0.00	5.41
Market vendor /local market	10.81	14.29	5.71	0.00	-9.19
Export company (Mukwano and Mount Meru)	35.14	39.29	22.86	28.00	0.99
Fellow farmer	2.70	3.57	2.86	4.00	0.27
Perceived quality of seed (% HHds/Farmers Reporting….)					
Very good	32.43	39.29	25.71	20.00	-12.57
Good	67.57	60.71	68.57	80.00	18.29
Poor	0.00	0.00	5.71	0.00	-5.71

Only one out of the 30 farmers in the Control group (3.3%) reported using chemical fertilizer in sunflower production, applying an average of 20 kgs between 2011 and 2013 and 15 kgs in 2010 or before. None of the sampled sunflower farmers reported using pesticides or herbicides in sunflower production. However, the average quantity of sunflower harvested as well as the sales increased in both farmer categories but by a bigger magnitude among Treatment farmers (by 59% and 24%, respectively) than their cohorts in the Control group (by 10% and 12%, respectively). On average, the increase in production and sales of sunflower per farmer attributable to aBi Trust support is 270 kgs and 66 kgs, respectively.

Table 20: Harvests and Sales of Sunflower

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Total quantity of sunflower harvested (kgs)	899.83 (834.53)	565.69 (241.82)	665.93 (525.54)	603.0682 (523.757)	271.3
Total quantity of sunflower sold (kgs)	696.93 (377.24)	561.64 (240.12)	663.33 (505.21)	594.43 (521.22)	66.4
Selling Price (Ush/kg)	836.51 (178.51)	806.08 (223.27)	812.20 (189.42)	808.30 (217.29)	26.5
Main Mode of Sale (% HHds/Farmers Reporting….)					
Collectively through group	52.63	34.48	0.00	0.00	18.15
Individually	47.37	65.52	100.00	100.00	-18.15

Main Buyer Type (% HHds/Farmers Reporting….)					
2=Trader,	21.05	31.03	50.00	48.15	-11.83
4=Institution	10.53	6.90	2.94	7.41	8.10
6=Processor	68.42	62.07	41.18	37.04	2.21
7=Broker	0.00	0.00	5.88	7.41	1.53
Average distance to main buyer (km)	1.18 (1.15)	1.16 (1.03)	1.21 (1.00)	1.03 (0.87)	-0.16
Mode of transport to point of sale (% HHds/Farmers Reporting….)					
2=bicycle,	90.32	95.65	92.86	95.45	-2.74
3=motorbike,	0.00	0.00	3.57	0.00	-3.57
4=Vehicle,	9.68	4.35	3.57	4.55	6.31
Average Transport Cost (Ush)	8011.64 (5850.22)	8180.92 (4922.32)	7740.83 (3864.81)	8591.30 (8048.77)	681.19
Who made sales decisions (when and how much to sell)? (% HHds/Farmers Reporting….)					
1=Husband;	21.05	13.79	20.59	19.23	5.90
2=Wife;	0.00	0.00	2.94	3.85	0.91
3=Both Husband& Wife;	76.32	82.76	76.47	76.92	-5.99
Who made decisions on the use of revenue from this crop? (% HHds/Farmers Reporting….)					
1=Husband;	13.16	3.45	14.71	7.69	2.69
2=Wife;	0.00	0.00	2.94	3.85	0.91
3=Both Husband& Wife;	84.21	93.10	82.35	88.46	-2.78
How was the revenue from this crop used? (List the top three) (% HHds/Farmers Reporting….)					
1=Consumption;	5.26	3.45	0.00	0.00	1.81
2=Investment in Agricultural enterprise	26.32	20.69	32.35	25.93	-0.79
3=Investment in non-agricultural enterprise;	13.16	10.34	14.71	7.41	-4.48
4=Medical expenses;	2.63	10.34	11.76	7.41	-12.06
5=Household durables;	10.53	10.34	2.94	7.41	4.66
7=School fees	42.11	41.38	38.24	48.15	10.64

Treatment farmers reported an increase in the price at which they sell sunflower of nearly Ush 30/kg between 2010 and 2013, while those in the Control category reported a 4 Ush/kg increment in price. The percentage of Treatment farmers selling sunflower collectively increased by 18 percentage points after aBi Trust-supported interventions, while no farmer in the Control category reported selling sunflower collectively both before and after aBi Trust-supported interventions. Sunflower yield (kgs/Acre) increased substantially among Treatment farmers from 433 kg/Acre in 2010 or before to 532 kg/Acre after aBi Trust-supported interventions but declined from 544 kg/Acre in 2010 or before to 362 kg/Acre in the Control group. Thus, the increase in sunflower yield attributable to aBi Trust support is 280 kg/Acre.

Table 21: Costs and Returns to Sunflower Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Productivity of sunflower (Kg/Acre)	532.27 (344.24)	432.9 (258.32)	362.55 (210.13)	543.63 (317.82)	280.45
Input Costs per Kg (Ush/Kg)	54.24 (21.84)	64.64 (47.06)	58.26 (30.79)	42.08 (25.08)	-26.58
Input Costs per Acre(Ush/Acre)	22684.31	19277.72	17228.47	15997.67	2,175.79

	(11826.05)	(10588.30)	(7242.57)	(6919.05)	
Input Costs per Farmer (Ush/Farmer)	32268.11 (15281.29)	30586.47 (15550.24)	27324.48 (17258.19)	20312.07 (14305.43)	-5330.8
Hired Labor costs of sunflower Production per Kg (Ush/Kg)	156.93 (114.60)	157.26 (160.38)	147.81 (101.13)	117.49 (77.50)	-30.65
Hired Labor costs of sunflower Production per Acre (Ush/Acre)	68928.67 (44869.93)	68773.25 (49166.91)	58516.96 (47058.99)	58658.97 (39133.66)	297.43
Hired Labor costs sunflower Production per Farmer (Ush/Farmer)	101941.2 (83000.7)	112015.4 (95155.29)	115833.3 (87112.08)	118873.4 (91318.81)	-7034.1
Total Cost of Production per Kg (Ush/Kg)	274.78 (113.73)	355.54 (286.61)	349.16 (234.22)	283.13 (67.85)	-146.79
Total Cost of Production per Acre (Ush/Acre)	63645.12 (47472.24)	56171.17 (48362.47)	42997.13 (40145.24)	46092.73 (41532.30)	10,569.55
Total Cost of Production per Farmer (Ush/Farmer)	97946.04 (82344.42)	98283.74 (87321.18)	90536.19 (79981.86)	106471.6 (86418.15)	15597.7
Gross margin per farmer (Ush)	454569.3 (259905.6)	373559.2 (272479.6)	349314.2 (258068.5)	414151.9 (279162.6)	145847.8
Gross margin per acre (Ush)	320171.2 (167338)	270048.7 (205916.4)	232682 (180136)	354154 (233693.6)	171594.5
% of Treatment HHs with positive Gross Margins			**20/30*100=66.67**		
Average income growth for Treatment farmers with positive Gross Margins			**351342.8 (260252.8)**		

On the other hand, the input costs per kilogram (Ush/kg) of sunflower produced as well as the total cost of production in Ush/kg decreased substantially among Treatment farmers but increased in the Control group. And whereas the input costs per farmer increased in both groups, the magnitude of the increase was higher among the Control than Treatment farmers; leading to a reduction in input costs of close to Ush 5,331 per farmer attributable to aBi Trust-supported interventions.

However, the input costs per Acre increased by a greater magnitude among the Treatment than Control farmers (see Table 21); while the total cost of production per Acre increased in the Treatment group by Ush 7,474 but declined in the Control group by Ush 3,096. This shows that during the intervention period of aBi Trust, Treatment farmers invested more (or increased their investment) in sunflower production relative to their cohorts in the Control group. The total cost of production per farmer remained constant in the Treatment group at about Ush 98,000, while that of the Control group dropped by Ush 15,000 from Ush 106,472 to Ush 90,536. Based on these findings, it is evident that aBi Trust-supported interventions made a significant contribution to the increase in production, productivity and sales of sunflower; and thus to the reduction in per unit (kilogram) production costs because of the attributable increase in yield.

Income from sunflower production (measured by Gross Margin) also increased among Treatment farmers but decreased in the Control group; leading to a large increase in sunflower income attributable to aBi Trust support to the tune of Ush 171,595 per Acre and Ush 145,848 per farmer. This shows that while Treatment farmers increased their investment in sunflower production by a greater magnitude than their cohorts in the Control group, they also earned

more during the intervention period. The study findings further show that two thirds (66.7%) of the Treatment farmers (N=30) registered positive income growth following intervention by aBi Trust, estimated at an average of Ush 351,343 per farmer.

6.2.5 Training on Improved Sunflower Technologies and Agronomic practices in 2010 or Before ("Before") and Between 2011 and 2013 ("After")

The proportion of Treatment farmers who received training on improved sunflower varieties increased from 40% in 2010 or before to 76.6% between 2011 and 2013—an increase of 36.7 percentage points compared to the 0 percentage point increase in the Control group during the same period. Thus, the change in prevalence of training on the use of improved sunflower seed attributable to aBi Trust support is 36.7 percentage points. The change in prevalence of training in soil fertility improvement attributed to aBi Trust support is 23.3 percentage points for Compost/Manure use; 10 percentage points for use of chemical fertilizer; and 30 percentage points for animal manure use.

Higher proportions of Treatment farmers reported receiving training in crop husbandry practices, such as timely planting and weeding, crop rotation, line planting and spacing and the changes in prevalence of training in these areas attributed to aBi Trust-supported interventions are much higher (over 30 percentage points). Attributable changes to aBi Trust supported interventions in training are however much smaller or non-existent in the area soil and water conservation practices (mulching, grass bands, trenches, trash lines, etc.).

Table 22: Prevalence of Training on Improved Sunflower Technologies and Agronomic practices.

Type of technology/practices	% HHs/Farmers Trained to Use 2011-2013		% HHs/Farmers Trained to use in 2010 or before		Attributable Changes (DID)
	Treatment (N=30)	Control (N=30)	Treatment (N=30)	Control (N=30)	
Improved varieties/seedlings					
01 Improved seed for sunflower	76.66	6.67	40.00	6.67	36.66
Soil fertility improvement					
01 Chemical Fertilisers	36.67	6.67	23.33	3.33	10
02 Compost/ Manure	36.67	10.00	6.67	3.33	23.33
04 Animal manure	50.00	3.33	20.00	3.33	30
Crop husbandry practices					
01 Timely planting	73.33	6.67	36.67	6.67	36.66
02 Timely weeding	73.33	6.67	36.67	6.67	36.66
03 Crop rotation	66.67	6.67	30.00	6.67	36.67
04 Chemical spraying	40.00	3.33	20.00	6.67	23.34
05 Line planting	76.67	6.67	40.00	10.00	40
06 Spacing	76.67	6.67	36.67	10.00	43.33
07 Seed rate	60.00	6.67	33.33	10.00	30
Soil and water conservation					
02 Trenches	3.33	0.00	0.00	0.00	3.33
04 Mulching	10.00	3.33	10.00	0.00	-3.33
06 Contour planting	6.67	0.00	3.33	0.00	3.34
Post harvest handling					
1 Use of Improved Storage facility such as Cribs, Granaries	26.67	6.67	6.67	3.33	16.66
2 Use of Tarpaulins for drying	63.33	6.67	23.33	6.67	40

4 Use of drying shade/platform	33.33	10.00	6.67	3.33	19.99
5 Use of drying and grading racks (works like sieve)	16.67	0.00	6.67	0.00	10
6 Storage pest Control	36.67	6.67	6.67	3.33	26.66
7 Threshing equipment	6.67	0.00	3.33	0.00	3.34
11 Screening or Sieving	3.33	0.00	3.33	0.00	0
14 Use of weighing scales	46.67	6.67	16.67	6.67	30
15 Quality Mgt Standards	16.67	3.33	0.00	6.67	20.01
16 Certification	10.00	0.00	0.00	0.00	10
17 Training and mentoring in PHH	30.00	6.67	6.67	3.33	19.99
Farming as a business					
1 Collective Marketing	66.67	3.33	16.67	3.33	50
2 Record keeping	50.00	10.00	16.67	3.33	26.66
3 Business planning	36.67	6.67	3.33	3.33	30
4 Information boards	26.67	0.00	3.33	0.00	23.34
Gender for growth (G4G)					
1. Training on gender mainstreaming	33.33	0.00	16.67	0.00	16.66
2. Entrepreneurship training	10.00	3.33	0.00	0.00	6.67
3. Training in VSLA ***(Village Savings and Loans Association)***	66.67	20.00	30.00	6.67	23.34
Financial service Dev't (FSD)					
1.Training on Savings & Loans	30.00	20.00	16.67	6.67	0

For post-harvest handling practices, the attributable changes to aBi Trust supported training is moderate in the use of tarpaulins for drying (40 percentage points); weighing scales (30 percentage points); storage and pest Control (26.6 percentage points); drying shades/platforms, quality management standards and mentoring in PHH (20 percentage points; and use of improved storage facilities such as cribs and granaries (16.7 percentage points). For other PHH practices the attributable change ranges from 10 percentage points and below.

The proportion of Treatment farmers who received training on collective marketing of sunflower increased from 16.7% in 2010 or before to 66.7% between 2011 and 2013—an increase of 50 percentage points compared to the 0 percentage point increase in the Control group during the same period. Thus, the attributable change to aBi Trust-supported training in collective marketing is 50 percentage points. The proportion of Treatment farmers trained in record-keeping and business planning increased from 16.7% and 3.3%, respectively, in 2010 or before to 50% and 36.7%, respectively between 2011 and 2013; and the increase in prevalence of training in these areas attributed to aBi Trust support is 26.7 and 30 percentage points, respectively. The change in training on the use of information boards attributable to aBi Trust support is 23.3 percentage points.

Under the Gender for Growth (G4G) intervention component, one third (33.3%) of farmers in the Treatment category received training in gender mainstreaming between 2011 and 2013; 10% received entrepreneurship training; while two-thirds (66.7%) received training in village savings and loans associations (VSLA). The increase in prevalence of

training in these areas attributed to aBi Trust support is 16.7 percentage points for gender mainstreaming; 23.3 percentage points for VSLA; and 6.7 percentage points for entrepreneurship training. The proportion of Treatment farmers who received training on savings and loans under the financial service development (FSD) component increased from 16.7% in 2010 or before to 30% between 2011 and 2013—an increase of 13.3 percentage points, just like in the Control group.

The majority of Treatment farmers who received training in the above-listed areas between 2011 and 2013 were trained by Apac District Farmers Association (ADFA)—the IP of aBi Trust-supported interventions in the sunflower value chain); while the Control farmers who received similar training were trained by NAADS, other NGOs and private companies such as Mukwano and Mount Meru.

Table 23: Institutions Involved in Farmer Training on Sunflower Technologies and Practices

Type of technology/practice	% HHs reporting ADFA extension staff		% HHs reporting NAADS staff		% HHs reporting Other NGO		% HHs reporting Exporting company	
	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control
Improved varieties of seeds/seedlings								
01 Improved seed for sunflower	60.87	0.00	4.35	50.00	0.00	0.00	30.43	50.00
Soil fertility improvement								
01 Chemical Fertilisers	63.64	0.00	18.18	50.00	0.00	0.00	9.09	50.00
02 Compost/ Manure	81.82	33.33	18.18	33.33	0.00	0.00	0.00	33.33
04 Animal manure	66.67	100.00	13.33	0.00	6.67	0.00	0.00	0.00
Crop husbandry practices								
01 Timely planting	54.55	0.00	9.09	50.00	9.09	0.00	22.73	50.00
02 Timely weeding	54.55	0.00	9.09	50.00	9.09	0.00	22.73	50.00
03 Crop rotation	60.00	0.00	10.00	50.00	5.00	0.00	25.00	50.00
04 Chemical spraying	58.33	0.00	16.67	50.00	8.33	0.00	8.33	50.00
05 Line planting	52.17	0.00	8.70	50.00	13.04	0.00	21.74	50.00
06 Spacing	52.17	0.00	8.70	50.00	8.70	0.00	21.74	50.00
07 Seed rate	55.56	0.00	5.56	50.00	11.11	0.00	27.78	50.00
Soil and water conservation								
02 Trenches	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04 Mulching	66.67	0.00	0.00	0.00	33.33	0.00	0.00	0.00
06 Contour planting	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post harvest handling								
1 Use of Improved Storage facility such as Cribs, Granaries	62.50	0.00	0.00	50.00	0.00	50.00	25.00	0.00
2 Use of Tarpaulins for drying	57.89	0.00	5.26	0.00	5.26	50.00	26.32	50.00
3 Use of Collapsible driers								
4 Use of drying shade/platform	60.00	0.00	0.00	33.33	0.00	0.00	20.00	66.67
5 Use of drying and grading racks (works like sieve)	80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Storage pest Control	72.73	50.00	9.09	50.00	0.00	0.00	18.18	0.00
14 Use of weighing scales	71.43	0.00	7.14	0.00	0.00	0.00	14.29	100.00
15 Quality Mgt Standards	80.00	0.00	20.00	100.00	0.00	0.00	0.00	0.00
16 Certification	33.33	0.00	33.33	0.00	0.00	0.00	0.00	0.00
17 Training and mentoring in PHH	55.56	0.00	22.22	50.00	0.00	0.00	22.22	50.00
Farming as a business								
1 Collective Marketing	65.00	0.00	10.00	0.00	10.00	0.00	10.00	100.00
2 Record keeping	46.67	0.00	20.00	33.33	13.33	33.33	13.33	33.33
3 Business planning	63.64	50.00	18.18	50.00	18.18	0.00	0.00	0.00
4 Information boards	75.00	0.00	12.50	0.00	12.50	0.00	0.00	0.00

Gender for growth								
1. Training on gender mainstreaming	50.00	0.00	0.00	0.00	10.00	0.00	10.00	0.00
2. Entrepreneurship training	66.67	0.00	0.00	100.00	33.33	0.00	0.00	0.00
3. Training in VSLA	20.00	0.00	10.00	33.33	45.00	66.67	15.00	0.00
Financial service development								
1.Training on Savings & Loans	33.33	0.00	22.22	33.33	33.33	66.67	0.00	0.00

Surprisingly, for various technologies promoted by aBi Trust-supported IPs and other development organizations and companies, more farmers (both Treatment and Control) reported using these technologies and practices than those who reported receiving training in the same. Such technologies and practices include use of improved sunflower seed, chemical fertilizers, timely planting and weeding, crop rotation, line planting and spacing, seed rate, storage and pest Control, use of weighing scales, training and mentoring in PHH, training in gender mainstreaming, training in VSLA and training in savings and loans associations. As a result, the estimated changes in percentage of farmers applying these technologies and practices between 2011 and 2013 rarely match the estimated changes in percentage of farmers who received training in these areas. This could be explained by the possibility of several farmers not directly participating in the demonstrations and training sessions conducted by the IPs and other agencies, but later on picking the good practices and technologies from their neighbors through farmer-to-farmer extension. However, because the Control farmers didn't directly participate in the training, the resultant impact of their use of the promoted technologies is inferior to that of Treatment farmers in terms of production, yield, sales and per unit cost of producing sunflower.

Table 24: Application of Improved Sunflower Technologies and Agronomic Practices

Type of technology/practices	**% HHs/Farmers that applied in 2011-2013**		**% HHs/Farmers that applied in 2010 or before**		**Attributable Changes (DID)**
	Treatment	**Control**	**Treatment**	**Control**	
Improved varieties of seeds/seedlings					
01 Improved seed for sunflower	93.33	83.33	93.33	70.00	-13.33
Soil fertility improvement					0
01 Chemical Fertilisers	63.33	3.33	6.67	3.33	56.66
02 Compost/ Manure	3.33	3.33	3.33	3.33	0
04 Animal manure	10.00	3.33	10.00	3.33	0
Crop husbandry practices					0
01 Timely planting	100.00	90.00	96.67	83.33	-3.34
02 Timely weeding	100.00	100.00	96.67	93.33	-3.34
03 Crop rotation	96.67	83.33	93.33	83.33	3.34
04 Chemical spraying	10.00	6.67	10.00	6.67	0
05 Line planting	100.00	86.67	96.67	83.33	-0.01
06 Spacing	100.00	93.33	93.33	76.66	-10
07 Seed rate	80.00	73.33	76.67	63.33	-6.67
Soil and water conservation					0
04 Mulching	13.33	10.00	13.33	10.00	0
Post harvest handling					0
1 Use of Improved Storage facility such as Cribs, Granaries	36.67	40.00	46.67	36.67	-13.33

2 Use of Tarpaulins for drying	76.67	53.33	60.00	33.33	-3.33
4 Use of drying shade/platform	40.00	36.67	40.00	33.33	-3.34
5 Use of drying and grading racks (works like sieve)	3.33	0.00	3.33	0.00	0
6 Storage pest Control	46.67	33.33	43.33	30.00	0.01
14 Use of weighing scales	83.33	76.67	83.33	76.67	0
15 Quality Mgt Standards	16.67	13.33	13.33	10.00	0.01
16 Certification	6.67	0.00	6.67	0.00	0
17 Training and mentoring in PHH	36.67	26.67	23.33	20.00	6.67
Farming as business					0
1 Collective Marketing	50.00	6.67	26.67	3.33	19.99
2 Record keeping	53.33	36.67	40.00	30.00	6.66
3 Business planning	33.33	13.33	16.67	10.00	13.33
4 Information boards	20.00	13.33	13.33	6.67	0.01
Gender for growth					0
1. Training on gender mainstreaming	50.00	16.67	46.67	16.67	3.33
2. Entrepreneurship training	6.67	6.67	0.00	3.33	3.33
3. Training in VSLA ***(Village Savings and Loans Association)***	90.00	46.67	40.00	23.33	26.66
Financial sevice dev't					0
1.Training on Savings & Loans	33.33	16.67	16.67	10.00	9.99

For Households/farmers that did not apply the aBi Trust-supported technologies and practices in sunflower production, the major reasons cited include the technologies (particularly improved seed) being unavailable; difficult to use/apply or expensive, and lack of training or interest. Reasons for non-use of soil fertility improving practices include the perception that this is unncecessary (not required) because of the land being fertile.

Table 25: Reasons for Non-Application of Sunflower Technologies and Agronomic Practices

Reasons	**% Households Reporting Reason**		
	Entire sample	**Treatment**	**Control**
1= Not available	11.04	12.42	9.70
2=Difficult to make/apply	17.79	19.88	15.76
5= Not trained	10.12	11.18	9.09
6= Expensive	19.63	18.01	21.21
10=Not interested	13.19	11.18	15.15
11=Fertile land	10.74	13.04	8.48
13=Not required	3.68	5.59	1.82

6.2.6: Farmer Perceptions on Impact of Applied Sunflower Technologies and Practices

Two thirds of the Treatment farmers (66.7%) and more than half of the Control farmers (56.7%) who used improved sunflower seed said it had a positive and large impact. Higher or equally high proportions of farmers who applied timely planting and weeding, crop rotation, line planting and spacing, and recommended seed rate also reported a positive and large impact arising from the use of these practices. Among post-harvest handling practices and technologies, those with fairly large proportions of farmers reporting a large and positive impact from their use include the use of weighing scales (60% Treatment and 70% Control); use of tarpaulins for drying (46.7% Treatment and 30% Control); storage and pest Control

(36.7% Treatment and 30% Control); use of drying shades or platforms (30% Treatment and 33.3% Control); and use improved storage facilities (23.3% Treatment and 23.3% Control).

Table 26: Perceived Impact of the Applied Sunflower Technologies and Practices

Type of technology/practice	**% HHs reporting *Positive & Large***		**% HHs reporting *Positive but Small***		% HHs reporting ***Negative and Large***	
	Treatment (N=30)	**Control (N=30)**	**Treatment (N=30)**	**Control (N=30)**	**Treatment (N=30)**	**Control (N=30)**
Improved varieties of seeds/seedlings						
01 Improved seed for sunflower	66.67	56.67	3.33	3.33	20.00	6.67
Soil fertility improvement						
01 Chemical Fertilisers	3.33	3.33	0.00	0.00	0.00	0.00
02 Compost/ Manure	3.33	0.00	0.00	0.00	0.00	0.00
04 Animal manure	0.00	0.00	6.67	0.00	3.33	0.00
Crop husbandry practices						
01 Timely planting	73.33	60.00	0.00	0.00	20.00	20.00
02 Timely weeding	73.33	70.00	0.00	0.00	20.00	20.00
03 Crop rotation	70.00	60.00	3.33	0.00	16.67	20.00
04 Chemical spraying	3.33	3.33	0.00	0.00	3.33	0.00
05 Line planting	66.67	60.00	0.00	3.33	23.33	16.67
06 Spacing	66.67	56.67	0.00	0.00	20.00	13.33
07 Seed rate	53.33	43.33	0.00	0.00	20.00	16.67
Soil water conservation						
04 Mulching	13.33	3.33	0.00	0.00	0.00	0.00
06 Contour planting	3.33	0.00	0.00	0.00	0.00	0.00
Post harvest handling						
1 Use of Improved Storage facility such as Cribs, Granaries	23.33	23.33	0.00	0.00	13.33	13.33
2 Use of Tarpaulins for drying	46.67	30.00	0.00	0.00	13.33	0.00
4 Use of drying shade/platform	30.00	33.33	0.00	0.00	6.67	0.00
6 Storage pest Control	36.67	30.00	3.33	0.00	3.33	0.00
14 Use of weighing scales	60.00	70.00	0.00	0.00	16.67	6.67
15 Quality Mgt Standards	13.33	10.00	0.00	0.00	0.00	0.00
16 Certification	6.67	0.00	0.00	0.00	0.00	0.00
17 Training and mentoring in PHH	23.33	16.67	0.00	0.00	0.00	0.00
Farming as a business						
1 Collective Marketing	13.33	3.33	3.33	0.00	10.00	0.00
2 Record keeping	30.00	26.67	0.00	0.00	6.67	3.33
3 Business planning	13.33	10.00	0.00	0.00	3.33	0.00
4 Information boards	6.67	6.67	3.33	0.00	3.33	0.00
Gender for growth						
1. Training on gender mainstreaming	40.00	16.67	0.00	0.00	3.33	0.00
3. Training in VSLA ***(Village Savings & Loans Association)***	30.00	10.00	0.00	3.33	10.00	10.00
Financial service dev't						
1.Training on Savings & Loans	13.33	10.00	0.00	0.00	3.33	0.00

Under farming as a business, record keeping had the highest proportion of farmers reporting a positive and large impact (30% Treatment and 26.7% Control); with the rest of the practices having much lower proportions of farmers (13% and below) who reported a positive and large impact. Gender for Growth practices also had fairly large proportions of farmers reporting a large and positive impact, with training in gender mainstreaming (40% Treatment and 16.7% Control) performing better than VSLA (30% Treatment and 10%

Control). Just about one tenth of the farmers (13.3% Treatment and 10% Control) felt that training on savings and loans under the FSD component had a large and positive impact.

6.2.7: Participation in Sunflower Production and Marketing Farmer Groups

The percentage of farmers/households in organizations involved in the production and/or marketing of sunflower increased from 50% in 2010 to 100% in 2013, an increase of 50 percentage points. No farmers in the Control category belonged to organizations involved in the production and/or marketing of sunflower. Based on the figures in Table 27 below, group marketing of sunflower is more popular than group production; and the proportion of Treatment farmers that participate in group production and marketing of sunflower decreased between 2010 and 2013. There is no collective (group) processing of sunflower, yet nearly half (43.5%) of the Treatment farmers participate in organizations whose main activities include the processing of other crops.

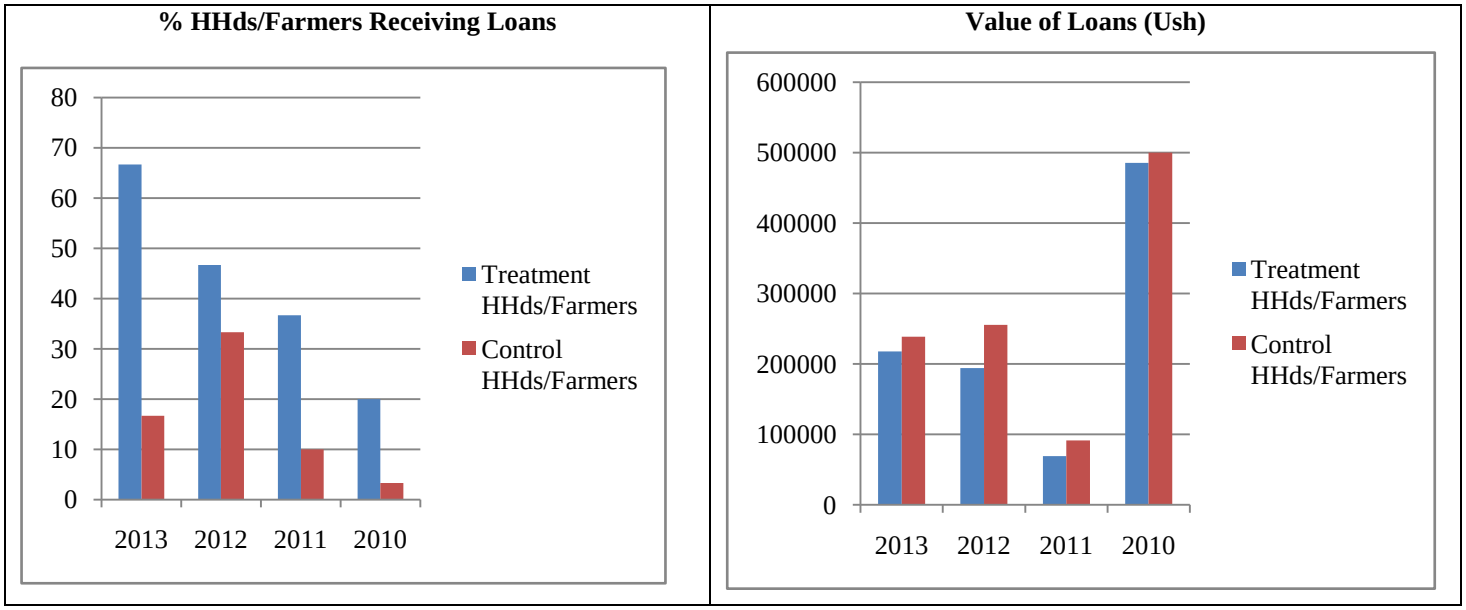
Table 27: Major Group Activities of Sunflower Producing and Marketing Groups

	Treatment		Control	
	2013	**2010**	**2013**	**2010**
% Households/Farmers belonging to organizations involved in production and/or marketing of sunflower	100.00	50.00	0.00	0.00
Main activities/enterprises that group members engage in collectively (% HHds/Farmers Reporting…)				
Production of ***sunflower***	15.22	20.00	0.00	0.00
Production of ***other crop***	8.70	20.00	0.00	0.00
Marketing of ***sunflower***	26.09	33.33	0.00	0.00
Marketing of ***other crop***	4.35	0.00	0.00	0.00
Processing of ***sunflower***	0.00	0.00	0.00	0.00
Processing of ***other crop***	43.48	26.67	0.00	0.00

6.2.8. Financial Services (Credit and Savings) in Sunflower Production

The proportion of Treatment farmers receiving loans increased from 20% in 2010 to 66.7% in 2013—a percentage point increase of 46.7%; while loan seeking among farmers in the Control category increased by 13.3 percentage points between 2010 and 2013. These results show a large improvement in loan-seeking behavior between 2010 and 2013, which is partly attributed to intervention in financial service delivery by aBi Trust. The average value of loans received by both Treatment and Control farmers decreased from an average of about Ush 500,000 in 2010 to below Ush 100,000 in 2011; but increased there after to about half of the 2010 levels, with households in the Control category performing slightly better than those in the Treatment group.

Figure 7: Trends in Credit Access and Loan Values among Sunflower Farmers



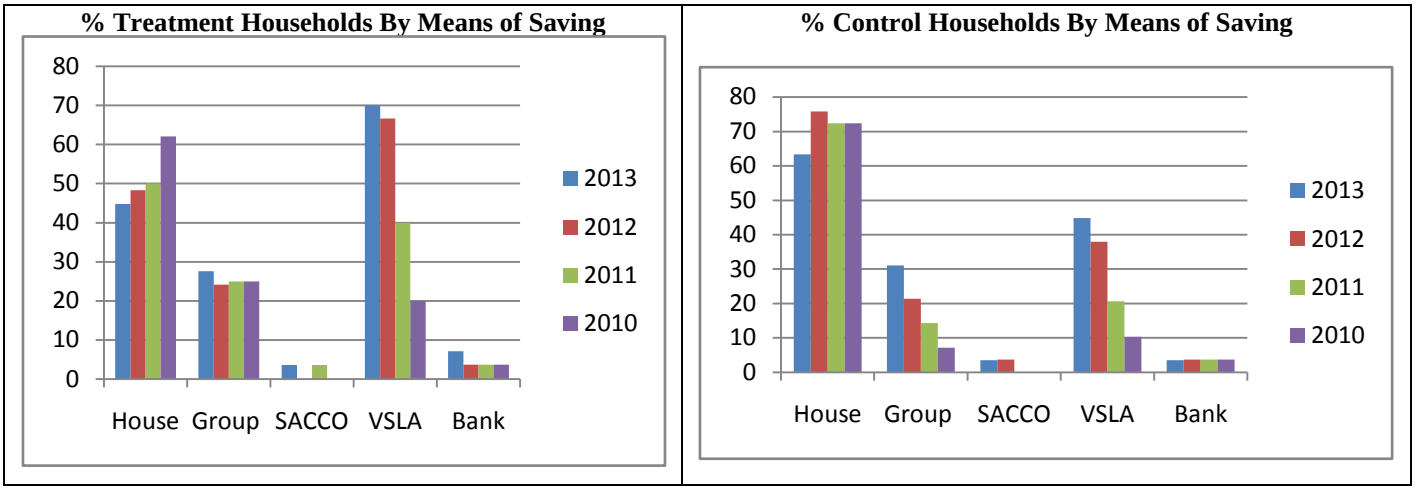
For those that acquired loans, the most commonly reported purpose was investment in agriculture, education (school fees) and health (medical bills). A sizeable proportion of farmers receivied loans for non-agricultural investments in 2010 and 2011, but this reduced significantly in 2012 and 2013. Those who received loans for investing in agriculture mainly spent the money on purchasing seed and hiring labor for sunflower production. The majority of farmers obtained loans from farmer groups/organizations and a few from the Hunger Project, commercial banks, relatives and friends. The impact of the acquired loans was reported to be major to moderate by the majority of the Treatment and Control farmers who acquired loans*(See Table SA21, Statistical Appendix for Sunflower).*

Most of the farmers who didn't acquire loans either felt they didn't need credit or feared borrrowing; while a few said they had no collateral. In general, there was a significant improvement in the satisfaction/rating of credit services in the surveyed communities in terms services availability, interest rates charged, application procedures and stringency of the terms and conditions of the credit. The average distance from the homes of the sampled farmers to the nearest banking institution also decreased by close to 12 kms for both Treatment and Control farmers between 2010 and 2013, implying that financial services were brought closer to the farmers during this period—partly because of the intervention of aBi Trust in financial service delivery.

The percentage of farmers (both Treatment and Control) saving money in their homes reduced between 2010 and 2013, while the percentage of those saving with institutions, particularly VSLAs (for both Treatment and Control farmers) and Groups (for Control farmers only increased substantially between 2010 and 2013. The proportion of those saving

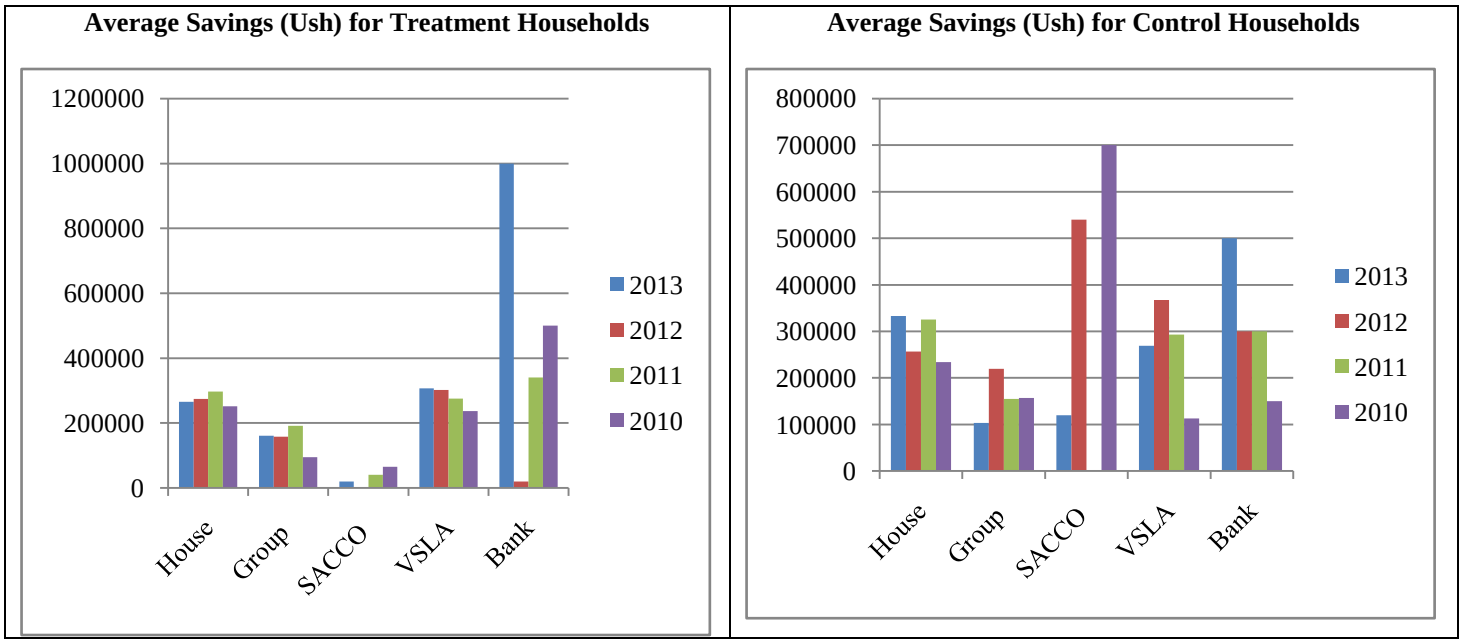
with VSLA was much higher among Treatment than Control farmers—partly because of the intervention of aBi Trust in financial service delivery, especially in the area of VSLA.

Figure 8: Trends in the Use of Different Means of Saving among Sunflower Farmers



The use of SACCOs and Banks as a means to save money was less prevalent and the proportion of farmers using these forms of savings didn't change much between 2010 and 2013. Between 2010 and 2013, the amount of money saved with VSLAs increased gradually among Treatment farmers but rapidly among Control farmers, except in 2013 when it dropped by about Ush 100,000. However, for the few farmers that saved with SACCOs, the amount of money saved reduced for both farmer categories; while the amount saved with Banks increased among the Control farmers but decreased in the Treatment group. Among the Control farmers, the amount of money saved at home increased though not steadily; but remained fairly constant in the Treatment group. Group savings also increased gradually among the Treatment and Control farmers but dropped in the Control category in 2013.

Figure 9: Trends in Values of Savings among Sunflower Farmers



6.2.9. Status of Performance Indicators for the Sunflower Value Chain in 2012 and 2013

The 2012 annual report shows that 42% of the sunflower farmers who benefited from aBi Trust's support adopted the recommended practices. The AI study findings, however, show significantly higher percentages of beneficiary farmers applying key practices in 2013, which include use of improved sunflower seed (93.3%), fertilizer (63.3%), correct spacing (100%) and seed rate (80%). For manure application and pest and disease control, however, the AI figures (10% of farmers applying each) are much lower than those in the 2012 Annual Report. The reported figures for acreage in the 2012 Annual report are also lower than those in this IA study report by 0.2acres; while the IA study report figures on average income per farmer, yield and price are lower than those of the 2012 Annual report by Ush 533,431, and 118kg/acre, and Ush 163/kg, respectively. Similar to sesame, the AI report shows improvement in some GAPs adoption and acreage indicators since 2012 and deterioration in income and yield indicators. The fact that very few Treatment farmers of sesame (2.4%) and sunflower (10%) based their interview responses on the poor-performing 2013A season (which would justify deterioration in yield and income), suggests that poor memory with no records to refer to and measurement errors associated with estimation of output and yield could partly explain the disparity in income and yield figures between the IA and 2012 Annual Report.

6.3 Beans

6.3.1 General Characteristics of the Sampled Beans Farmers

A total of 90 beans farmers (60 Treatment and 30 Control) from Bugamba, Kagongi, Mwizi, Rubindi and Rwanyamahembe sub-counties in Mbarara district participated in this impact assessment study. The Treatment farmers are members of Mbarara District Farmers Association (MBADFA)—the Implementing Partner of aBi Trust-supported interventions in the beans value chain.

Table 28: Characteristics of the Beans Farmers/Household Heads and their households

Variable	Entire Sample (N=90)	Treatment (N=60)	Control (N=30)
% Male Farmers/Headed-Households	54.44	41.67	80.00
Main Occupation of Farmer/HH Head (% Households/Farmers Reporting….)			
Production of crops	86.67	88.33	83.33
Salary employment	3.33	5.00	0.00
Production of livestock	1.11	1.67	0.00
Average age (years) of Farmer/HH Head	45.47 (13.17)	46.03 (12.91)	44.33 (13.83)
Highest school grade completed by Farmer/HH Head	6.34 (3.77)	6.77 (3.85)	5.53 (3.53)
Marital status of Farmer/HH Head (% Households/Farmers Reporting ….)			
Married	83.33	83.33	83.33
Widowed	15.56	15.00	16.67
Divorced	1.11	1.67	0.00
Average family size	7.03 (2.41)	7.37 (2.39)	6.37 (2.34)
Dependency Ratio	0.30 (0.36)	0.23 (0.29)	0.43 (0.45)

Just over half (54.4%) of the sampled households are male-headed, but the proportion of male-headed households is significantly higher among Control (80%) than Treatment (41.7%) farmers. There is no significant difference in the average age of Household heads/farmers between the Treatment (46 years) and Control (44 years) groups. The education level (years of schooling) of the household head/farmer is higher in the Treatment group (6.8) than the Control group (5.5). The main occupation for most of the sampled households/farmers (88.3%) in the Treatment group is crop farming, while the corresponding proportion in the Control category is 83.3%. The average household in the Treatment category has 7 family members, which is significantly higher than in the Control group (6.4); but the dependency ratio (No. of productive/No. of unproductive family members) is significantly higher in the Control (0.43) than the Treatment (0.23) group.

6.3.2 Asset Accumulation

Both Treatment and Control households accumulated transport and livestock assets between 2010 and 2013, but the Control households performed better than those in the Treatment group. However, the value of communication equipment increased in the Treatment group but declined in the Control group; while that of farm equipment declined

among both Treatment and Control farmers, with those in the Control category performing worse than their cohorts in the Treatment group.

Table 29: Household Asset Endowment in 2010 (Before Intervention) and 2013

	Treatment		**Control**		**Attributable Changes (DID)**
	Now(2013)	***2010***	***Now(2013)***	***2010***	
Total value of Farm Equipment (Ush)	165436.1 (115318.7)	304254.8 (157069.9)	99644.75 (85221.42)	266178.3 (163678.50	27714.85
Total value of Transport Equipment (Ush)	485277.4 (438861.5)	363444.5 (417711.2)	541928.3 (446826.3)	417711.2 (363444.5)	-2384.2
Total value of Communication Equipment (TV, Radio, Mobile Phone) (Ush)	111083.3 (52874.32)	108214.9 (66439.8)	93833.33 (67750.26)	97853.73 (67479.37)	6888.8
Total value of Livestock (Ush)	1543326 (1159962)	1533730 (1159442)	1270580 (1026085)	879191.6 (909929.6)	-381792

6.3.3. Job Creation at the Household/Farmer Level

Between 2010 and 2013, the average number of employees working with the Treatment farmers increased from 3.44 to 4.21; while those working with Control farmers increased from 3.7 to 4.57. For both farmer categories, the number of permanent employees decreased while that of short-term employees increased—although very few Control farmers used permanent workers. While the monthly payment to permanent workers increased among Treatment farmers it decreased among those in the Control group; and the annual payment to to short-term workers increased for both Treatment and Control farmers—with the increment being greater among Control farmers. Treatment farmers created more FTE jobs (34.5) than their cohorts in the Control group (12.75)

Table 30. Number of Farm Empoyees and Expenditure on Labor in 2010 and 2013

	Treatment		**Control**		**Attributable Changes (DID)**
	2013	**2010**	**2013**	**2010**	
Total Number of workers currently employed	4.21 (2.53)	3.44 (1.96)	4.57 (2.56)	3.70 (2.83)	-0.1
Number of Permanent workers	1.36 (0.49)	1.42 (0.60)	1.00 (N=3)	2.00 (N=1)	-
Number of Temporary/short-term workers	3.96 (2.34)	3.35 (1.84)	4.36 (2.50)	3.89 (2.93)	0.14
Number of Months in a year the farmer uses Temporary/short-term workers	4.42 (2.06)	4.37 (1.96)	4.64 (2.27)	4.37 (2.06)	-0.2
Additional Fulltime Equivalent (FTE) Jobs Created		41.25		23.625	17.625
Monthly payment to Permanent workers **(Total in Ush)**	78579.55 (33563.9)	53801.17 (29439.4)	80000 (60827.6) (N=3)	100000 (N=1)	-
Total annual payment to Temporary/ short-term workers **(Total in Ush)**	121940.9 (75884.2)	104644.1 (78155.3)	120108.6 (98284.6)	91558.56 (65466.4)	-11,253.2

6.3.4. Production and Sales of Beans in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

The average number of beans plots planted per season increased from 1.4 to 1.49 among Treatment farmers following intervention by aBi Trust; and from 1.27 and 1.39 among those in the Control group. The average area planted to beans and the quantity of seed planted also increased—albeit marginally among both Treatment and Control farmers. There was an

increase in the quantities of soil fertility enhancing inputs (chemical and organic fertilizers) and value of pesticides applied by Treatment farmers between 2010 and 2013; although the numbers of farmers using these inputs are too small (1-3) to provide a basis for drawing meaningful inference on the change in applied quantities and values of these inputs that is attributable to aBi Trust's intervention .

Table 31: Land Allocation and Input Use in Beans Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Separate plots/gardens of beans grown	1.49 (0.68)	1.40 (0.62)	1.39 (0.59)	1.27 (0.58)	-0.03
Total land area (acres) planted to beans	1.01 (0.79)	0.95 (0.85)	0.59 (0.41)	0.45 (0.29)	-0.1
Total quantity of beans seed planted (kgs)	33.42 (26.13)	30.78 (24.26)	19.67 (14.76)	18.65 (11.47)	1.6
Total Value of beans seed planted (Ush)	38893.98 (27041.99)	40973.4 (31230.5)	25865.0 (15795.4)	24473.5 (13191.4)	-3471.0
Total quantity of main fertilizer applied (kg)	11.00 (10.42) (N=3)	6.33 (4.62) (N=2)	9.0 (N=2)	0.00	-
Total Value of main fertilizer applied (Ush)	33333.3 (17559.4) (N=3)	0.00	21875 (9722.72) (N=2)	0.00	-
Total quantity of organic input applied (kg)	305.54 (216.07)	240.67 (105.59)	500 (N=1)	0.00	-
Total value of organic input applied (Ush)	62937.5 (41753.65)	55214.84 (31763.33)	40000 (N=1)	0.00	-
Total Cost of pesticides applied (Ush)	15750 (20153) (N=2)	0.00	0.00	0.00	-
Main Source of Seed (% HHds/Farmers Reporting….)					
Own seed	64.37	55.56	48.84	44.74	4.71
Input trader	14.94	14.81	32.56	28.95	-3.48
District or Lower-Level Farmers organization	4.60	11.11	0.00	0.00	-6.51
Market vendor/ local market	12.64	14.81	11.63	15.79	1.99
Fellow farmer	0.00	1.23	6.98	10.53	2.32
Perceived quality of Seed (% HHds/Farmers Reporting….)					
Very good	25.29	27.50	27.91	21.05	-9.07
Good	68.97	67.50	60.47	63.16	4.16
Poor	5.75	5.00	11.63	15.79	4.91
Main Source of Fertilizer (% HHds/Farmers Reporting….)					
Input trader,	60.00	50.00	0.00	0.00	10
District or Lower-Level Farmers organization	4.00	50.00	0.00	0.00	-46
Perceived quality of Fertilizer (% HHds/Farmers Reporting….)					
Very good	66.67	100.00	0.00	0.00	-33.33
Good	33.33	0.00	0.00	0.00	33.33

Most farmers (both Treatment and Control) used own seed; and the proportion using own seed increased between 2010 and 2013. Sourcing of seed from input traders was not only more prevalent among Control farmers but it also increased by over 3 percentage points; while it remained lower and constant in the Treatment category. Only 11% of the Treatment farmers (and none in the Control category) reported sourcing beans seed from District or Lower-Level Farmers organization in 2010 or before, and this proportion reduced to below 5% after aBi Trust's intervention. More than two thirds of Treatment farmers and a slightly lower proportion of Control farmers perceived the quality of beans seed they planted to be good; and

about one quarter of farmers perceived the quality to be very good. The few farmers who used chemical fertilizers sourced them mainly from input traders and the majority perceived the fertilizer quality to be very good.

Table 32: Harvests and Sales of Beans

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Total quantity of beans harvested (kgs)	224.1 (213.5)	218.8 (189.0)	136.8 (51.90)	140.37 (85.18)	8.9
Total quantity of beans sold (kgs)	178.1 (112.6)	185.8 (157.7)	134.8 (50.56)	137.77 (79.88)	-4.7
Selling Price (Ush/kg)	1464.01 (511.15)	1263.34 (369.05)	1433.7 (322.10)	1290.237 (260.54)	57.2
Main Mode of Sale (% HHds/Farmers Reporting….)					
Collectively through group	52.46	22.81	5.56	5.88	29.97
Individually	47.54	77.19	94.44	94.12	-29.97
Main Buyer Type (% HHds/Farmers Reporting….)					
1=Consumer	3.28	0.00	11.11	5.88	-1.95
2=Trader	86.89	91.23	88.89	88.24	-4.99
4=Institution	9.84	3.51	0.00	0.00	6.33
7=Broker	0.00	5.26	0.00	5.88	0.62
Average distance to main buyer (km)	2.88 (2.58)	3.08 (3.07)	2.97	2.97 (0.82)	-0.2
Mode of transport to point of sale (% HHds/Farmers Reporting….)					
1=foot	31.25	54.55	0.00	40.00	16.7
2=bicycle,	37.50	45.45	100.00	60.00	-47.95
3=motorbike,	18.75	0.00	0.00	0.00	18.75
4=Vehicle,	12.50	0.00	0.00	0.00	12.5
Average Transport Cost (Ush)	3247.9 (1439.3)	2008.7 (945.7)	4000 (1414.2)	2375 (750.0)	-385.67
Who made sales decisions (when and how much to sell)? (% HHds/Farmers Reporting….)					
1=Husband;	20.00	30.36	22.22	35.29	2.71
2=Wife;	10.00	8.93	33.33	23.53	-8.73
3=Both Husband& Wife;	65.00	57.14	44.44	41.18	4.6
Who made decisions on the use of revenue from this crop? (% HHds/Farmers Reporting….)					
1=Husband;	20.00	30.36	11.11	29.41	7.94
2=Wife;	11.67	8.93	27.78	23.53	-1.51
3=Both Husband& Wife;	68.33	60.71	61.11	47.06	-6.43
How was the revenue from this crop used? (List the top three) (% HHds/Farmers Reporting….)					
1=Consumption;	6.67	10.91	22.22	11.76	-14.7
2=Investment in Agricultural enterprise	10.00	5.45	16.67	11.76	-0.36
3=Investment in non-agricultural enterprise	0.00	1.82	0.00	0.00	-1.82
4=Medical expenses;	5.00	5.45	0.00	0.00	-0.45
5=Household durables;	6.67	16.36	11.11	11.76	-9.04
7=School fees	71.67	60.00	50.00	52.94	14.61
9=Paying debts	0.00	0.00	0.00	11.76	11.76

On average, the quantity of beans harvested increased by about 5kgs among farmers in the Treatment group but dropped by 4kgs in the Control category—leading to a net increase in production of 9kgs attributed to aBi Trust intervention; while the average sales decreased by

close to 8kg among Treatment farmers but remained constant in the Control category—leading to a drop in beans sales of close to 5kgs during the period of aBi Trust-supported interventions. Treatment farmers reported an increase in the average price at which they sell beans of about Ush 200/kg between 2010 and 2013, which is higher than the corresponding price increment in the Control group of 144 Ush/kg. The average sales price received by Treatment farmers was also higher than that of the Control group by about Ush 30/kg after aBi Trust-supported interventions, but was lower than that of the Control group by about Ush 27/kg before aBi Trust-supported interventions. This means that the increment in sales price attributed to aBi Trust-supported interventions is Ush 57/kg. The percentage of Treatment farmers selling beans collectively increased by close to 30 percentage points after aBi Trust-supported interventions, but remained the same at about 6% of farmers in the Control category. The increase collective marketing of beans among Treatment farmers partly explains the sales price difference between Treatment and Control farmers.

Table 33: Costs and Returns to Beans Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Productivity of Beans (Kg/Acre)	327.61 (178.79)	346.42 (176.94)	351.78 (163.69)	396.99 (165.07)	26.4
Input Costs per Kg (Ush/Kg	217.20 (137.99)	191.16 (162.31)	228.71 (224.98)	169.99 (153.85)	-32.68
Input Costs per Acre(Ush/Acre)	57400.19 (32320.04)	53229.87 (29808.46)	50768.15 (33824.78)	56893.13 (31252.88)	10295.3
Input Costs per Farmer (Ush/Farmer)	50236.51 (41066.58)	49301.06 (39535.11)	27740.01 (18314.46)	26306.78 (14346.02)	-497.8
Hired Labor costs of Beans Production per Kg (Ush/Kg)	334.63 (195.89)	319.51 (157.04)	304.54 (134.34)	278.77 (118.70)	-10.65
Hired Labor costs of Beans Production per Acre (Ush/Acre)	79097.61 (39971.31)	89849.74 (57595.1)	99770.14 (74659.49)	68474.73 (29356.2)	-42047.5
Hired Labor costs Beans Production per Farmer (Ush/Farmer)	85285.52 (69407.27)	84800 (83926.72)	42539.68 (32298.58)	62428.57 (43756.36)	20374.4
Total Cost of Production per Kg	463.44 (322.88)	452.78 (320.41)	489.37 (304.70)	395.36 (282.29)	-83.35
Total Cost of Production per Acre (Ush/Acre)	125409.4 (78250.57)	142567.9 (110518.4)	164532.6 (137698.8)	148823 (106050.8)	-32868.1
Total Cost of Production per Farmer (Ush/Farmer)	93642.45 (58414.44)	82282.73 (61639.08)	58381.06 (37213.09)	52772.76 (41260.94)	5751.4
Gross margins per Farmer (Ush)	219160.5 (106079.3)	166418.4 (129144.3)	184335.4 (111446.9)	156130.7 (117047.5)	24537.4
Gross margins per Acre (Ush)	286926.4 (214004.5)	273738.6 (197383.2)	321065.8 (253200.8)	341644.1 (229970.1)	33766.1
% of Treatment Farmers with positive Gross Margins			**38.33**		
Average income growth for Treatment Farmers with positive Gross Margins			**167,319.4**	**(145,202)**	

On average, beans yield (kgs/Acre) decreased among both farmer categories, to the tune of nearly 20 kgs/Acre among Treatment farmers and 45 kgs/Acre among farmers in the Control group. The yield decline among both farmer categories between 2010 and 2013 is

largely attributed to drought conditions that characterized the first cropping season of 2013, which was the reference cropping season for 88.3% of the Treatment farmers for the period after aBi Trust-supported interventions. However, much as both farmer categories registered lower yields, the decline in yield among Control farmers (45 kgs) was more than twice that of their cohorts in the Treatment category (20 kgs), suggesting that without aBi Trust supported interventions, the drop in yield experienced by Treatment farmers would have been greater. The change in beans yield attributable to aBi Trust support is 26.4 kgs/Acre.

Also, whereas the average input costs per kilogram (Ush/kg) of beans as well as the average input costs per farmer increased in both farmer categories, the magnitude of the increase was higher among the Control than Treatment farmers, leading to a reduction in input costs per kilogram and per farmer (Ush 32.7 and Ush 498, respectively) attributable to aBi Trust support. However, the input costs per Acre increased among Treatment farmers but declined among Control farmers, an indication that following aBi Trust supported interventions, Treatment farmers increased their investment on each Acre of beans produced while their cohorts in the Control group reduced it. The hired labor costs per kilogram of beans produced increased by about Ush 15/kg in the Treatment group compared to Ush 26/kg in the Control category. And while hired labor costs per Acre and per farmer increased substantially among Control farmers, they decreased among Treatment farmers, leading to a substantial decline in per Acre hired labor costs for beans production attributed to aBi Trust-supported interventions. Hired labor costs per farmer, however, decreased by Ush 20,000 in the Control group but increased marginally (by Ush 400) in the Treatment group. A similar trend is depicted by the total cost of beans production per kilogram, Acre and farmer—thanks to intervention by aBi Trust.

Despite the poor weather conditions in the first cropping season of 2013 that affected beans yield and harvests (output), results of the Gross Margin analysis show that income from beans production (per farmer and Acre) increased among both Treatment and Control farmers. The results also indicate that Treatment farmers performed better than their cohorts in the Control group; leading to a net increase in income attributable to aBi Trust support to the tune of Ush 24,537 per farmer and Ush 33,766 per Acre. Had the first cropping season of 2013 been normal, the income change attributable to aBi Trust support would likely have been higher. Nevertheless, more than a third (8.3%) of the Treatment farmers (N=60) registered positive income growth following intervention by aBi Trust, estimated at an average of Ush 167,319 per farmer.

6.3.5 Training on Improved Beans Technologies and Agronomic practices in 2010 or Before ("Before") and Between 2011 and 2013 ("After")

The proportion of Treatment farmers who received training on improved beans varieties increased from 50% in 2010 or before to 96.6% between 2011 and 2013—an increase of 46.7 percentage points compared to the 13.4 percentage point increase in the Control group during the same period. Thus, the change in prevalence of training on the use of improved beans seed attributable to aBi Trust support is 33.3 percentage points. The change in prevalence of training in soil fertility improvement attributed to aBi Trust support is 23.3 percentage points for Compost/Manure use; 35 percentage points for use of chemical fertilizer; and 45 percentage points for animal manure use.

Table 34: Prevalence of Training on Improved Beans Technologies and Agronomic practices.

Type of technology/practices	% HHs/Farmers Trained to Use 2011-2013		% HHs/Farmers Trained to use in 2010 or before		Attributable Changes (DID)
	Treatment	Control	Treatment	Control	
Improved varieties of seeds/seedlings					
01 Improved seed for beans	96.67	16.67	50.00	3.33	33.33
Soil fertility improvement					
01 Chemical Fertilisers	76.67	6.67	35.00	0.00	35
02 Compost/ Manure	63.33	6.67	33.33	0.00	23.33
04 Animal manure	70.00	0.00	25.00	0.00	45
Crop husbandry practices					
01 Timely planting	95.00	3.33	40.00	0.00	51.67
02 Timely weeding	95.00	3.33	43.33	0.00	48.34
03 Crop rotation	85.00	3.33	36.67	0.00	45
04 Chemical spraying	73.33	0.00	21.67	0.00	51.66
05 Line planting	88.33	3.33	28.33	0.00	56.67
06 Spacing	86.67	3.33	25.00	0.00	58.34
07 Seed rate	83.33	3.33	28.33	0.00	51.67
Soil and water conservation					
01 Grass bands	56.67	0.00	25.00	0.00	31.67
02 Trenches	76.67	3.33	13.33	0.00	60.01
03 Trash lines	68.33	0.00	25.00	0.00	43.33
04 Mulching	56.67	3.33	21.67	0.00	31.67
05 Hedge rows	18.33	0.00	6.67	0.00	11.66
06 Contour planting	43.33	0.00	20.00	0.00	23.33
07 Soil conservation basins	48.33	0.00	18.33	0.00	30
Post harvest handling					
1 Use of Improved Storage facilities	83.33	3.33	38.33	0.00	41.67
2 Use of Tarpaulins for drying	96.67	0.00	43.33	0.00	53.34
3 Use of Collapsible driers	16.67	0.00	8.33	0.00	8.34
4 Use of drying shade/platform	16.67	3.33	5.00	0.00	8.34
5 Use of drying and grading racks	83.33	0.00	1.67	0.00	81.66
6 Storage pest Control	81.67	3.33	33.33	0.00	45.01
7 Threshing equipment	51.67	0.00	21.67	0.00	30
11 Screening or Sieving	25.00	3.33	5.00	0.00	16.67
14 Use of weighing scales	80.00	3.33	30.00	3.33	50
15 Quality Mgt Standards	40.00	3.33	83.33	0.00	-46.66
16 Certification	5.00	0.00	1.67	0.00	3.33
17 Training and mentoring in PHH	86.33	0.00	21.67	0.00	64.66
Farming as a business					
1 Collective Marketing	96.67	3.33	28.33	6.67	71.68

2 Record keeping	96.67	0.00	31.67	0.00	65
3 Business planning	83.33	0.00	18.33	0.00	65
4 Information boards	36.67	0.00	6.67	0.00	30
5 Sms mkt information service	23.33	0.00	5.00	0.00	18.33
6 Voice message mkt information service	43.33	0.00	11.67	0.00	31.66
Gender for growth					
1. Training on gender mainstreaming	91.67	20.00	23.33	6.67	55.01
2. Entrepreneurship training	85.00	6.67	15.00	3.33	66.66
3. Training in VSLA	95.00	6.67	30.00	6.67	65
Financial service dev't					
1.Training on Savings & Loans	98.33	13.33	40.00	6.67	51.67

Higher proportions of Treatment farmers reported receiving training in crop husbandry practices, such as timely planting and weeding, chemical spraying, crop rotation, line planting and spacing and the changes in prevalence of training in these areas attributed to aBi Trust-supported interventions are much higher (45 to 58 percentage points). Attributable changes to aBi Trust supported interventions in training in the area soil and water conservation practices such as mulching, grass bands, trenches, trash lines, etc. are also quite high compared to the figures reported earlier on sesame and sunflower production.

For post-harvest handling practices, the attributable change to aBi Trust supported training is high for the use of drying and grading racks (81.7 percentage points); tarpaulins for drying (53.3 percentage points); weighing scales (50 percentage points); storage and pest Control (45 percentage points); training and mentoring in PHH (64.7 percentage points); use of improved storage facilities such as cribs and granaries (41.7 percentage points) and threshing equipment (30 percentage points). Surprisingly, there was a nearly 50% reduction in the prevalence of training on quality management standards between 2010 and 2013. It may be necessary to investigate the validity of this result and the underlying causes.

The proportion of Treatment farmers who received training on collective marketing of beans increased from 28.3% in 2010 or before to 96.7% between 2011 and 2013—an increase of 68 percentage points compared to the 3.3 percentage point decrease in the Control group during the same period. Thus, the change in prevalence of training in collective marketing attributable to aBi Trust-support is 71.7 percentage points. The proportion of Treatment farmers trained in record-keeping and business planning increased from 31.7% and 18.3%, respectively, in 2010 or before to 96.7% and 83.3%, respectively between 2011 and 2013; and the increase in prevalence of training in these areas attributed to aBi Trust support is 65 percentage points. The change in training in the use of information boards attributable to aBi Trust support is 30 percentage points; and for the use of sms and voice messaging market information service, it is 18.3 and 31.7 percentage points, respectively.

Under the Gender for Growth (G4G) intervention component, 91.7% of farmers in the Treatment category received training in gender mainstreaming between 2011 and 2013; 85%

received entrepreneurship training; while 95% received training in village savings and loans associations (VSLA). The increase in prevalence of training in these areas attributed to aBi Trust support is 55 percentage points for gender mainstreaming; 65 percentage points for VSLA; and 66.7 percentage points for entrepreneurship training. The proportion of Treatment farmers who received training on savings and loans under the financial service development (FSD) component increased from 40% in 2010 or before to 98.3% between 2011 and 2013—an increase of 58.3 percentage points; while in the Control group, the proportion increased from 6.7% to 13.3%.

The majority of Treatment farmers who received training in the above-listed areas between 2011 and 2013 were trained by Mbarara District Farmers Association (MBADFA)—the IP of aBi Trust-supported interventions in the beans value chain); while the few Control farmers who received similar training were trained by NAADS and other NGOs. However, not all farmers who received training in the above-listed areas applied the imparted knowledge and skills.

Table 35: Institutions Involved in Farmer Training on Beans Technologies and Practices

Type of technology/practice	% HHs reporting MBADFA extension staff		% HHs reporting NAADS staff		% HHs reporting Other NGO	
	Treatment	Control	Treatment	Control	Treatment	Control
Improved varieties						
01 Improved seed for beans	91.38	0.00	3.45	75.00	1.72	0.00
Soil fertility improvement						
01 Chemical Fertilisers	95.65	0.00	0.00	100.00	2.17	0.00
02 Compost/ Manure	89.19	0.00	5.41	100.00	2.70	0.00
04 Animal manure	88.10	0.00	4.76	0.00	2.38	0.00
Crop husbandry practices						
01 Timely planting	91.23	0.00	0.00	100.00	1.75	0.00
02 Timely weeding	89.47	0.00	3.51	100.00	1.75	0.00
03 Crop rotation	90.20	0.00	7.84	100.00	1.96	0.00
04 Chemical spraying	93.18	0.00	2.27	0.00	0.00	0.00
05 Line planting	92.45	0.00	1.89	100.00	0.00	0.00
06 Spacing	94.23	0.00	5.77	100.00	0.00	0.00
07 Seed rate	92.00	0.00	2.00	100.00	2.00	0.00
Soil and water conservation						
01 Grass bands	88.24	0.00	2.94	0.00	0.00	0.00
02 Trenches	89.13	0.00	2.17	100.00	0.00	0.00
03 Trash lines	95.12	0.00	2.44	0.00	0.00	0.00
04 Mulching	97.06	0.00	0.00	0.00	0.00	0.00
05 Hedge rows	90.91	0.00	0.00	0.00	0.00	0.00
06 Contour planting	84.62	0.00	3.85	0.00	0.00	0.00
07 Soil conservation basins	86.21	0.00	6.90	0.00	0.00	0.00
Post harvest handling						
1 Use of Improved Storage facilities	96.36	0.00	1.82	100.00	0.00	0.00
2 Use of Tarpaulins for drying	94.83	0.00	3.45	0.00	0.00	0.00
3 Use of Collapsible driers	100.00	0.00	0.00	0.00	0.00	0.00
4 Use of drying shade/platform	100.00	0.00	0.00	100.00	0.00	0.00
5 Use of drying and grading racks	100.00	0.00	0.00	0.00	0.00	0.00
6 Storage pest Control	97.96	0.00	2.04	100.00	0.00	0.00
7 Threshing equipment	93.55	0.00	6.45	0.00	0.00	0.00
8 Use of Shellers (Maize&G.nuts)	100.00	0.00	0.00	0.00	0.00	0.00

11 Screening or Sieving	93.33	0.00	6.67	100.00	0.00	0.00
14 Use of weighing scales	93.75	0.00	6.25	100.00	0.00	0.00
15 Quality Mgt Standards	83.33	0.00	8.33	100.00	0.00	0.00
16 Certification	66.67	0.00	33.33	0.00	0.00	0.00
17 Training and mentoring in PHH	92.50	0.00	5.00	0.00	0.00	0.00
Farming as a business						
1 Collective Marketing	98.28	0.00	0.00	100.00	0.00	0.00
2 Record keeping	98.28	0.00	0.00	0.00	0.00	0.00
3 Business planning	98.00	0.00	0.00	0.00	0.00	0.00
4 Information boards	100.00	0.00	0.00	0.00	0.00	0.00
5 Sms mkt information service	100.00	0.00	0.00	0.00	0.00	0.00
6 Voice message mkt information service	100.00	0.00	0.00	0.00	0.00	0.00
Gender for Growth						
1. Training on gender mainstreaming	96.36	16.67	1.82	0.00	0.00	50.00
2. Entrepreneurship training	96.08	0.00	1.96	0.00	0.00	50.00
3. Training in VSLA	98.25	0.00	0.00	50.00	0.00	25.00
Financial service dev't						
1.Training on Savings & Loans	96.61	0.00	1.69	50.00	0.00	0.00

Whereas the change in prevalence of training on the use of improved beans seed attributable to aBi Trust support is 33.3 percentage points, the corresponding change in actual use of improved beans seed is minus 1.67 percentage points. While the change in prevalence of training in soil fertility improvement attributed to aBi Trust is 23.3 percentage points for Compost/Manure use, 35 percentage points for Chemical fertilizer use and 45 percentage points for Animal manure use; the corresponding changes in actual use are 8.3, 15, 5 and 21.7 percentage points, respectively. The changes in application of improved crop husbandry practices such as timely planting and weeding, chemical spraying, crop rotation, line planting, etc. attributed to aBi Trust support are much higher (ranging from 13 to 51.7 percentage points) than those reported for soil fertility improvement.

Changes in the use of soil and water conservation practices (grass bands, trenches, contour planting, trash lines and mulching) attributed to aBi Trust support are in the range of 8 to 28 percentage points. However, for PHH practices, the attributable changes to aBi Trust support are much higher in the use of tarpaulins for drying (38 percentage points), weighing scales (43 percentage points), storage pest Control (40 percentage points), use of improved storage facilities (28 percentage points), threshing equipment (18 percentage points), quality management standards (23 percentage points), as well as use of the knowledge acquired in training and mentoring in post-harvest handling (38 percentage points). Change in use of the principles of farming as a business attributed to aBi Trust support is also higher, ranging from 50 percentage points for collective marketing; 46.7 percentage points for record keeping and business planning; 15 percentage points for use of information boards; 13 percentage points for use of sms market information service and 26.7 percentage points for use of voice message market information service. The magnitude of change in use of G4G practices attributed to aBi Trust support is 46.7 percentage points for gender mainstreaming; 55

percentage points for entrepreneurship training; and 63 percentage points for VSLA; while for savings and loans under the FSD component, it is 53 percentage points.

Table 36: Application of Improved Beans Technologies and Agronomic Practices

Type of technology/practices	% HHs/Farmers that applied in 2011-2013		% HHs/Farmers that applied in 2010 or before		Attributable Changes (DID)
	Treatment	Control	Treatment	Control	
Improved varieties of seeds					
01 Improved seed for beans	88.33	13.33	90.00	13.33	-1.67
Soil fertility improvement					
01 Chemical Fertilisers	11.67	0.00	3.33	0.00	8.34
02 Compost/ Manure	26.67	0.00	11.67	0.00	15
04 Animal manure	35.00	0.00	13.33	0.00	21.67
Crop husbandry practices					
01 Timely planting	95.00	3.33	40.00	0.00	51.67
02 Timely weeding	93.33	3.33	40.00	0.00	50
03 Crop rotation	78.33	3.33	28.33	0.00	46.67
04 Chemical spraying	23.33	0.00	10.00	0.00	13.33
05 Line planting	51.67	3.33	15.00	0.00	33.34
06 Spacing	66.67	3.33	20.00	0.00	43.34
07 Seed rate	73.33	3.33	26.67	0.00	43.33
Soil and water conservation					
01 Grass bands	36.67	0.00	20.00	0.00	16.67
02 Trenches	55.00	3.33	23.33	0.00	28.34
03 Trash lines	31.67	0.00	10.00	0.00	21.67
04 Mulching	35.00	3.33	16.67	0.00	15
05 Hedge rows	3.33	0.00	1.67	0.00	1.66
06 Contour planting	15.00	0.00	6.67	0.00	8.33
07 Soil conservation basins	25.00	0.00	13.33	0.00	11.67
Post harvest handling					
1 Use of Improved Storage facilities	48.33	3.33	16.67	0.00	28.33
2 Use of Tarpaulins for drying	68.33	0.00	30.00	0.00	38.33
3 Use of Collapsible driers	6.67	0.00	1.67	0.00	5
4 Use of drying shade/platform	1.67	0.00	0.00	0.00	1.67
6 Storage pest Control	66.67	3.33	23.33	0.00	40.01
7 Threshing equipment	35.00	0.00	16.67	0.00	18.33
11 Screening or Sieving	8.33	3.33	3.33	0.00	1.67
14 Use of weighing scales	70.00	3.33	26.67	3.33	43.33
15 Quality Mgt Standards	35.00	3.33	8.33	0.00	23.34
16 Certification	1.67	0.00	1.67	0.00	0
17 Training and mentoring in PHH	55.00	0.00	16.67	0.00	38.33
Farming as a business					
1 Collective Marketing	71.67	0.00	21.67	0.00	50
2 Record keeping	63.33	0.00	16.67	0.00	46.66
3 Business planning	61.67	0.00	15.00	0.00	46.67
4 Information boards	20.00	0.00	5.00	0.00	15
5 Sms mkt information service	18.33	0.00	5.00	0.00	13.33
6 Voice message mkt information service	36.67	0.00	10.00	0.00	26.67
Gender for growth					
1. Training on gender mainstreaming	88.33	20.00	21.67	0.00	46.66
2. Entrepreneurship training	68.33	6.67	6.67	0.00	54.99
3. Training in VSLA	83.33	13.33	10.00	3.33	63.33
Financial Development					
1.Training on Savings & Loans	95.00	13.33	35.00	6.67	53.34

For Households/farmers that did not apply the aBi Trust-supported technologies and practices in beans production, the major reasons cited include the technologies being unavailable or their access being limited to group members only; lack of training or interest; being expensive and sheer laziness.

Table 37: Reasons for Non-Application of Beans Technologies and Agronomic Practices

Reasons	% Households Reporting Reason		
	Entire sample	Treatment	Control
1= Not available	6.67	7.14	6.25
4= Lack of ability	3.33	7.14	0.00
5= Not trained	6.67	7.14	6.25
6= Expensive	3.33	7.14	0.00
9=For group members only	43.33	7.14	75.00
10=Not interested	10.00	14.29	6.25
13=Not required	6.67	7.14	6.25
31= Laziness	6.67	14.29	0.00

6.3.6: Farmer Perceptions on Impact of Applied Beans Technologies and Practices

Over 90% of the Treatment and Control farmers who used improved beans seed said it had a positive and large impact. Higher or equally high proportions of farmers who applied soil fertility improvement practices (chemical and organic fertilizers); crop husbandry practices (timely planting and weeding, chemical spraying, crop rotation, line planting and spacing, recommended seed rate); soil and water conservation practices; post-harvest handling practices and technologies; Farming as a Business practices; G4G practices; and training on savings and loans under FSD reported a large and positive impact arising from the application of these practices and technologies.

Table 38: Perceived Impact of the Applied Beans Technologies and Practices

Type of technology/practice	% HHs reporting *Positive & Large*		% HHs reporting *Positive but Small*		% HHs reporting No Impact		% HHs reporting Negative but small		% HHs reporting Negative and large	
	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control
Improved varieties of seeds/seedlings										
01 Improved seed for beans	91.89	93.75	5.41	0.00	0.00	0.00	0.00	6.25	2.70	0.00
Soil fertility										
01 Chemical Fertilisers	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02 Compost/ Manure	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04 Animal manure	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop husbandry										
01 Timely planting	94.44	82.76	5.56	17.24	0.00	0.00	0.00	0.00	0.00	0.00
02 Timely weeding	94.12	84.62	3.92	15.38	0.00	0.00	0.00	0.00	1.96	0.00
03 Crop rotation	93.33	88.46	6.67	11.54	0.00	0.00	0.00	0.00	0.00	0.00
04 Chemical spraying	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05 Line planting	81.82	60.00	18.18	20.00	0.00	20.00	0.00	0.00	0.00	0.00
06 Spacing	93.55	83.33	6.45	16.67	0.00	0.00	0.00	0.00	0.00	0.00
07 Seed rate	97.22	91.67	2.78	8.33	0.00	0.00	0.00	0.00	0.00	0.00
Soil & water conservation										
01 Grass bands	95.24	100.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02 Trenches	90.63	91.67	9.38	8.33	0.00	0.00	0.00	0.00	0.00	0.00
03 Trash lines	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

04 Mulching	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05 Hedge rows	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06 Contour planting	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07 Soil conservation basins	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post harvest handling										
1 Use of Improved Storage facility such as Cribs, Granaries	94.44	5.56	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Use of Tarpaulins for drying	100.00	87.50	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00
3 Use of Collapsible driers	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Use of drying shade/platform	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Storage pest Control	92.86	93.75	0.00	6.25	0.00	0.00	0.00	0.00	7.14	0.00
7 Threshing equipment	96.43	100.00	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Screening or Sieving	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Use of weighing scales	100.00	86.67	0.00	6.67	0.00	6.67	0.00	0.00	0.00	0.00
15 Quality Mgt Standards	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Certification	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Training and mentoring in PHH	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Farming as business										
1 Collective Marketing	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Record keeping	85.71	100.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Business planning	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Information boards	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Sms mkt information service	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Voice message mkt information service	77.78	33.33	22.22	33.33	0.00	33.33	0.00	0.00	0.00	0.00
Gender for growth										
1. Training on gender mainstreaming	91.30	75.00	4.35	25.00	4.35	0.00	0.00	0.00	0.00	0.00
2. Entrepreneurship training	92.31	100.00	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. Training in VSLA ***(Village Savings and Loans Association)***	95.24	100.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Financial service Dev't										
1.Training on Savings & Loans	96.15	3.85	87.50	12.50	0.00	0.00	0.00	0.00	0.00	0.00

6.3.7: Participation in Beans Production and Marketing Farmer Groups

The percentage of Treatment farmers/households in organizations involved in the production and/or marketing of beans increased from 65% in 2010 to 100% in 2013, an increase of 35 percentage points. No farmers in the Control category belonged to organizations involved in the production and/or marketing of beans. Based on the figures in Table 39 below, group production of beans appears to be more common than group marketing. There is no collective (group) processing of beans, yet nearly one quarter (23.7%) of the Treatment farmers participate in organizations whose main activities include the processing of other crops.

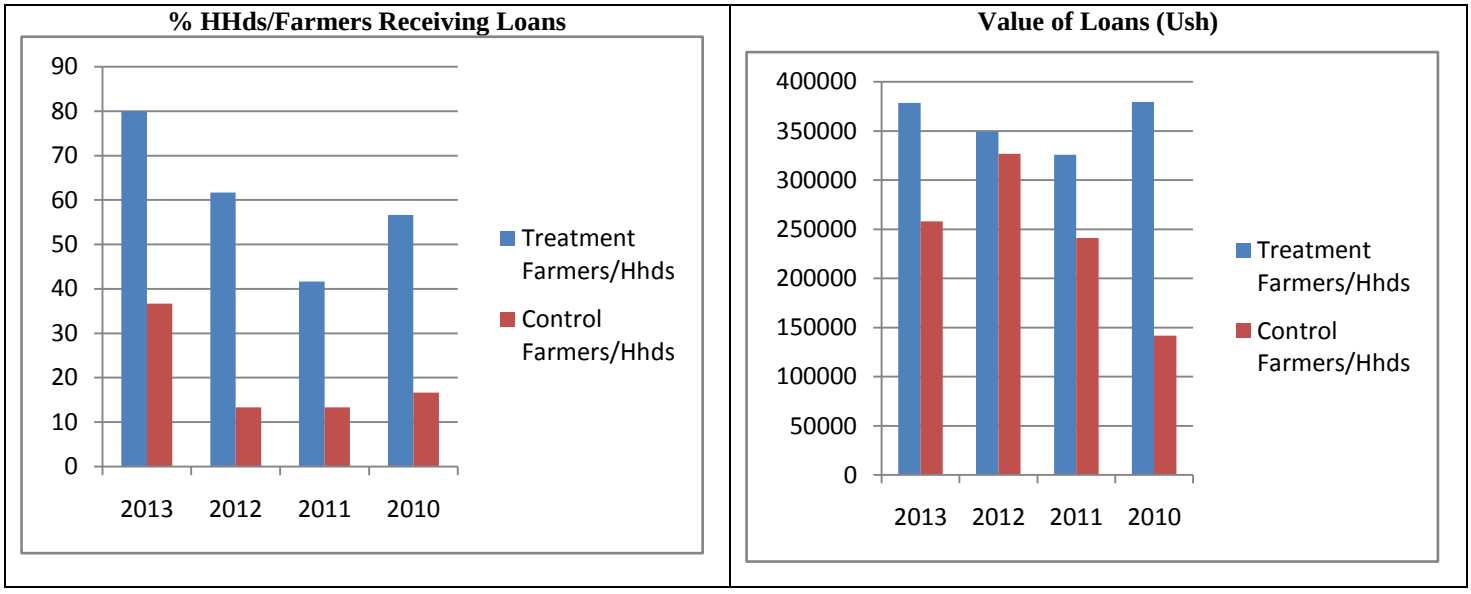
Table 39: Major Group Activities of Beans Producing and Marketing Groups

	Treatment		Control	
	2013	**2010**	**2013**	**2010**
8.1 & 8.2: % Households/Farmers belonging to organizations involved in production and/or marketing of beans	100.00	65.00	0.00	0.00
Main activities/enterprises that group members engage in collectively (% HHds/Farmers Reporting…)				
Production of ***Beans***	25.77	28.33	0.00	0.00
Production of ***other crop***	15.46	11.67	0.00	0.00
Marketing of ***Beans***	18.56	26.67	0.00	0.00
Marketing of ***other crop***	12.37	10.00	0.00	0.00
Processing of ***other crop***	23.71	21.67	0.00	0.00
Provision of inputs	2.06	0.00	0.00	0.00

6.3.8. Financial Services (Credit and Savings) in Beans Production

The proportion of Treatment farmers receiving loans increased from 56.7% in 2010 to 80% in 2013—a percentage point increase of 23.3%; while loan seeking among farmers in the Control category increased by 20 percentage points between 2010 and 2013. It appears that the impact of aBi Trust intervention on loan-seeking behavior among beans farmers is not as profound as was seen earlier among sesame and sunflower farmers. The average value of loans received by Treatment farmers did not change much from the average of Ush 380,000 in 2010. However, among farmers in the Control category, the value of loans received increased from an average of about Ush 141,793 in 2010 to Ush 326,786 in 2012 before falling to Ush 258,024 in 2013.

Figure 10: Trends in Credit Access and Loan Values among Beans Farmers

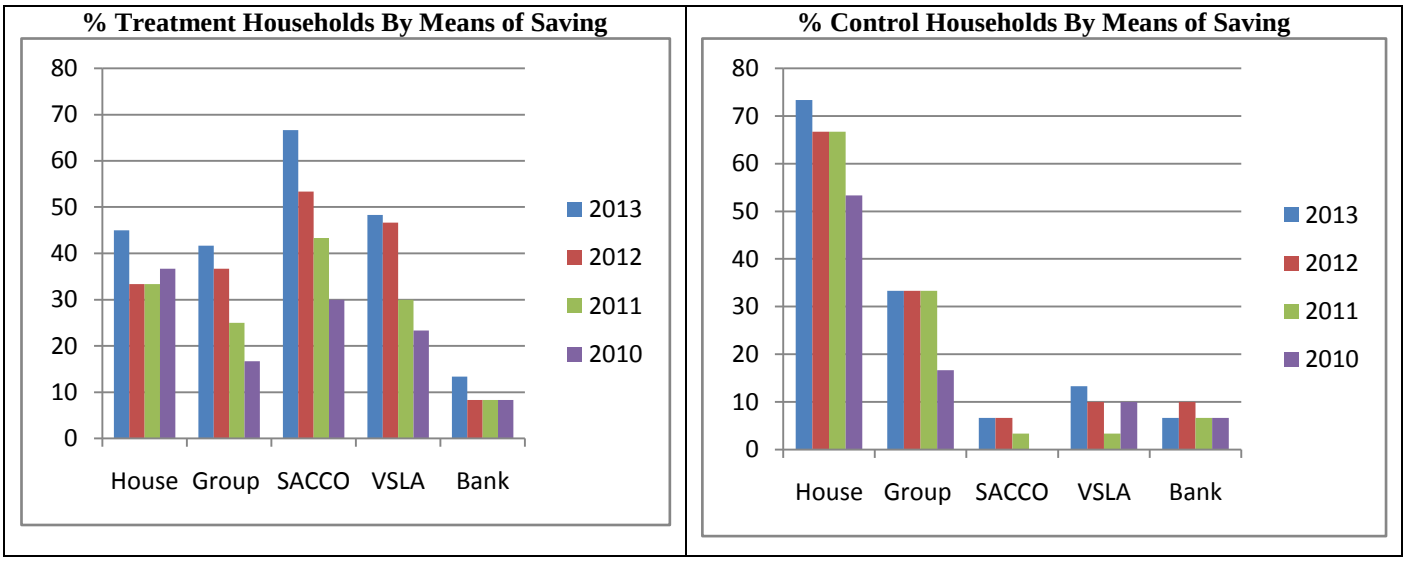


For those that acquired loans, the most commonly reported purpose was investment in education (school fees), agriculture and non-agricultural ventures. The proportion of Treatment farmers investing loan money in agriculture increased steadily from 29.4% in 2010 to 40.5% in 2012 before falling by 13 percentage points in 2013 to 27%. However, in the

Control category, the proportion of farmers investing loan money in agriculture dropped rapidly from 40% in 2010 to 0% in 2013. The proprotion of farmers investing loan money into education increased steadily between 2010 and 2013 for both Treatment and Control farmers. Those who received loans for investing in agriculture mainly spent the money on purchasing seed and hiring labor for the production of beans, coffee and maize. The majority of farmers obtained loans from farmer groups/organizations and SACCOs. The impact of the acquired loans was reported to be major by the majority of the Treatment and Control farmers who acquired loans *(See Table SA31, Statistical Appendix for Beans).*

Most of the farmers who didn't acquire loans either felt they didn't need credit, had no collateral or had outstanding loans. In general, there was a significant improvement in the satisfaction/rating of credit services in the surveyed communities in terms services availability, interest rates charged, application procedures and stringency of the terms and conditions of the credit. Between 2010 and 2013, the average distance from the homes of the sampled farmers to the nearest banking institution decreased by 3.6 kms among Treatment farmers, and by 2.6 kms among farmers in the Control category.

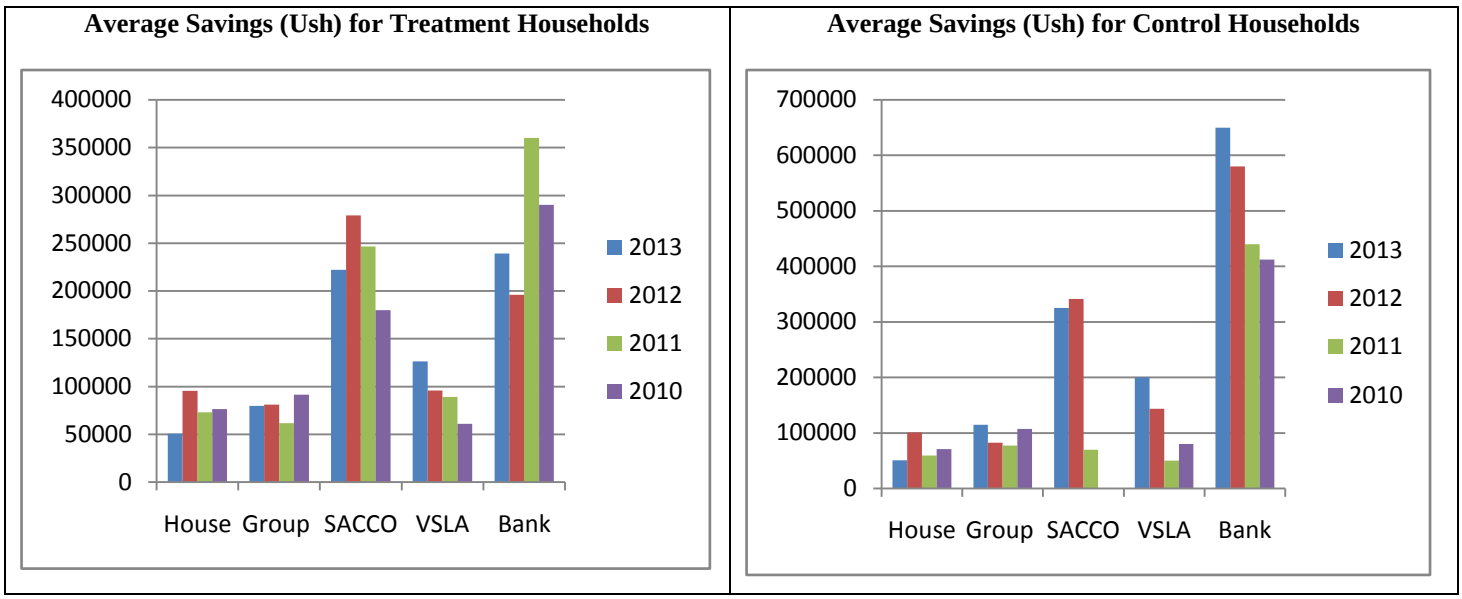
Figure 11: Trends in the Use of Different Means of Saving among Beans Farmers



The percentage of Treatment farmers saving money individually in their homes didn't change much between 2010 and 2012 but increased by 12 percentage points in 2013. In the Control category, however, the proportion of farmers saving money in their homes increased by 20 percentage points between 2010 and 2013. Among Treatment farmers, the proportion saving with institutions (VSLAs, SACCOs and Groups) increased steadily between 2010 and 2013. The proportion of Treatment farmers saving with banks was constant between 2010 and 2012 but increased by 5 percentage points in 2013. Among the Control farmers, the proportion saving with institutions (VSLAs, SACCOs and Groups) also increased but not as

steadily and rapidly as in the Treatment category. This suggests that intervention by aBi Trust in financial service delivery contributed to the rapid growth in the propotion of Treatment farmers saving with VSLA and SACCOs. The proportion of Control farmers saving with banks remained below the 10% mark during this period except in 2012 when it rose sligthly to 10%.

Figure 12: Trends in Values of Savings among Beans Farmers



Between 2010 and 2013, the average amount of money saved with VSLAs and SACCOs increased among both Treatment and Control farmers, except in 2013 when it dropped among Treatment farmers saving with SACCOs. The amount of money saved with Banks steadily increased between 2010 and 2013 among Control farmers but was erratic among Treatment farmers. However, for the Treatment and Control farmers saving with groups, the amount of money saved didn't change much and remained below the Ush 100,000 mark, except in 2013 when it rose to Ush 114,980 among Control farmers. In both farmer categories, the amount of money saved at home also changed erratically and remained below the Ush 100,000 mark, except in 2012 when it rose to Ush 100,750 among Control farmers.

6.3.9. Status of Performance Indicators for the Beans Value Chain in 2012 and 2013

The 2012 annual report shows that 46.8% of the Treatment farmers in the beans value chain adopted the recommended practices. The AI study findings, however, show that significantly higher percentages of beneficiary farmers applied key practices in 2013, which include use of improved beans seed (88.3%), correct spacing (66.7%) and seed rate (73.3%). For fertilizer and manure application as well as the use of pest and disease control, however, the AI respective figures (11.7%, 35% and 23.3%, respectively) are much lower than the

46.8% reported in the 2012 Annual Report. The IA study report figures on acreage, average income per farmer, sales price and yield are also lower than those of the 2012 Annual report by 0.09acres, Ush 506,839, Ush 36/kg, and 222kg/acre, respectively. With the exception of adoption of improved beans seed and use of correct spacing and seed-rate, the AI report shows deterioration in all other indicators (fertilizer use, disease and pest control, acreage, income, yield and prices) since 2012. The fact that 88.3% of beans Treatment farmers based their interview responses on the poor-performing 2013A season may partly explain the deterioration in these performance indicators. However, poor memory and difficulty of accurately estimating quantitative indicators such as output and yield also contributed to the disparity between reported figures in the IA Report and the 2012 Annual Report.

6.4 Maize

6.4.1 General Characteristics of the Sampled Maize Farmers

A total of 120 maize farmers (78 Treatment and 42 Control) from the sub-counties of Busimbi and Maanyi in Mityana district; Makuutu and Namungalwe in Iganga district; Pakanyi and Bwijanga in Masindi district; and Kigumba and Kiryandongo in Kiryandongo district were sampled for participation in this study. The Treatment farmers are members of District Farmers Associations (Mubende, Masindi and Iganga)—the IPs of aBi Trust-supported interventions in the maize value chain.

Table 40: Characteristics of the Maize Farmers/Household Heads and their households

Variable	Entire Sample N=120	Treatment (N=78)	Control (N=42)
% Male Farmers/Headed-Households	60.00	53.85	71.43
Main Occupation of Farmer/HH Head (% HHds/Farmers Reporting….)			
Production of crops	85.00	84.62	85.71
Trading	3.33	5.13	0.00
Average age (years) of Farmer/HH Head	42.58 (12.75)	44.26 (12.71)	39.48 (12.38)
Highest school grade completed by Farmer/HH Head	5.6 (4.33)	6.23 (4.32)	4.31 (4.12)
Married	80.00	79.49	80.95
Single	4.17	5.13	2.38
Divorced	8.33	6.41	11.90
Widowed	7.50	8.97	4.76
Average family size	6.66 (2.95)	7.04 (3.03)	5.95 (2.69)
Dependency Ratio	0.67 (0.44)	0.55 (0.33)	0.88 (0.53)

More than half (60%) of the sampled households/farmers are male-headed, but the proportion of male-headed households is significantly higher among Control (71.4%) than Treatment (53.9%) farmers. Treatment farmers are significantly older (44 years) and more educated (6.2 years of schooling) than their cohorts in the Control group (39 years of age and 4.3 years of schooling). The main occupation for most the sampled households/farmers (85%) is crop farming, and there is no significant difference across the two farmer categories. The average household has 6.7 people, with Treatment farmers having slightly bigger households (7 people) than those in the Control group (6 people); but the dependency ratio (No. of productive/No. of unproductive family members) is significantly higher in the Control (0.88) than the Treatment (0.55) group.

6.4.2 Asset Accumulation

Both Treatment and Control households accumulated farm, transport, communication and livestock assets during the project period (2011-2013); but the Treatment households performed better than those in the Control category, with the exception of communication equipment.

Table 41: Household Asset Endowment in 2010 (Before Intervention) and 2013

Variable	Treatment		Control		Attributable Changes (DID)
	Now(2013)	*2010*	*Now(2013)*	*2010*	
Total value of Farm Equipment (Ush)	150,789.7 (126,699)	78,796.1 (60,110.2)	92,509.5 (53,805.3)	42,020.2 (36,847.6)	21,504.3
Total value of Transport Equipment (Ush)	219,836.3 (82,127.7)	117,442.6 (83,497.1)	199,161.5 (41,829.2)	132,803 (72,137.4)	36,035.2
Total value of Communication Equipment (TV, Radio, Mobile Phone) (Ush)	233,254.1 (63,293.6)	101,720.6 (89,466.2)	231,370.9 (47,586.9)	75,914.8 (58,241.5)	-23,922.6
Total value of Livestock (Ush)	1,120,433 (819,118.3)	680,454.8 (440,751.4)	803,017.6 (447,838.9)	698,800 (321,221)	335,760.6

6.4.3. Job Creation at the Household/Farmer Level

Unlike beans, none of the sampled maize farmers employed farm workers on permanent terms. On average, the number of short-term employees working with both the Treatment and Control farmers increased by one person between 2010 and 2013; but the annual wage-bill for farmers in both categories decreased during this period, with that of Control farmers decreasing by a greater magnitude. This is because of the reduction in number of months in a year that the farmers used short-term employees. In terms of Fulltime Equivalents of the short-term jobs, Treatment farmers created more FTE jobs (44.25) than their cohorts in the Control group (7.125).

Table 42: Number of Farm Empoyees and Expenditure on Labor in 2010 and 2013

	Treatment		Control		Attributable Changes (DID)
	2013	**2010**	**2013**	**2010**	
Number of Temporary/short-term workers currently employed	4.48 (3.47)	3.45 (1.56)	4.94 (2.82)	3.99 (1.39)	0.08
Number of Months the farmer uses Temporary/short-term workers	2.8 (1.69)	3 (2.21)	2.2 (1.24)	4 (3.27)	1.6
Additional Fulltime Equivalent (FTE) Jobs Created		44.25		7.125	37.125
Total annual payment to Temporary/short-term workers **(Ush)**	218,826.6 (163,799.9)	227,526.4 (103,625.1)	156,872 (117,991.8)	272,065.7 (109,342.3)	106,493.9

6.4.4. Production and Sales of Maize in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

Among Treatment farmers, the average number of maize plots planted in a season increased by a greater magnitude (0.3) than in the Control category (0.1) after aBi Trust-supported interventions (2011-2013). The average area allocated to maize also increased in both farmer categories by o.4 acres in the Treatment group and by 0.2 acres among the Control farmers. This is also reflected in the value of maize seed planted, which increased by a greater magnitude in the Treatment group (Ush 14,868) than the Control group (Ush 1,212).

Table 43: Land Allocation and Input Use in Maize Production

	Treatment	Control	Attributable

	2011-2013	*2010&B4*	*2011-2013*	*2010&B4*	**Changes (DID)**
Separate plots/gardens of maize grown	1.64 (0.80)	1.35 (0.66)	1.36 (0.63)	1.26 (0.55)	0.19
Total land area (acres) planted to maize	2.11 (1.51)	1.71 (1.29)	1.52 (1.18)	1.32 (1.27)	0.2
Total quantity of maize seed planted (kgs)	15.8652 (10.12)	13.72 (9.57)	12.28 (9.41)	12.24 (11.25)	2.1
Total Value of maize seed planted (Ush)	43709.88 (32632.71)	28842.18 (26046.53)	26264.04 (20976.02)	25051.73 (22708.13)	13655.4
Total quantity of organic inputs applied (kg)	714.00 (532.43)	481.00 (293.13)	400.00 (115.47) (N=4)	700 (N=1)	-
Total value of organic inputs applied (Ush)	70000 (40000)	38100 (17372.39)	45000.00 (28867.51) (N=4)	65000 (N=1)	-
Total quantity of main fertilizer applied (kg)	10.80 (6.66)	12.75 (10.37)	8.6 (12.1) (N=5)	3.0 (2.83) (N=2)	-
Total value of main fertilizer applied (Ush)	37452.91 (20993.86)	35675.44 (25874.6)	16280 (9331.2) (N=5)	5500 (3535.5) (N=2)	-
Total Cost of pesticides applied (Ush)	19857.14 (16943.83)	13666.67 (12436.51)	59555.56 (42944.75) (N=6)	36500 (33201.41) (N=4)	-
Total Cost of Herbicides applied (Ush)	37952.49 (20375.13)	22107.84 (17309.09)	31770 (18520.11)	18000 (9092.12)	2074.7
Main Source of Seed (% HHds/Farmers Reporting….)					
Own seed	37.01	34.23	37.04	42.00	7.74
Input trader	45.67	41.44	55.56	50.00	-1.33
NGO	3.15	3.60	0.00	0.00	-0.45
District or Lower-Level Farmers organization	4.72	9.01	0.00	0.00	-4.29
Market vendor/ local market	3.15	4.50	1.85	2.00	-1.20
Fellow farmer	3.94	5.41	5.56	6.00	-1.03
Perceived quality of Seed (% HHds/Farmers Reporting….)					
Very good	39.20	42.20	26.42	26.00	-3.42
Good	48.80	46.79	64.15	60.00	-2.14
Poor	12.00	11.01	9.43	14.00	5.56
Main Source of Fertilizer (% HHds/Farmers Reporting….)					
Input trader,	68.18	57.14	60.00	77.78	28.82
NGO	4.55	9.52	0.00	0.00	-4.97
District or Lower-Level Farmers organization	4.55	9.52	0.00	0.00	-4.97
Market vendor	0.00	4.76	0.00	0.00	-4.76
Fellow farmer	13.64	14.29	40.00	22.22	-18.43
Perceived quality of Fertilizer (% HHds/Farmers Reporting….)					
Very good	73.08	68.18	40.00	55.56	20.46
Good	26.92	31.82	60.00	44.44	-20.46

Most farmers (both Treatment and Control) sourced seed from input traders both before and after aBi Trust-supported interventions, and the practice of sourcing seed from input traders appears to have increased after intervention by aBi Trust; while that of using own (farmer-saved) seed declined among Control farmers but increased in the Treatment group. More than one third of the Treatment farmers and about one quarters of their cohorts in the Control group perceived the quality of the maize seed they planted to be very good, and a much bigger proportion (between half and two thirds) perceived the seed quality to be good.

Fewer farmers than those who used purchased seed also used soil fertility enhancing inputs; but the quantity and value of organic inputs applied increased significantly during the

intervention period (2011-2013) among Treatment farmers, while the quantity of chemical fertilizers applied declined marginally (by 2kgs) in the Treatment group. In the Control category, the number of farmers who used organic fertilizers increased from 1 before intervention (2010 and before) to 4 after intervention (2011-2013); while the number of farmers who used chemical fertilizers increased from 2 before intervention (2010 and before) to 5 after intervention (2011-2013). A similar trend is observed for pesticides. Because of the small number of Control farmers using organic and chemical fertilizer as well as pesticide, the computed means are not reliable and have, therefore, not been used to estimate the change in use of fertilizer and pesticide attributed to aBi Trust intervention. Similar to maize seed, most farmers sourced fertilizer from input traders—the other sources being fellow farmers, NGOs and Farmers' Organizations. The majority of those who used chemical fertilizer perceived the quality to be very good, although the proportion of Control farmers perceiving the quality to be very good declined from 55.6% in 2010 or before to 40% between 2011 and 2013; while that of Treatment farmers increased from 68% to 73%.

The average quantity of maize harvested increased by just over 11% among Treatment farmers (from 1,158kgs before intervention to 1,289kgs after intervention) and by a smaller magnitude (9.8%) in the Control group. On average, the increase in maize output attributable to aBi Trust support in a typical household is 45 kgs. Maize sales also increased by a greater magnitude among Treatment (10.7%) than Control farmers (0.3%); and the average increase in maize sales attributed to aBi Trust support for a typical farmer is 92kgs. Treatment farmers reported an increase in the price at which they sell maize of Ush 94/kg between 2010 and 2013, while those in the Control category reported a 78 Ush/kg increment in price. The average sales price received by Treatment farmers was higher than that of the Control group by about Ush 26/kg before aBi Trust-supported interventions, but the price gap grew to Ush 42/kg after aBi Trust interventions between 2011 and 2013. The percentage of Treatment farmers selling maize collectively increased by 3.4 percentage points after aBi Trust-supported interventions, while that of farmers in the Control group remained fairly constant.

Table 44: Harvests and Sales of Maize

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Total quantity of maize harvested (kgs)	1289.08 (852.93)	1157.95 (687.26)	965.92 (645.02)	880.18 (637.95)	45.39
Total quantity of maize sold (kgs)	981.69 (682.44)	886.56 (689.50)	878.34 (517.31)	875.42 (477.64)	92.2
Selling Price (Ush/kg)	568.71 (300.89)	474.95 (294.43)	526.99 (106.09)	448.57 (122.77)	15.34
Main Mode of Sale (% HHds/Farmers Reporting….)					
Collectively through group	7.69	4.26	3.23	2.94	3.14
Individually	92.31	95.74	96.77	97.06	-3.14
Main Buyer Type (% HHds/Farmers Reporting….)					

1=Consumer	0.96	2.13	0.00	2.94	1.77
2=Trader,	86.54	87.23	100.00	94.12	-6.57
3=NGO	2.88	3.19	0.00	2.94	2.63
4=Institution	0.96	1.06	0.00	0.00	-0.10
5=Exporter	0.96	0.00	0.00	0.00	0.96
6=Processor	6.73	5.32	0.00	0.00	1.41
Average distance to main buyer (km)	1.17 (0.50)	3.25 (1.50)	1.79 (0.74)	1.77 (0.74)	-2.10
Mode of transport to point of sale (% HHds/Farmers Reporting….)					
2=bicycle,	28.57	0.00	80.00	60.00	8.57
3=motorbike,	57.14	100.00	0.00	0.00	-42.86
4=Vehicle,	0.00	0.00	20.00	40.00	20.00
Average Transport Cost (Ush)	12,500 (10,246.95)	17,500 (10,408.33)	9,000 (8,625.54)	5,166.67 (3,829.71)	-8833.33
Who made sales decisions (when and how much to sell)? (% HHds/Farmers Reporting….)					
1=Husband;	44.00	44.57	25.81	44.12	17.74
2=Wife;	13.00	13.04	9.68	2.94	-6.78
3=Both Husband& Wife;	43.00	42.39	64.52	52.94	-10.97
Who made decisions on the use of revenue from this crop? (% HHds/Farmers Reporting….)					
1=Husband;	42.57	42.39	22.58	41.18	18.78
2=Wife;	11.88	11.96	9.68	2.94	-6.82
3=Both Husband& Wife;	45.54	45.65	67.74	55.88	-11.97
How was the revenue from this crop used? (List the top three) (% HHds/Farmers Reporting….)					
1=Consumption;	21.78	20.65	23.33	27.27	5.07
2=Investment in Agricultural enterprise	7.92	7.61	13.33	6.06	-6.96
3=Investment in non-agricultural enterprise;	5.94	3.26	10.00	6.06	-1.26
4=Medical expenses;	1.98	7.61	6.67	15.15	2.85
5=Household durables;	5.94	8.70	6.67	12.12	2.69

Maize yield (kgs/Acre) increased among Treatment farmers by 9.5% from 928 kg/Acre in 2010 or before to 1016 kg/Acre after aBi Trust-supported interventions compared to a 5% increase (from 894 kg/Acre to 939 kg/Acre) in the Control group. Thus, the increase in maize yield attributable to aBi Trust support is 43 kg/Acre. On the other hand, the total cost of production in Ush/kg decreased in both farmer categories but by a higher magnitude among Treatment than Control farmers, as did the input costs per kilogram (Ush/kg) although the latter declined by a greater magnitude in the Control group.

Table 45: Costs and Returns to Maize Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Productivity of maize (Kg/Acre)	1016.28 (474.61)	928.4359 (520.81)	938.82 (549.54)	893.95 (455.04)	43.0
Input Costs per Kg (Ush/Kg)	25.38 (20.04)	27.22 (19.66)	21.59 (15.11)	24.74 (23.20)	1.3
Input Costs per Acre(Ush/Acre)	26111.94 (31427.58)	23965.38 (18798.56)	22956.77 (20232.39)	21192.16 (19507.31)	381.9
Input Costs per Farmer (Ush/Farmer)	55830.18 (43455.68)	42825.47 (34054.84)	51572.57 (39658.42)	38439.42 (30729.55)	-128.44
Hired Labor costs of maize Production per Kg (Ush/Kg)	85.87 (76.44)	105.54 (79.96)	109.15 (125.22)	143.25 (93.64)	14.4
Hired Labor costs of maize Production per Acre (Ush/Acre)	83083.54 (63501.1)	73572.05 (62851.14)	63732.38 (51302.68)	83622.49 (48811.01)	29,401.6
Hired Labor costs per Farmer (Ush/Farmer)	151747.2 (112932.7)	118711.1 (87976.29)	118699.9 (97448.73)	157733.3 (117427.1)	72069.5
Total Cost of Production per Kg (Ush/Kg)	81.22 (53.99)	104.18 (67.11)	88.71 (62.04)	94.41 (65.51)	-17.3

Total Cost of Production per Acre (Ush/Acre)	89192.9 (59879.18)	90100.23 (55371.62)	91281.02 (59818.6)	80547.03 (59698.75)	-11,641.3
Total Cost of Production per Farmer (Ush/Farmer)	183469.1 (121935.2)	130214 (103940.9)	135721.9 (101159.8)	105568.2 101774.7	23101.4
Gross Margin per farmer (Ush)	611528.9 (292717)	514269.4 (196915.9)	453407.9 (224199.3)	395340.6 (130129.9)	39192.2
Gross Margin per acre (Ush)	438110.7 (241205.6)	299982.7 (217609.8)	367750.3 (231993.5)	303229.4 (253776.7)	73,607.1
% of Treatment Farmers with positive Gross Margins			**49.37**		
Average income growth for Treatment Farmers with positive Gross Margins			**526089.8**	**(330355.9)**	

The hired labor costs per kilogram of maize and per farmer also declined in both farmer categories but by a greater magnitude in the Control group; while hired labor costs per Acre increased in the Treatment category but declined among Control farmers. The total costs of production per Acre increased substantially in the Control group (by 13%) but declined marginally (by 1%) in the Treatment group; while the total production costs per farmer increased in both categories but by a greater magnitude in the Treatment group, leading to an average increase in total production costs per farmer of Ush 23,101.

Based on these findings, it is evident that aBi Trust-supported interventions made a positive contribution to the output, productivity and sales of maize; and thus to the reduction in per unit (kilogram) production costs because of the attributable increase in yield. Income from maize production (measured by Gross Margin per Acre and per farmer) increased in both farmer categories but by a greater magnitude in the Treatment than the Control group. During the intervention period, maize income in the Treatment group increased by Ush 138,128 per Acre (46%) and Ush 97,260 per farmer (19%); while in the Control group, it increased by Ushs 64,521 per Acre (21%) and Ushs 58,607 per farmer (15%). The increase in maize income attributable to aBi Trust support is estimated at Ush 73,607 per Acre and Ush 39,192 per farmer. The study findings further show that half (49.4%) of the Treatment farmers (N=78) registered positive income growth following intervention by aBi Trust, estimated at an average of Ush 526,090 per farmer.

6.4.5 Training and Application of Improved Maize Technologies and Agronomic practices in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

The proportion of Treatment farmers who received training on improved maize varieties increased from 39.7% in 2010 or before to 78.2% between 2011 and 2013—an increase of 38.5 percentage points compared to the 4.7 percentage point increase in the Control group during the same period. Thus, the change in prevalence of training on the use of improved maize seed attributable to aBi Trust support is 33.7 percentage points. The change in prevalence of training in soil fertility improvement attributed to aBi Trust support is 15.6 percentage points for Compost/Manure use; 23.7 percentage points for use of

chemical fertilizer and leguminous cover crops; 10.6 percentage points for animal manure use; and 18.1 percentage points for leguminous cover crops.

Higher proportions of Treatment farmers reported receiving training in crop husbandry practices, such as timely planting and weeding, crop rotation, line planting and spacing and the changes in prevalence of training in these areas attributed to aBi Trust-supported interventions are much higher (34-48 percentage points). Attributable changes to aBi Trust supported interventions in training are however much smaller or non-existent in the area soil and water conservation practices (mulching, grass bands, trenches, trash lines, etc.).

Table 46: Prevalence of Training on Improved Maize Technologies and Agronomic practices.

Type of technology/practices	% HHs/Farmers Trained to Use 2011-1023		% HHs/Farmers Trained to use in 2010 or before		Attributable Changes (DID)
	Treatment (N=78)	Control (N=42)	Treatment (N=78)	Control (N=42)	
Improved varieties/seedlings					
01 Improved seed for Maize	78.2	9.5	39.7	4.8	33.7
Soil fertility improvement					
01 Chemical Fertilisers	59.0	7.1	26.9	2.4	27.3
02 Compost/ Manure	37.2	4.8	19.2	2.4	15.6
03 Leguminous cover crop	28.2	4.8	7.7	2.4	18.1
04 Animal manure	42.3	7.1	26.9	2.4	10.6
Crop husbandry practices					
01 Timely planting	70.5	4.8	34.6	2.4	33.5
02 Timely weeding	73.1	4.8	33.3	2.4	37.4
03 Crop rotation	67.9	4.8	32.1	2.4	33.5
04 Chemical spraying	70.5	7.1	29.5	4.8	38.6
05 Line planting	78.2	4.8	32.1	4.8	46.2
06 Spacing	83.3	4.8	35.9	4.8	47.4
07 Seed rate	73.1	4.8	23.1	2.4	47.6
Soil and water conservation					
01 Grass bands	6.4	0.0	5.1	0.0	1.3
02 Trenches	23.1	0.0	10.3	2.4	15.2
03 Trash lines	9.0	0.0	6.4	0.0	2.6
04 Mulching	26.9	0.0	11.5	0.0	15.4
05 Hedge rows	2.6	0.0	3.8	0.0	-1.3
06 Contour planting	5.1	0.0	0.0	0.0	5.1
07 Soil conservation basins	12.8	0.0	9.0	0.0	3.8
Post harvest handling					
1 Use of Improved Storage facilities	53.8	2.4	28.2	2.4	25.6
2 Use of Tarpaulins for drying	66.7	2.4	37.2	2.4	29.5
3 Use of Collapsible driers	11.5	0.0	6.4	0.0	5.1
4 Use of drying shade/platform	15.4	2.4	3.8	0.0	9.2
5 Use of drying and grading racks (works like sieve)	7.7	0.0	3.8	0.0	3.8
6 Storage pest control	33.3	2.4	10.3	0.0	20.7
7 Threshing equipment	16.7	0.0	11.5	0.0	5.1
8 Use of Shellers (Maize&Gnuts)	37.2	2.4	12.8	0.0	22.0
11 Screening or Sieving	11.5	0.0	1.3	0.0	10.3
13 Use of Aflatoxin Machines	7.7	0.0	1.3	0.0	6.4
14 Use of weighing scales	50.0	4.8	23.1	4.8	26.9
15 Quality Mgt Standards	33.3	0.0	12.8	2.4	22.9
16 Certification	10.3	0.0	6.4	0.0	3.8
17 Training and mentoring in PHH	50.0	0.0	14.1	2.4	38.3
Farming as a business					

1 Collective Marketing	66.7	0.0	23.1	2.4	46.0
2 Record keeping	47.4	0.0	16.7	2.4	33.2
3 Business planning	28.2	0.0	9.0	2.4	21.6
4 Information boards	16.7	0.0	3.8	0.0	12.8
5 Sms mkt information service	7.7	0.0	1.3	0.0	6.4
Gender for growth					
1. Training on gender mainstreaming	46.2	0.0	16.7	2.4	31.9
2. Entrepreneurship training	16.7	0.0	6.4	2.4	12.6
3. Training in VSLA ***(Village Savings and Loans Association)***	74.4	4.8	30.8	2.4	41.2
Financial service Dev't					
1.Training on Savings & Loans	59.0	4.8	25.6	2.4	31.0

For post-harvest handling practices, the attributable changes to aBi Trust supported training is moderate in the use of tarpaulins for drying (29.5 percentage points); weighing scales (26.9 percentage points); storage and pest Control (20.7 percentage points); use of shellers (22 percentage points); quality management standards (22.9 percentage points); drying training and mentoring in PHH (38.3 percentage points); and use of improved storage facilities such as cribs and granaries (25.6 percentage points). For other PHH practices the attributable change ranges from 10 percentage points and below.

The proportion of Treatment farmers who received training on collective marketing of maize increased from 23.1% in 2010 or before to 66.7% between 2011 and 2013—an increase of 43.6 percentage points compared to the 2.4 percentage point decline in the Control group during the same period. Thus, the attributable change to aBi Trust-supported training in collective marketing is 46 percentage points. The increase in prevalence of training in farming as a business skills and practices attributed to aBi Trust support is 33.2 percentage points for record-keeping; 21.6 percentage points for business planning; 12.8 percentage points for use of information boards; and 6.4 percentage points for sms market information services.

Under the Gender for Growth (G4G) intervention component, 42.6% of farmers in the Treatment category received training in gender mainstreaming between 2011 and 2013; 16.7% received entrepreneurship training; while three quarters (74.4%) received training in village savings and loans associations (VSLA). The increase in prevalence of training in these areas attributed to aBi Trust support is 31.9 percentage points for gender mainstreaming; 41.2 percentage points for VSLA; and 12.6 percentage points for entrepreneurship training. The proportion of Treatment farmers who received training on savings and loans under the financial service development (FSD) component increased from 25.6% in 2010 or before to 59% between 2011 and 2013; and the attributable change to aBi Trust support towards training in this area is 31 percentage points.

The majority of Treatment farmers who received training in the above-listed areas between 2011 and 2013 were trained by their District Farmers Associations (Mubende, Masindi and Iganga)—the IPs of aBi Trust-supported interventions in the maize value chain). A large proportion of the Treatment farmers also reported NARO and to a lower extent NAADS as the government agencies that trained them on improved maize technologies and practices.

Table 47: Institutions Involved in Farmer Training on Maize Technologies and Practices

Type of technology/practice	% HHs reporting DFA extension staff		% HHs reporting NAADS staff		% HHs reporting Other NGO		% HHs reporting NARO	
	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control
Improved varieties of seeds/seedlings								
01 Improved seed for Maize	36.1	25.0	4.9	0.0	1.6	0.0	29.5	25.0
Soil fertility improvement								
01 Chemical Fertilisers	43.5	0.0	6.5	33.3	0.0	0.0	21.7	0.0
02 Compost/ Manure	41.4	50.0	10.3	0.0	0.0	0.0	17.2	0.0
03 Leguminous cover crop	27.3	50.0	9.1	0.0	0.0	0.0	31.8	0.0
04 Animal manure	42.4	33.3	9.1	0.0	0.0	0.0	18.2	0.0
Crop husbandry practices								
01 Timely planting	34.5	50.0	7.3	0.0	3.6	0.0	30.9	0.0
02 Timely weeding	33.3	50.0	7.0	0.0	1.8	0.0	33.3	0.0
03 Crop rotation	30.2	50.0	7.5	0.0	3.8	0.0	35.8	0.0
04 Chemical spraying	34.5	33.3	10.9	33.3	0.0	0.0	29.1	0.0
05 Line planting	27.9	50.0	8.2	0.0	3.3	0.0	29.5	0.0
06 Spacing	32.3	50.0	7.7	0.0	1.5	0.0	29.2	0.0
07 Seed rate	31.6	50.0	7.0	0.0	0.0	0.0	33.3	0.0
Soil and water conservation								
01 Grass bands	20.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0
02 Trenches	27.8	0.0	5.6	0.0	0.0	0.0	44.4	0.0
03 Trash lines	28.6	0.0	0.0	0.0	0.0	0.0	42.9	0.0
04 Mulching	38.1	0.0	4.8	0.0	0.0	0.0	23.8	0.0
05 Hedge rows	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
06 Contour planting	25.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0
07 Soil conservation basins	30.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0
Post harvest handling								
1 Use of Improved Storage facility such as Cribs, Granaries	33.3	0.0	4.8	0.0	2.4	0.0	31.0	0.0
2 Use of Tarpaulins for drying	36.5	0.0	3.8	0.0	1.9	0.0	26.9	0.0
3 Use of Collapsible driers	33.3	0.0	0.0	0.0	0.0	0.0	33.3	0.0
4 Use of drying shade/platform	58.3	0.0	0.0	0.0	0.0	0.0	33.3	0.0
5 Use of drying and grading racks	50.0	0.0	16.7	0.0	0.0	0.0	33.3	0.0
6 Storage pest control	26.9	0.0	3.8	0.0	0.0	0.0	38.5	0.0
7 Threshing equipment	23.1	0.0	0.0	0.0	0.0	0.0	30.8	0.0
8 Use of Shellers (Maize&G.nuts)	24.1	0.0	6.9	0.0	0.0	0.0	41.4	0.0
11 Screening or Sieving	11.1	0.0	0.0	0.0	0.0	0.0	44.4	0.0
13 Use of Aflatoxin Machines	16.7	0.0	0.0	0.0	0.0	0.0	66.7	0.0
14 Use of weighing scales	28.2	0.0	5.1	0.0	2.6	0.0	43.6	0.0
15 Quality Mgt Standards	34.6	0.0	7.7	0.0	3.8	0.0	23.1	0.0
16 Certification	25.0	0.0	12.5	0.0	0.0	0.0	12.5	0.0

17 Training and mentoring in PHH	30.8	0.0	5.1	0.0	0.0	0.0	33.3	0.0
Farming as a business								
1 Collective Marketing	30.8	0.0	7.7	0.0	0.0	0.0	26.9	0.0
2 Record keeping	24.3	0.0	5.4	0.0	0.0	0.0	40.5	0.0
3 Business planning	27.3	0.0	0.0	0.0	0.0	0.0	50.0	0.0
4 Information boards	46.2	0.0	7.7	0.0	0.0	0.0	30.8	0.0
5 Sms mkt information service	33.3	0.0	0.0	0.0	0.0	0.0	50.0	0.0
Gender for growth								
1. Training on gender mainstreaming	38.9	0.0	0.0	0.0	11.1	0.0	41.7	0.0
2. Entrepreneurship training	23.1	0.0	0.0	0.0	0.0	0.0	69.2	0.0
3. Training in VSLA ***(Village Savings and Loans Association)***	29.3	0.0	0.0	0.0	6.9	50.0	32.8	0.0
Financial service dev't								
1.Training on Savings & Loans	23.9	0.0	0.0	0.0	6.5	0.0	41.3	0.0

Surprisingly, for various technologies promoted by aBi Trust-supported IPs and government agencies, more farmers (both Treatment and Control) reported using these technologies and practices than those who reported receiving training in the same. Such technologies and practices include use of improved maize seed, timely planting and weeding, crop rotation, line planting and spacing, seed rate, and use of weighing scales. As a result, the estimated changes in percentage of farmers applying these technologies and practices between 2011 and 2013 are much lower than the changes in percentage of farmers who received training in these areas as a result of aBi Trust-supported intervention. This could be explained by the possibility of several farmers not directly participating in the demonstrations and training sessions conducted by the IPs and other agencies, but later on picking the good practices and technologies from their neighbors through farmer-to-farmer extension. However, because the Control farmers didn't directly participate in the training, the resultant impact of their use of the promoted technologies is inferior to that of Treatment farmers in terms of production, yield, and per unit cost of producing maize.

Table 48: Application of Improved Maize Technologies and Agronomic Practices

Type of technology/practices	**% HHs/Farmers that applied in 2011-2013**		**% HHs/Farmers that applied in 2010 or before**		**Attributable Changes (DID)**
	Treatment	**Control**	**Treatment**	**Control**	
Improved varieties of seeds/seedlings					
01 Improved seed for maize	84.6	64.3	78.2	54.8	-3.1
Soil fertility improvement					
01 Chemical Fertilisers	30.8	9.5	12.8	7.1	15.6
02 Compost/ Manure	5.1	2.4	2.6	2.4	2.6
03 Leguminous cover crop	25.6	9.5	21.8	9.5	3.8
04 Animal manure	15.4	4.8	12.8	7.1	4.9
Crop husbandry practices					
01 Timely planting	92.3	81.0	89.7	69.0	-9.3
02 Timely weeding	94.9	81.0	92.3	71.4	-7.0

03 Crop rotation	83.3	81.0	80.8	73.8	-4.6
04 Chemical spraying	55.1	28.6	44.9	19.0	0.7
05 Line planting	91.0	78.6	82.1	69.0	-0.5
06 Spacing	94.9	73.8	87.2	64.3	-1.8
07 Seed rate	80.8	66.7	71.8	59.5	1.8
Soil and water conservation					
01 Grass bands	5.1	0.0	5.1	0.0	0.0
02 Trenches	19.2	9.5	12.8	9.5	6.4
03 Trash lines	6.4	2.4	5.1	2.4	1.3
04 Mulching	20.5	7.1	16.7	7.1	3.8
05 Hedge rows	3.8	2.4	3.8	2.4	0.0
06 Contour planting	1.3	0.0	0.0	0.0	1.3
07 Soil conservation basins	10.3	2.4	9.0	0.0	-1.1
Post harvest handling					
1 Use of Improved Storage facilities	24.4	16.7	17.9	14.3	4.0
2 Use of Tarpaulins for drying	66.7	14.3	52.6	35.7	35.5
4 Use of drying shade/platform	9.0	9.5	7.7	9.5	1.3
5 Use of drying &grading racks	1.3	0.0	1.3	0.0	0.0
6 Storage pest control	33.3	14.3	25.6	14.3	7.7
7 Threshing equipment	30.8	19.0	26.9	19.0	3.8
8 Use of Shellers (Maize &Gnuts)	48.7	23.8	25.6	19.0	18.3
11 Screening or Sieving	10.3	4.8	7.7	4.8	2.6
14 Use of weighing scales	84.6	83.3	85.9	76.2	-8.4
15 Quality Mgt Standards	34.6	11.9	25.6	11.9	9.0
16 Certification	6.4	0.0	1.3	0.0	5.1
17 Training and mentoring in PHH	43.6	11.9	29.5	11.9	14.1
Farming as business					
1 Collective Marketing	19.2	0.0	7.7	0.0	11.5
2 Record keeping	35.9	19.0	20.5	19.0	15.4
3 Business planning	20.5	9.5	12.8	9.5	7.7
4 Information boards	6.4	2.4	2.6	2.4	3.8
5 Sms mkt information service	3.8	0.0	0.0	0.0	3.8
Gender for growth					
1. Training on gender mainstreaming	44.9	9.5	35.9	9.5	9.0
2. Entrepreneurship training	15.4	2.4	10.3	2.4	5.1
3. Training in VSLA	74.4	21.4	29.5	7.1	30.6
Financial service dev't					
1.Training on Savings & Loans	56.4	7.1	25.6	2.4	26.0

For Households/farmers that did not apply the aBi Trust-supported technologies and practices in maize production, the major reasons cited include the technologies (particularly improved seed) being unavailable; difficult to use/apply or expensive, and lack of training or interest. Reasons for non-use of soil fertility improving practices include the perception that this is unncecessary (not required) because of the land being fertile.

Table 49: Reasons for Non-Application of Maize Technologies and Agronomic Practices

Reasons	Entire sample (%)	Treatment (%)	Control (%)
1= Not available	11.04	12.42	9.70
2=Difficult to make/apply	17.79	19.88	15.76
5= Not trained	10.12	11.18	9.09
6= Expensive	19.63	18.01	21.21

10=Not interested	13.19	11.18	15.15
11=Fertile land	10.74	13.04	8.48
13=Not required	3.68	5.59	1.82

6.4.6: Farmer Perceptions on Impact of Applied Maize Technologies and Practices

More than three quarters of the Treatment (81.8%) and Control (77.8%) farmers who used improved maize seed said it had a positive and large impact. Equally high proportions of farmers who applied timely planting and weeding, crop rotation, line planting and spacing, and recommended seed rate also reported a positive and large impact arising from the use of these practices. Among post-harvest handling practices and technologies, those with fairly large proportions of farmers reporting a large and positive impact from their use include the use of weighing scales (83.8% Treatment and 82.9% Control); use of tarpaulins for drying (65.4% Treatment and 16.7% Control); storage and pest Control (69.2% Treatment and 83.3% Control); use of drying shades or platforms (71.4% Treatment and 50% Control); use improved storage facilities (68.4% Treatment and 85.7% Control); and use of screening or sieving and threshing equipment (75% Treatment and 100% Control for both practices).

Under farming as a business, record keeping had the highest proportion of farmers reporting a positive and large impact (above 50% Treatment and 75-100% Control); with the rest of the practices having lower proportions of farmers who reported a positive and large impact. Gender for Growth practices also had fairly large proportions of farmers reporting a large and positive impact, with training in gender mainstreaming (74.3% Treatment and 100% Control) performing better than VSLA (37.9% Treatment and 22.2% Control) and entrepreneurship training (58.3% Treatment and 100% Control). Over one third of the farmers (38.6% Treatment and 33.3% Control) felt that training on savings and loans under the FSD component had a large and positive impact.

Table 50: Perceived Impact of the Applied Maize Technologies and Practices

Type of technology/practice	**% HHs reporting *Positive & Large***		**% HHs reporting *Positive but Small***		**% HHs reporting No Impact**	
	Treatment	**Control**	**Treatment**	**Control**	**Treatment**	**Control**
Improved varieties of seeds/seedlings						
01 Improved seed for maize	81.8	77.8	6.1	7.4	0.0	0.0
Soil fertility improvement						
01 Chemical Fertilisers	37.5	25.0	0.0	25.0	0.0	0.0
02 Compost/ Manure	50.0	100.0	0.0	0.0	0.0	0.0
03 Leguminous cover crop	40.0	0.0	25.0	75.0	10.0	0.0
04 Animal manure	50.0	100.0	16.7	0.0	0.0	0.0
Crop husbandry practices						
01 Timely planting	81.9	73.5	12.5	11.8	0.0	0.0
02 Timely weeding	81.1	76.5	13.5	11.8	0.0	0.0
03 Crop rotation	81.5	79.4	13.8	11.8	0.0	0.0
04 Chemical spraying	62.8	41.7	16.3	25.0	0.0	0.0
05 Line planting	73.2	69.7	16.9	18.2	0.0	0.0
06 Spacing	77.0	71.0	13.5	16.1	0.0	0.0

07 Seed rate	74.6	67.9	12.7	21.4	0.0	0.0
Soil water conservation						
01 Grass bands	100.0	0.0	0.0	0.0	0.0	0.0
02 Trenches	66.7	100.0	0.0	0.0	0.0	0.0
03 Trash lines	80.0	100.0	0.0	0.0	0.0	0.0
04 Mulching	75.0	100.0	6.3	0.0	0.0	0.0
05 Hedge rows	100.0	100.0	0.0	0.0	0.0	0.0
07 Soil conservation basins	87.5	0.0	0.0	0.0	0.0	0.0
Post harvest handling						
1 Use of Improved Storage facilities	68.4	85.7	0.0	0.0	0.0	0.0
2 Use of Tarpaulins for drying	65.4	16.7	3.8	16.7	1.9	0
4 Use of drying shade/platform	71.4	50.0	14.3	0.0	0.0	0.0
5 Use of drying and grading racks	100.0	0.0	0.0	0.0	0.0	0.0
6 Storage pest control	69.2	83.3	0.0	0.0	0.0	0.0
7 Threshing equipment	75.0	100.0	4.2	0.0	0.0	0.0
8 Use of Shellers (Maize & G.nuts)	42.1	60.0	5.3	10.0	0.0	0.0
11 Screening or Sieving	75.0	100.0	0.0	0.0	0.0	0.0
14 Use of weighing scales	83.3	82.9	4.5	2.9	6.1	5.7
15 Quality Mgt Standards	63.0	20.0	7.4	80.0	0.0	0.0
16 Certification	20.0	0.0	0.0	0.0	0.0	0.0
17 Training and mentoring in PHH	55.9	40.0	8.8	60.0	0.0	0.0
Farming as a business						
1 Collective Marketing	20.0	0.0	6.7	0.0	0.0	0.0
2 Record keeping	53.6	100.0	3.6	0.0	0.0	0.0
3 Business planning	56.3	75.0	6.3	0.0	0.0	0.0
4 Information boards	40.0	100.0	0.0	0.0	0.0	0.0
Gender for growth						
1. Training on gender mainstreaming	74.3	100.0	0.0	0.0	0.0	0.0
2. Entrepreneurship training	58.3	100.0	8.3	0.0	0.0	0.0
3. Training in VSLA ***(Village Savings and Loans Association)***	37.9	22.2	1.7	0.0	0.0	11.1
Financial service dev't						
1.Training on Savings & Loans	38.6	33.3	4.5	0.0	0.0	0.0

6.4.7: Participation in Maize Production and Marketing Farmer Groups

The percentage of farmers/households in organizations involved in the production and/or marketing of maize increased from 37.7% in 2010 to 96.1% in 2013, an increase of 59 percentage points. Only one farmer in the Control category (2.38%) claimed to belong to organizations involved in the production and/or marketing of maize. Based on the figures in Table 51 below, group production of maize is more popular than group marketing; and the proportion of Treatment farmers that participate in group production and marketing of maize decreased between 2010 and 2013. There is no collective (group) processing of maize, yet nearly half (43.5%) of the Treatment farmers participate in organizations whose main activities include the processing of other crops.

Table 51: Major Group Activities of Maize Producing and Marketing Groups

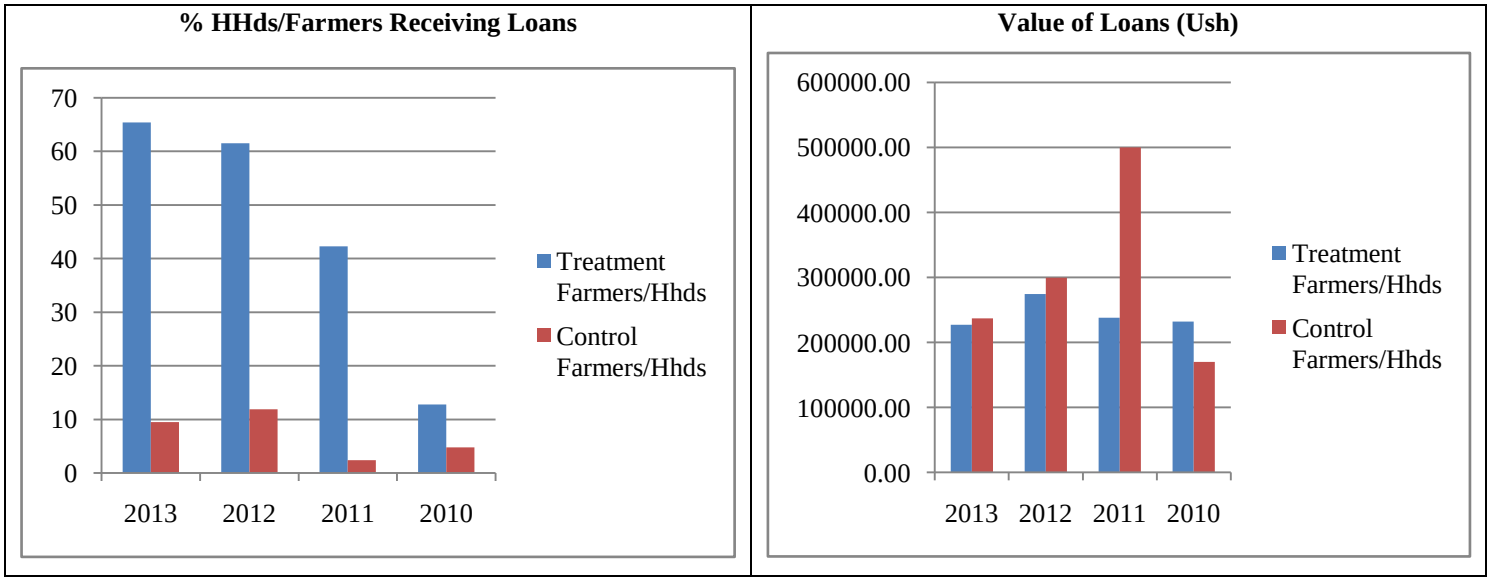
	Treatment		**Control**	
	2013	**2010**	**2013**	**2010**
8.1 & 8.2: % HHds/Farmers belonging to organization dealing in the production and/or marketing of maize	96.10	37.66	2.38	2.38
Main activities/enterprises that group members engage in collectively (% HHds/Farmers Reporting….)				

1=Production of maize	20.7	22.9	50.0	50.0
2=Production of ***other crop***	21.7	25.7	50.0	50.0
3=Marketing of maize	6.5	11.4	0.0	0.0
4=Marketing of ***other crop***	1.0	0.0	0.0	0.0
5=Processing of maize	0.0	0.0	0.0	0.0
6=Processing of ***other crop***	43.5	34.3	0.0	0.0

6.4.8. Financial Services (Credit and Savings) in Maize Production

The proportion of Treatment farmers receiving loans increased from 12.8% in 2010 to 65.4% in 2013—a percentage point increase of 52.6%; while loan seeking among farmers in the Control category increased by about 5 percentage points between 2010 and 2013. These results show a large improvement in loan-seeking behavior between 2010 and 2013, which is partly attributed to intervention in financial service delivery by aBi Trust. The average value of loans received by Treatment farmers ranged between Ush 225,000 and 270,000, but the range in the Control group was wider (between Ush 170,000 and 500,000) although only one Control farmer reported receiving a loan of Ush 500,000 in 2011.

Figure 13: Trends in Credit Access and Loan Values among Maize Farmers



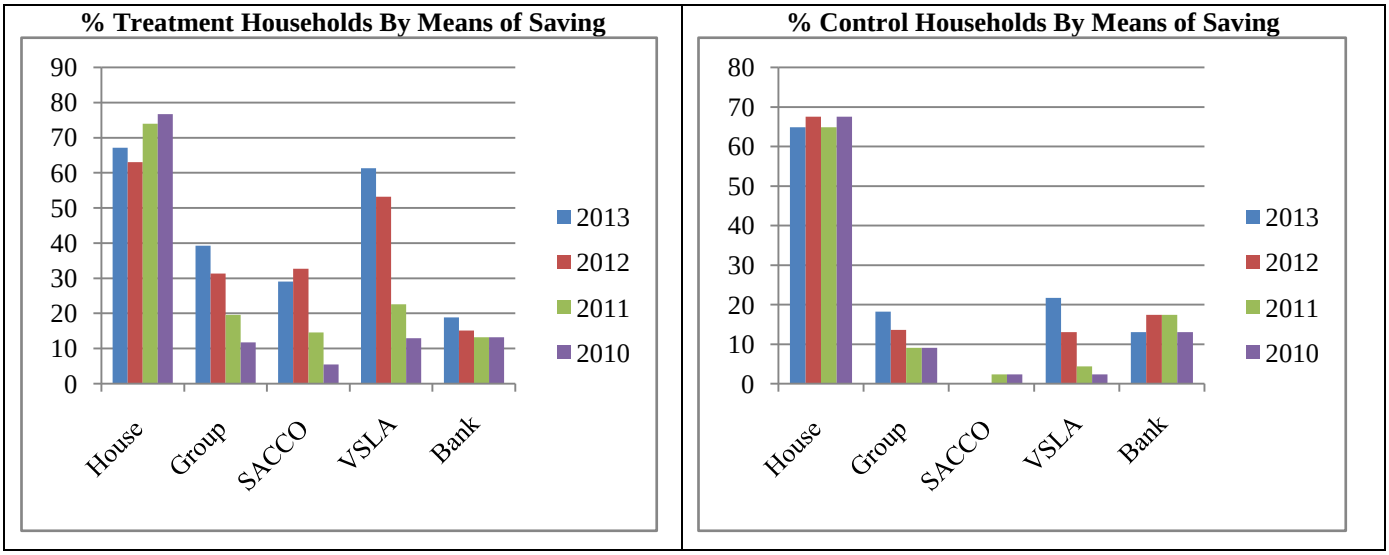
For those that acquired loans, the most commonly reported purpose was investment in agricultural and non-agricultural enterprises. Those who received loans for investing in agriculture mainly spent the money on purchasing seed and hiring labor for beans and maize production. The majority of farmers obtained loans from farmer groups/organizations and a few from the Hunger Project, commercial banks, relatives and friends. The impact of the acquired loans was reported to be major to moderate by the majority of the Treatment and Control farmers who acquired loans *(See Table SA41, Statistical Appendix for Maize).*

Most of the farmers who didn't acquire loans either felt they didn't need credit or credit services were not available. In general, there was a significant improvement in the

satisfaction/rating of credit services in the surveyed communities in terms services availability, interest rates charged, application procedures and stringency of the terms and conditions of the credit. The average distance from the homes of the sampled farmers to the nearest banking institution also decreased by close to 2.4 kms for both Treatment and Control farmers between 2010 and 2013, implying that financial services were brought closer to the farmers during this period—partly because of the intervention of aBi Trust in financial service delivery.

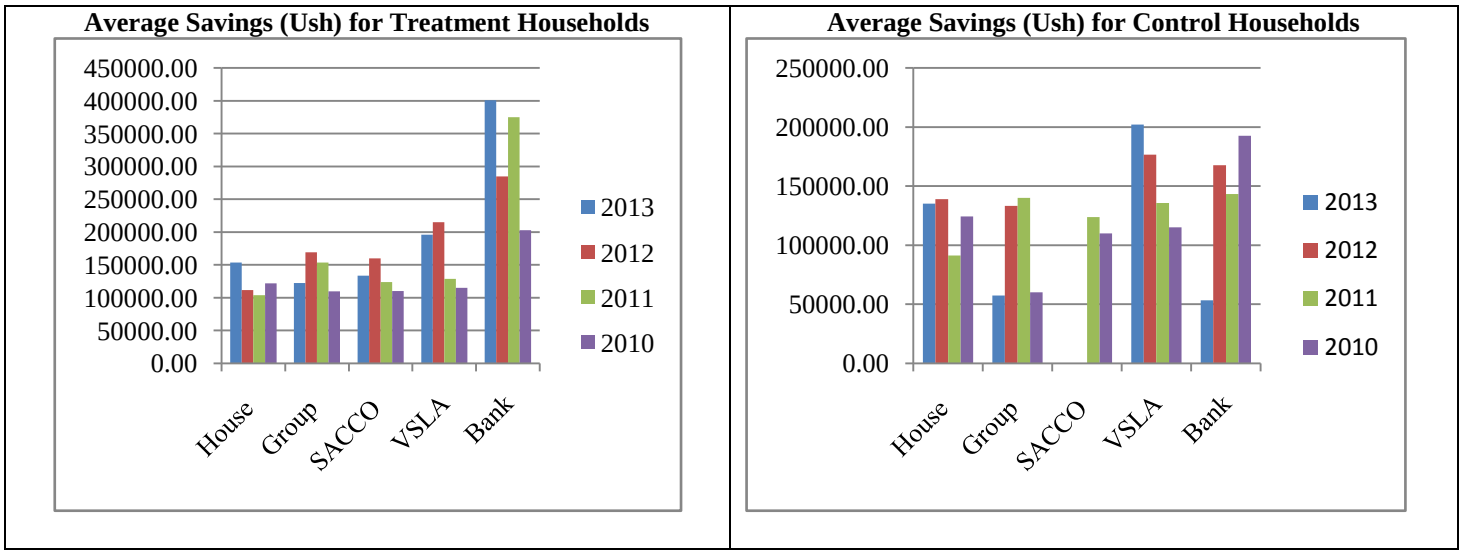
The percentage of Treatment farmers saving money in their homes reduced by about 10 percentage points between 2010 and 2013, that of Control farmers remained fairly constant at an average 65% of the farmers who saved. The percentage of farmers saving with institutions (VSLAs, SACCOs and Groups for Treatment farmers; and VSLAs and Groups for Control farmers) increased between 2010 and 2013; but the rate of growth in the use of institutions for saving was faster among the Treatment than Control farmers. The use of banks as a means to save money was less prevalent, but increased among Treatment farmers; while in the Control group, bank use for saving money increased by 4 percentage points from 2010 to 2011 before falling by the same magnitude in 2013.

Figure 14: Trends in the Use of Different Means of Saving among Maize Farmers



Between 2010 and 2012, the amount of money saved with VSLAs, SACCOs and Groups increased gradually among Treatment farmers but declined slightly in 2013. Among the Control farmers, it is only those saving with VSLAs that registered steady growth in savings. For all the other means of saving, the value of savings was erratic between 2010 and 2011.

Figure 15: Trends in Values of Savings among Maize Farmers



6.4.9. Status of Performance Indicators for the Maize Value Chain in 2012 and 2013

The 2012 annual report shows that 75% of the Treatment farmers in the maize value chain adopted the recommended practices. The AI study findings, however, show that higher percentages of beneficiary farmers applied key practices in 2013, which include use of improved maize seed (84.6%), correct spacing (94.9%) and seed rate (80.8%). For fertilizer and manure application as well as the use of pest and disease control, however, the AI respective figures (30.8%, 15.4% and 55.1%, respectively) are much lower than the 75% figure reported in the 2012 Annual Report. The reported figures for acreage in the 2012 Annual report are also lower than those in this IA study report by 1.21acres; while the IA study report figures on average income per farmer, sales price and yield are also lower than those of the 2012 Annual report by Ush 428,471, Ush 231/kg, and 284kg/acre, respectively. Similar to beans, the AI report shows deterioration in the majority of performance indicators for maize since 2012. Although the fact that the "after intervention" data for 84.6% of maize Treatment farmers was gathered on the poor-performing 2013A season partly explains the deterioration in these performance indicators; poor memory and difficulty to accurately estimate quantitative indicators may also have contributed to the disparity between reported figures in the IA Report and the 2012 Annual Report.

6.5 Coffee

6.5.1 General Characteristics of the Sampled Coffee Farmers

A total of 174 coffee farmers (119 Treatment and 55 Control) from the sub-counties of Kyondo, Buhuhira and Nyakiyumbu in Kasese district; Lwebitakuli, Mijwala and Mateete in Sembabule district; Nakatsi and Bukigai in Mbale district; Ruhinda and Bugangari in Rukungiri district; and Kasangombe and Luwero in Luwero district were sampled for participation in this study. The Treatment farmers are members of District Farmers Associations (Kasese, Sembabule, Mbale and Rukungiri; and for Luwero Hanns R. Neumann Stiftung (HRNS)—the IPs of aBi Trust-supported interventions in the coffee value chain.

Table 52 below shows information on the demographic characteristics of the sampled households. Information gathered indicates that there were more male headed households in the control group (67.3%, N=55) compared to the treatment group (56.3%, N=119). A slightly higher proportion of control households (92.7%) were engaged in crop production as their main occupation compared to Treatment households (89.1%).

Table 52: Socio-economic characteristics of Coffee Farmers/Household Heads and their Households

Variable	Entire Sample (N=174)	Treatment (N=119)	Control (N=55)
% Male Farmers/Headed-Households	59.77	56.30	67.27
Main Occupation of Farmer/HH Head (% Households/Farmers Reporting….)			
Production of crops	90.23	89.08	92.73
Salary employment	3.45	4.20	`1.82
Others	6.13	6.72	7.28
Average age (years) of Farmer/HH Head	47.32 (15.15)	47.44 (14.39)	47.07 (16.80)
Highest school grade completed by Farmer/HH Head	6.27 (3.58)	6.81 (3.54)	4.92 (3.34)
Marital status of Farmer/HH Head (% Households/Farmers Reporting ….)			
Single	2.30	2.52	1.82
Married	82.76	84.03	80.00
Widowed	9.24	16.36	11.49
Divorced	3.45	4.20	1.82
Average family size	6.94(3.26)	7.23 (3.62)	6.33 (2.19)
Dependency Ratio	0.76 (0.69)	0.71 (0.70)	0.85 (0.68)

The average age of the farmer (household head) was the same (47 years) in both Treatment and Control households. The heads of Treatment households had significantly higher education levels (6.81 years of schooling) than the Control households (4.92 years of schooling). The average household size among the Treatment households (7.23 people) was above the national average of 6.5 household members and was also significantly higher than in the Control group (6.3 people); but the dependency ratio was higher among Control farmers (0.85) compared to the Treatment households (0.71), suggesting a higher dependency burden among farmers in the Control group.

6.5.2 Asset Accumulation

The survey findings on asset accumulation indicate that Treatment farmers had higher asset endowments than their cohorts in the Control category, with exception of transport equipment.

Table 53: Household Asset Endowment in 2010 (Before Intervention) and 2013

	Treatment		**Control**		**Attributable Changes (DID)**
	Now(2013)	***2010***	***Now(2013)***	***2010***	
Total value of Farm Equipment (Ush)	94,984.86 (73901.9)	76,326.52 (59673.7)	70,122.95 (55085.96)	61,903.85 (37603.47)	10,439
Total value of Transport Equipment (Ush)	135,482.9 (90182.35)	132,313.7 (60955.33)	171,922.3 (120040)	122,746.5 (55526.62)	-46,007
Total value of Communication Equipment (TV, Radio, Mobile Phone) (Ush)	83,661.09 (44701.62)	67,836.54 (33308.79)	63,837.44 (36636.66)	60,817.04 (37880.83)	12,804
Total value of Livestock (Ush)	608,406.4 (437733.1)	576,622.6 (343685.9)	593,391.6 (379235.9)	489,028.4 (330368.3)	-72,579

Although farmers in both categories accumulated transport equipment and livestock during the intervention period (2011-2013), Control farmers out-performed their cohorts in the Treatment group; hence the negative change in the values of these assets during the intervention period. For farm equipment and communication assets, while farmers in both categories attained higher asset values during the intervention period, Treatment households out-performed those in the Control group.

6.5.3. Job Creation at the Household/Farmer Level

The survey findings show that the average number of workers employed by the sampled households in 2013 was higher among Treatment (3.38) than Control (2.76) farmers; and there was a slight increase in number of workers employed by the Treatment households between 2010 and 2013. On the other hand, the total number of workers employed by the Control households decreased slightly from 2.82 workers in 2010 to 2.76 workers in 2013. In terms of Fulltime Equivalents of the short-term jobs, Treatment farmers created more FTE jobs (49.75) than their cohorts in the Control group (14.5). Use of permanent workers was mainly reported among Treatment households, but was almost non-existent in the Control group as only one Control farmer reported employing permanent workers.

Table 54: Number of Farm Empoyees and Expenditure on Labor in 2010 and 2013

	Treatment		**Control**		**Attributable Changes (DID)**
	2013	**2010**	**2013**	**2010**	
Total Number of workers currently employed	3.38 (1.81)	3.01 (1.75)	2.76 (1.54)	2.82 (1.81)	0.43
Number of Permanent workers	2.00 (0.94)	1.80 (0.92)	1.00 (N=1)	1.00 (N=1)	-
Number of short-term workers	3.2 (1.74)	2.85 (1.69)	3.01 (1.48)	2.73 (1.59)	0.07
Additional Fulltime Equivalent (FTE)		49.75		14.5	35.25

Jobs Created					
Monthly payment to Permanent workers **(Total in Ush)**	65000 (12899.85)	52375 (14713.11)	60000 (N=1)	40000 (N=1)	-
Number of Months the farmer uses short-term workers	4.01 (2.26)	4.08 (2.67)	3.26 (2.27)	3.26 (2.40)	-0.07
Total annual payment to Temporary/short-term workers **(Total in Ush)**	339755.2 (201633.8)	254789.1 (73487.9)	242600.9 (204554.8)	228360.6 (96200.45)	70,725.8

Among the Treatment households, the average number of permanent employees increased from 1.8 in 2010 to 2.0 workers in 2013. The number of months worked by short-term employees didn't change much between 2010 and 2013 in both farmer categories; but annual wages paid out to short-term workers increased by a greater margin among Treatment (Ush 84,966) than Control (14240) farmers.

6.5.4. Production and Sales of Coffee in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

There are two main types of coffee grown in Uganda namely; Arabica and Robusta coffee. Arabica coffee is mainly grown in the highland areas of Eastern and Western Uganda, as well as the West Nile region; while Robusta coffee grows in the lowland areas of Central, Western and Eastern Uganda. Thus, the two coffee types are grown in distinctly different farming systems and agro-ecological zones; and because of this, the associated processes and practices also differ. Based on these facts, the discussion on production and sales of coffee in this section is separated by coffee type. Out of the sampled 174 coffee farmers, 52% (91) are Robusta coffee farmers (65 Treatment and 26 Control) and the rest (83) are Arabica coffee farmers (54 Treatment and 29 Control).

On average, both Treatment and Control farmers grew less than 2 plots of both coffee types (Robusta and Arabica) in the period before and after intervention by aBi Trust. The number of **Robusta** coffee plots grown by Treatment farmers increased marginally from 1.5 plots in 2010 or before to 1.71 plots in 2013 but did not change much in the Control category. For **Arabica** coffee, the number of coffee plots grown by Treatment farmers also increased marginally from 1.44 plots in 2010 or before to 1.54 plots in 2013 but did not change much in the Control category.

Table 55A: Land Allocation and Input Use in Robusta Coffee Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Separate plots/gardens of coffee grown	1.71 (0.93)	1.50 (0.69)	1.28 (0.54)	1.30 (0.55)	0.23
Total land area (acres) planted to Coffee	1.96 (.51)	1.60 (1.36)	1.55 (.41)	1.47 (1.27)	0.28
Total quantity of main fertilizer applied (kg)	72.60 (62.92)	71.25 (65.62)	40.93 (9.57)	36.00 (19.80)	-3.58
Total Value of main fertilizer applied (Ushs)	148090 (121239)	103750 (72500)	85413.33 (19968.82)	54011.11 (18748.34)	12937.78
Total quantity of organic input applied (kg)	599.61	619.17	534.06	728.54	174.92

	(369.89)	(431.69)	(317.01)	(371.84)	
Total Value of organic input applied (Ushs)	109339.8 (58434.49)	104498.2 (77392.27)	76411.46 (44082.28)	61597.22 (10977.52)	-9972.64
Total Cost of pesticides applied (Ushs)	33875 (5926.635)	27611.11 (11760.04)	44571.43 (19560.65)	38600 (17169.74)	292.46
Total Cost of Herbicides applied (Ushs)	61146 (42380.09)	50572.66 (33331.06)	54850 (26530.41)	35416.67 (17286.31)	-8859.99
Main Source of fertilizer (% HHds/Farmers Reporting….)					
Own source/material	35.56	43.33	54.55	40.00	-22.32
Input trader	48.89	43.33	18.18	30.00	17.38
Fellow farmer	11.11	10.00	9.09	0.00	-7.98
DFA	2.22	3.33	9.09	10.00	-0.2
NAADS	0.00	0.00	0.00	0.00	0.00

The total area planted to **Robusta** coffee increased from 1.6acres to 1.96acres among Treatment farmers but increased by a smaller magnitude in the Control group from 1.47acres to 1.5acres; while the total area planted to **Arabica** coffee increased by 0.21acres among Treatment farmers from 1.63acres to 1.84acres, and by 0.09acres in the Control group from 1.13acres to 1.22acres. The quantity of chemical fertilizers applied on **Robusta** coffee among Treatment farmers increased by close to 1.35kg, and by 4.9kg in the Control category. For **Arabica** coffee, the quantity of chemical fertilizers applied among Treatment farmers decreased by just over 8kg, but increased by 25kg in the Control category. The majority of Treatment farmers who used fertilizers on both coffee types sourced them from input traders, own sources (particularly for organic fertilizers), and fellow farmers. The quantity of organic fertilizers used on **Robusta** coffee decreased in both farmer categories but by a greater magnitude among Control (184.5kg) than Treatment farmers (19.6kg); while the quantity of organic fertilizer used on **Arabica** coffee also decreased in both farmer categories but a bigger magnitude among Treatment (148kg) than Control farmers (113kg).

Table 55B: Land Allocation and Input Use in Arabica Coffee Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Separate plots/gardens of coffee grown	1.54 (0.84)	1.44 (0.82)	1.24 (0.44)	1.22 (0.42)	0.08
Total land area (acres) planted to Coffee	1.84 (.43)	1.63 (1.25)	1.22 (0.76)	1.13 (0.79)	0.12
Total quantity of main fertilizer applied (kg)	75.37 (45.73)	83.49 (31.56)	25.17 (15.79)	0.00	-33.29
Total Value of main fertilizer applied (Ushs)	132735.1 (66045.01)	152578.8 (84178.8)	50616.67 (26045.1)	0.00	-70460.4
Total quantity of organic input applied (kg)	490.72 (353.58)	638.96 (361.99)	383.98 (198.09)	496.88 (307.43)	-35.34
Total Value of organic input applied (Ushs)	92493.92 (79435.79)	77320.39 (44428.65)	62261.36 (35697.34)	54548.61 (24121)	7460.78
Total Cost of pesticides applied (Ushs)	42692.31 (30414.93)	45208.33 (35211.99)	41282.05 (1110.291)	0.00	-43798.1
Total Cost of Herbicides applied (Ushs)	48887.5 (16441.96)	59554.17 (29107.93)	0.00	0.00	-10666.7
Main Source of fertilizer (% HHds/Farmers Reporting….)					

Own source/material	10.53	26.67	62.50	100.00	21.36
Input trader	63.16	66.67	0.00	0.00	-3.51
Fellow farmer	10.53	6.67	0.00	0.00	3.86
DFA	5.26	0.00	0.00	0.00	5.26
NAADS	10.53	0.00	0.00	0.00	10.53

The value of pesticides and herbicides applied by both Treatment and Control farmers on **Robusta** coffee increased during the period of aBi Trust intervention; but for pesticides, the magnitude of the increment was bigger among Treatment than Control farmers, while the converse is true for herbicides.For **Arabica** coffee, the value of pesticides applied decreased in the Treatment category but increased among Control farmers; while the value of herbicides used also decreased among Treatment farmers. No **Arabica** coffee farmer in the Control category used herbicides both before and after intervention by aBi Trust.

Table 56A: Harvests and Sales of Robusta Coffee

Variable	**Treatment**		**Control**		**Attributable Changes**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Total quantity of coffee harvested (Kg)	507.91 (415.91)	424.41 (372.24)	408.13 (316.11)	412.09 (378.17)	87.5
Total quantity of coffee sold (Kg)	493.25 (433.63)	418.21 (370.87)	408.00 (315.81)	394.85 (382.68)	61.9
Selling price (Ug Shs/Kg)	2661.00 (728.34)	2635.56 (1236.12)	2607.23 (1162.94)	2712.89 (1215.74)	131.1
Main mode of sale					
Collectively through group	13.64	15.79	12.50	2.78	-11.87
Individually	86.36	84.21	87.50	97.22	11.87
Main Buyer Type (% HHds/Farmers Reporting….)					
2=Trader,	84.82	89.69	87.50	91.67	-0.7
3=NGO	6.25	7.22	0.00	0.00	-0.97
4=Institution	0.89	0.00	0.00	0.00	0.89
5=Exporter	1.79	0.00	0.00	0.00	1.79
6=Processor	6.25	3.09	12.50	8.33	-1.01
7=Broker	0.00	0.00	0.00	0.00	0
Average distance to main buyer (km)	5.55 (5.16)	5.24 (4.2)	6.88 (5.86)	6.97 (5.08)	0.4
Mode of transport to point of sale (% HHds/Farmers Reporting….)					
1=foot,	0.00	0.00	20.00	60.00	40
2=bicycle,	52.63	68.18	0.00	0.00	-15.55
3=motorbike,	10.53	4.55	0.00	0.00	5.98
4=Vehicle,	36.84	27.27	80.00	40.00	-30.43
Average Transport Cost (Ush)	11902.56 (6935.14)	14373.53 (11029.13)	5185.97 (2407.29)	13097.15 (6368.42)	5440.21
Who made sales decisions (when and how much to sell)? (% HHds/Farmers Reporting….)					
1=Husband;	44.64	52.58	62.50	73.53	3.09
2=Wife;	12.50	10.31	18.75	11.76	-4.8
3=Both Husband& Wife;	42.86	37.11	18.75	14.71	1.71
Who made decisions on the use of revenue from this crop? (% HHds/Farmers Reporting….)					
1=Husband;	41.96	46.39	56.25	67.65	6.97
2=Wife;	8.04	8.25	18.75	11.76	-7.2
3=Both Husband& Wife;	50.00	45.36	25.00	20.59	0.23
How was the revenue from this crop used? (List the top three) (% HHds/Farmers Reporting….)					
1=Consumption;	14.29	21.65	32.26	42.86	3.24
2=Investment in Agricultural enterprise	16.96	16.49	9.68	20.00	10.79
3=Investment in non-agricultural enterprise;	1.79	4.12	3.23	0.00	-5.56

4=Medical expenses;	8.04	5.15	0.00	0.00	2.89
5=Household durables;	6.25	11.34	12.90	8.57	-9.42
7=school fees	48.21	39.18	41.94	28.57	-4.34

The study findings show that during the *"after intervention"* period, Treatment farmers for **Robusta** and **Arabica** coffee harvested significantly higher quantities of coffee estimated at 508kg and 477kg, respectively than their cohorts in the Control group (408kg for **Robusta** and 307kg for **Arabica**. Also, the quantity of **Robusta** coffee harvested by the Treatment farmers increased by a greater magnitude (83.5kg) compared to the 4kg reduction in the Control category; leading to an increase of 87.5 kgs of harvested coffee that is attributable to support from aBi Trust. For **Arabica** coffee, the quantity harvested by Treatment farmers also increased by a bigger margin (91.3kg) than in the Control group (7.5kg); leading to an increase of 83.8kg in Arabica coffee output attributed to aBi Trust's support.

Table 56B: Harvests and Sales of Arabica Coffee

Variable	**Treatment**		**Control**		**Attributable Changes**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Total quantity of coffee harvested (Kg)	476.89 (271.96)	385.57 (283.14)	306.90 (111.95)	299.42 (228.21)	83.8
Total quantity of coffee sold (Kg)	411.13 (269.98)	382.64 (238.91)	293.26 (122.25)	298.55 (227.96)	33.8
Selling price (Ug Shs/Kg)	3516.65 (1153.96)	4614.04 (2014.23)	3106.95 (1025.36)	4020.59 (1938.04)	-183.8
Main mode of sale					
Collectively through group	18.89	23.86	2.94	3.23	-4.68
Individually	81.11	76.14	97.06	96.77	4.68
Main Buyer Type (% HHds/Farmers Reporting….)					
2=Trader,	78.16	68.97	79.41	87.10	16.88
3=NGO	3.45	2.30	2.94	0.00	-1.79
4=Institution	4.60	6.90	0.00	0.00	-2.3
5=Exporter	0.00	0.00	0.00	0.00	0
6=Processor	10.34	17.24	11.76	6.45	-12.21
7=Broker	3.45	4.60	5.88	6.45	-0.58
Average distance to main buyer (km)	3.76 (3.15)	3.6 (3.2)	7.89 (5.51)	6.54 (4.97)	-1.14
Mode of transport to point of sale (% HHds/Farmers Reporting….)					
1=foot,	25.64	29.73	43.75	30.00	-17.84
2=bicycle,	15.38	13.51	12.50	10.00	-0.63
3=motorbike,	20.51	10.81	18.75	0.00	-9.05
4=Vehicle,	38.46	45.95	25.00	60.00	27.51
Average Transport Cost (Ush)	10266.67 (5871.95)	12598.08 (9476.44)	6515.18 (5588.92)	7964.29 (6677.93)	-882.3
Who made sales decisions (when and how much to sell)? (% HHds/Farmers Reporting….)					
1=Husband;	58.89	61.36	64.71	48.39	-18.79
2=Wife;	5.56	6.82	5.88	19.35	12.21
3=Both Husband& Wife;	35.56	31.82	29.41	32.26	6.59
Who made decisions on the use of revenue from this crop? (% HHds/Farmers Reporting….)					
1=Husband;	52.22	53.41	50.00	35.48	-15.71
2=Wife;	5.56	6.82	5.88	19.35	12.21
3=Both Husband& Wife;	42.22	39.77	44.12	45.16	3.49
How was the revenue from this crop used? (List the top three) (% HHds/Farmers Reporting….)					
1=Consumption;	16.67	18.60	39.39	45.16	3.84
2=Investment in Agricultural enterprise	10.00	8.14	6.06	3.23	-0.97

3=Investment in non-agricultural enterprise;	2.22	2.33	0.00	6.45	6.34
4=Medical expenses;	0.00	1.16	6.06	6.45	-0.77
5=Household durables;	4.44	1.16	3.03	9.68	9.93
7=school fees	66.67	68.60	39.39	25.81	-15.51
13=Bought land	16.67	18.60	39.39	45.16	3.84

Robusta coffee sales also increased by a bigger margin among Treatment (75kg) than Control farmers (13kg); while Arabica coffee sales increased in the Treatment group by 28.5kg but declined among Control farmers by 5.3kg. The selling price for Robusta coffee increased by Ush 25/kg the Treatment group but declined by Ush 105.7/kg in the Control group; while the price for Arabica coffee declined in both farmer categories during the intervention period but by a bigger margin in the Treatment (Ush 1097.4/kg) than the Control category (Ush 913.6/kg). With the exception Robusta coffee in the pre-intervention period, Treatment farmers for both coffee types received higher prices for their coffee than their cohorts in the Control group. (Ushs 2,768.32 per kg in 2010 or before; and Ushs 2,771.31 per kg in 2011-2013). The price increment for Robusta coffee attributable to aBi Trust intervention is estimated at Ush 131/kg. For Arabica, however, prices dropped by Ush 183.8/kg during the period of intervention by aBi Trust.

Following intervention by aBi Trust, the proportion of Treatment farmers marketing their coffee collectively decreased from 15.8% to 13.6% for Robusta and from 23.9% to 18.9% for Arabica, despite targeted training and sensitization of farmers on the benefits of collective marketing. For Robusta coffee, however, there was an increase in the proportion of Control farmers involved in collective marketing of coffee from 2.78% (in 2010 or before) to 12.5% (in 2011-2013). Both Treatment and Control farmers of both coffee types sold their coffee mainly to the traders and processors before and during the intervention period. A few (3-6.5%) of Arabica coffee farmers (and none) of the Robusta coffee farmers) reported selling coffee to brokers. The distance to the main buyer among both Treatment and Control farmers, and for both coffee types did not change much after intervention by aBi Trust; but was longer among farmers of Robusta than Arabica coffee (see Tables 56A&B). The study findings show that revenue from coffee sales for both coffee types is mainly invested in educating children (school fees), consumption and investment in agricultural enterprises. Gender mainstreaming at household level is starting to yield results, with joint decision-making becoming more prevalent at the household level, particularly regarding sales and the use of revenue from a traditional cash crop such as coffee. The results show a decline in the proportion of husbands unilaterally making decisions on when and how much to sell, and how to use the coffee revenues; and a proportionate increase in joint decision-making by husband and wife.

Tables 57A&B below show that the yield for Robusta coffee increased among Treatment farmers by about 16kg/acre from 359.6kg/acre (in 2010 or before) to 375.6kg/acre (in 2011-2013) but declined in the Control category by 18.5kg/acre; leading to a 34.5kg/Acre increment in yield attributable to aBi Trust intervention in the Robusta coffee value chain. For Arabica coffee, however, yield dropped in both farmer categories but by a bigger margin among Control (38.1kg) than Treatment farmers (18.9kg). The yield decline in both farmer categories is largely attributed to drought conditions that characterized the first cropping season of 2013, which was the reference cropping season for 74% of the Treatment farmers (Robusta and Arabica combined) for the period after aBi Trust-supported interventions[6]. However, much as both farmer categories registered lower yields of Arabica coffee, the decline in yield among Control farmers (38kg) was twice that of their cohorts in the Treatment category (18.9kg), suggesting that without aBi Trust supported interventions, the drop in yield experienced by Treatment farmers would have been greater. The change in Arabica coffee yield attributable to aBi Trust support is 19.1kg/Acre.

Table 57A: Costs and Returns to Robusta Coffee Production

Variable	**Treatment**		**Control**		**Attributable Changes**
	2011-2013	**2010&B4**	**2011-2013**	**2010&B4**	
Productivity of coffee (Kg/Acre)	375.55 (333.40)	359.55 (289.03)	342.41 (252.48)	360.93 (297.36)	34.5
Input Costs per Kg (Ush/Kg)	333.33 (204.401)	404.6 (211.4)	405.62 (306.22)	378.93 (127.32)	-98.0
Input Costs per Acre(Ush /Acre)	106233.5 (51073.43)	102727.5 (65119.33)	125008.2 (81215.52)	83729.04 (52009.79)	-37773.2
Input Costs per Farmer (Ush /Farmer)	143561.2 (110418.4)	144812.9 (113188.6)	100321.2 (58041.69)	104156.5 (56030.73)	2583.6
Hired Labor costs of coffee Production per Kg (Ush /Kg)	280.65 (201.92)	354.39 (273.94)	143.69 (60.78)	185.07 (114.21)	-32.4
Hired Labor costs of coffee Production per Acre (Ush /Acre)	64132.41 (28911.61)	61496.86 (37198.25)	65381.63 (6888.074)	47691.4 (19040.56)	-15054.7
Hired Labor costs coffee Production per Farmer (Ush /Farmer)	107131.9 (78440.18)	106331.7 (85528.59)	73222.22 (49154.8)	89200 (54352.35)	16778.0
Total Cost of Production per Kg (Ush/Kg)	695.59 (569.79)	630.63 (476.58)	634.04 (377.25)	598.87 (413.77)	29.8
Total Cost of Production per Acre (Ush /Acre)	160819.9 (93285.85)	**161303 (110639.2)**	184487.9 9143732.2)	111729.7 (54826.36)	-73241.3
Total Cost of Production per Farmer (Ush /Farmer)	187937.3 (142098.2)	189391 (152231)	125895.2 (101545.8)	156679.4 (90062.44)	29330.5
Gross Margin per farmer (Ush)	1017353 (602301.4)	788924 (615558.9)	890642.2 (638628.9)	799351.9 (590767.2)	137138.7
Gross Margin per acre (Ush)	674652.1 (350777.2)	631606.5 (328451.6)	696462.4 (381840.9)	667810.4 425024.6	14393.6
% of Treatment Farmers with positive Gross Margins			**53.85**		
Average income growth for Treatment Farmers with positive Gross Margins			**756523.1 (644014.3)**		

[6] Grouping the sampled coffee farmers into Robusta and Arabica categories shows that a higher proportion of Arabica farmers (80% Treatment and 93% Control) has the first cropping season of 2013 as their reference for the "after intervention" period than the Robusta coffee farmers (69.2% Treatment and 65.4% Control)

Whereas input costs per Acre increased among both categories of farmers of Robusta coffee, the magnitude of the cost increment was greater among Control (Ush 41,279) than Treatment farmers (Ush 3,506). This means that during the intervention period of aBi Trust, Control farmers increased their investment on each Acre of Robusta coffee produced by a greater magnitude that their cohorts in the Treatment group, notwithstanding the yield decline experienced by the Control group versus the increment in yield among Treatment farmers. Because of the increase in yield, input costs per kilogram declined among Treatment farmers by Ush 71.3/kg but increased in the Control group by Ush 26.7/kg; leading to a net reduction in input costs of Ush 98/kg attributable to aBi Trust intervention.

Table 57B: Costs and Returns to Arabica Coffee Production

Variable	**Treatment**		**Control**		**Attributable Changes**
	2011-2013	**2010&B4**	**2011-2013**	**2010&B4**	
Productivity of coffee (Kg/Acre)	225.67 (177.14)	244.61 (185.03)	229.59 (181.17)	267.65 (199.32)	19.1
Input Costs per Kg (Ush/Kg)	456.27 (176.51)	432.57 (156.38)	541.15 (172.20)	364.14 (97.59)	-153.3
Input Costs per Acre(Ush /Acre)	139595.5 (108603)	134859.4 (100242.3)	70305.43 (45737.94)	52666.22 (41113.28)	-12903.1
Input Costs per Farmer (Ush /Farmer)	162614.6 (143475.7)	102995.9 (85982.28)	79086.77 (42857.29)	52470.24 (22695.58)	33002.2
Hired Labor costs of coffee Production per Kg (Ush/Kg)	290.62 (223.80)	303.13 (277.84)	265.74 (143.64)	109.45 (77.39) (N=2)	-
Hired Labor costs of coffee Production per Acre (Ush /Acre)	83714.81 (76119.33)	66385.54 (49192.51)	98333.33 (58214.16)	40000 (28284.27) (N=2)	-
Hired Labor costs coffee Production per Farmer (Ush /Farmer)	107293.6 (66469.32)	108810.2 (102143.9)	70000 (14142.14)	40000 (28284.27) (N=2)	-
Total Cost of Production per Kg (Ush/Kg)	582.18 (530.15)	499.67 (378.25)	326.48 (298.54)	252.72 (192.91)	8.7
Total Cost of Production per Acre (Ush /Acre)	171205.8 (110405.6)	158245.6 (97872.99)	194301.2 (123552.4)	155081.4 (73387.6)	-26259.6
Total Cost of Production per Farmer (Ush /Farmer)	168469.8 (137853.5)	136544.6 (115688.1)	91814.05 (61891.33)	49699.07 (22727.84)	-10189.8
Gross Margin per farmer (Ush)	1203249 (681625.4)	1127365 (845604)	952251.4 (456942.4)	1037254 (641017.5)	160886.6
Gross Margin per acre (Ush)	864649.1 (699376.4)	774090.7 (647943)	633678.2 (522052.1)	678514.4 (434810.7)	135394.6
% of Treatment Farmers with positive Gross Margins			**38.89**		
Average income growth for Treatment Farmers with positive Gross Margins			**292485.5 (205493.6)**		

For Arabica coffee, input costs per Acre also increased in both farmer categories, still by a greater magnitude among Control (Ush 17,639) than Treatment farmers (Ush 4,736). Notwithstanding the larger increment in input investment among Arabica coffee farmers in the Control than the Treatment group, yield declined by a bigger margin among Control (38.1kg) than Treatment farmers (18.9kg). Because of the declining yield, input costs per kilogram increased in both farmer categories but by a bigger magnitude in the Control (Ush

177/kg) than the Treatment group (Ush 23.7/kg); leading to a net reduction in input costs of Ush 153.3/kg attributable to aBi Trust intervention. Input costs per farmer on the other hand dropped in both categories of Robusta coffee farmers, but by a greater magnitude among Control (Ush 3,835.3) than Treatment farmers (Ush 1,251.7). For Arabica coffee, input costs per farmer increased in both farmer categories, but by a bigger margin among Control (Ush 26,616.5) than Treatment farmers (Ush 59,618.7). For both coffee types, therefore, there was an increase in input costs per farmer during the intervention period estimated at Ush 2,583.6 Ush 33,002, respectively.

For both Arabica and Robusta coffee, the total cost of production per kilogram increased in both farmer categories but by a greater magnitude among Treatment than Control farmers; leading to a net increase in total production cost attributed to aBi Trust of Ush 29.8/kg for Robusta and Ush 8.7/kg for Arabica. On the other hand, the total cost of production per farmer dropped in both farmer categories for Robusta coffee, but by a greater magnitude among Control (Ush 30,784) than Treatment farmers (Ush 1,453.7). For Arabica coffee, however, the total production cost per farmer increased in both farmer categories, but by a bigger margin among Control (Ush 42,115) than Treatment farmers (Ush 31,925).

Overall, Treatment farmers for both coffee types invested more in coffee production (incurred higher total production costs per farmer) than their cohorts in the Control group, both before and after aBi Trust's intervention. And because Treatment farmers invested more than their cohorts in the Control group, they also earned more. Whereas the per acre and per farmer income (gross margin) from Robusta coffee increased in both farmer categories, the magnitude of the increment was bigger in the Treatment than the Control group; leading to a net increase in income of Ush 137,139 per farmer and Ush 14,393.6 per acre attributed to aBi Trust-supported interventions. For Arabica coffee, while income per acre and per farmer increased in the Treatment group, it declined among Control farmers to the extent that there was an increase in Arabica coffee income of Ush 160,886.6 per farmer and Ush 135,394.6 per acre attributed to aBi Trust's intervention. The study findings further show that more than half (53.85%) of the Treatment farmers for Robusta coffee (N=65); and more than a third (38.89%) of the Treatment farmers for Arabica coffee (N=54) registered positive income growth following intervention by aBi Trust, estimated at an average of Ush 756,523 per farmer and Ush 292,484.5, respectively.

6.5.5 Training and Application of Improved Coffee Technologies and Agronomic practices in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

Treatment farmers received training in various aspects of the coffee value chain right from planting material selection and production to post harvest handling between 2011 and 2013. Treatment farmers were also trained on farming as a family business (FaaFB), gender mainstreaming, and financial management. Findings from the survey indicate that a majority of intervention farmers were trained in the following areas: agronomic practices such as line planting and plant spacing (83.2%); timely planting (75.6%); timely weeding (71.4%); improved seed selection (80.6%); pruning (79.8%) and coffee tree planting (77.3%). Treatment farmers were also trained in soil fertility management and soil and water conservation (SWC) practices; such as of use of organic manures (74.5%); and chemical fertilizers (73.1%). Over two thirds of the framers (69.7%) were trained on use of trenches for SWC and mulching (57.9%). The proportion of Control farmers trained in agronomic practices, soil fertility management and SWC measures within the same period; was relatively small and ranged from 1.8% to 20%, except for coffee tree planting (77.3%).

The change in prevalence of training in these areas attributable to aBi trust is however much smaller because a sizeable proportion of Treatment and Control farmers had already received related training in these areas prior to the inception of the aBi Trust program.

Table 58: Prevalence of Training on Improved Coffee Technologies and Agronomic practices.

Type of technology/practices	**Number of HHs/Farmers Trained to Use 2011-1023**		**Number of HHs/Farmers Trained to use in 2010 or before**		**Attributable Changes**
	Treatment (N=119)	**Control (N=55)**	**Treatment (N=119)**	**Control (N=55)**	
Improved varieties of seeds/seedlings					
01 Improved or clean planting materials for coffee	80.7	16.4	49.6	12.7	27.46
Soil fertility improvement					
01 Chemical Fertilisers	73.1	12.7	42.9	1.8	19.34
02 Compost/ Manure	58.8	10.9	31.9	5.5	21.44
03 Leguminous cover crop	31.1	1.8	14.3	0.0	14.99
04 Animal manure	74.8	14.5	42.9	12.7	30.11
Crop husbandry practices					
01 Timely planting	75.6	7.3	42.0	7.3	33.61
02 Timely weeding	71.4	10.9	42.0	9.1	27.59
04 Chemical spraying	73.1	10.9	46.2	9.1	25.07
05 Line planting	83.2	20.0	47.1	9.1	25.23
06 Spacing	83.2	18.2	49.6	9.1	24.52
08 Coffee tree Training	77.3	14.5	43.7	12.7	31.80
09 Pruning	79.8	16.4	50.4	18.2	31.23
Soil and water conservation					
01 Grass bands	23.5	1.8	11.8	1.8	11.76
02 Trenches	69.7	9.1	42.0	5.5	24.09
03 Trash lines	22.7	1.8	16.0	0.0	4.90
04 Mulching	58.0	10.9	30.3	9.1	25.91
05 Hedge rows	12.6	3.6	8.4	0.0	0.57
06 Contour planting	20.2	1.8	10.9	0.0	7.43
07 Soil conservation basins	48.7	7.3	29.4	3.6	15.69

Post harvest handling					
1 Use of Improved Storage facilities	47.1	5.5	24.4	0.0	17.23
2 Use of Tarpaulins for drying	86.6	16.4	52.1	10.9	29.00
3 Use of Collapsible driers	14.3	1.8	5.0	1.8	9.24
4 Use of drying shade/platform	17.6	3.6	8.4	3.6	9.24
5 Use of drying and grading racks (works like sieve)	16.8	0.0	10.9	0.0	5.88
6 Storage pest control	12.6	1.8	5.9	1.8	6.72
9 Use of coffee pulpers	50.4	7.3	25.2	5.5	23.39
10 Washing stations for coffee	38.7	3.6	20.2	1.8	16.67
11 Screening or Sieving	34.5	3.6	16.8	1.8	15.83
12 Cocoons	10.9	0.0	3.4	0.0	7.56
13 Use of Aflatoxin Machines	5.9	0.0	2.5	0.0	3.36
14 Use of weighing scales	62.2	9.1	39.5	9.1	22.69
15 Quality Mgt Standards	58.8	10.9	38.7	5.5	14.71
16 Certification	20.2	3.6	11.8	1.8	6.59
17 Training and mentoring in PHH	63.0	5.5	33.6	1.8	25.78
Farming as a business					
1 Collective Marketing	80.7	7.3	39.5	5.5	39.36
2 Record keeping	59.7	7.3	23.5	3.6	32.50
3 Business planning	37.8	3.6	14.3	1.8	21.71
4 Information boards	13.4	3.6	6.7	1.8	4.90
5 Sms mkt information service	8.4	1.8	3.4	0.0	3.22
Gender for growth					
1. Training on gender mainstreaming	58.0	10.9	21.8	7.3	32.50
2. Entrepreneurship training	28.6	3.6	10.1	0.0	14.85
3. Training in VSLA	75.6	18.2	34.5	7.3	30.27
Financial service dev't					
1.Training on Savings & Loans	67.2	23.6	32.8	10.9	21.73

Whereas 80.6% of Treatment farmers received training on improved coffee planting materials between 2011 and 2013, half of these (49.5%) had already received similar training in 2010 or before. Among the Control farmers, 16.4% received training on improved planting materials between 2011 and 2013—an increase of 3.7 percentage points from 2010 or before. The change in prevalence of training on improved or clean planting materials for coffee attributable to aBi Trust intervention is therefore 28 percentage points. The change in prevalence of training in soil fertility management was about 19 percentage points for use of chemical fertilizers and 21-30 percentage points for use of organic fertilizers—compost and animal manure, respectively.

Changes in prevalence of training in various agronomic practices attributable to aBi Trust support were also modest, with spacing having 22 percentage points; and chemical spraying 25 percentage points. The change attributed to aBi Trust support was slightly higher for line planting and timely weeding (27 percentage points); coffee tree training (32 percentage points); and timely planting (33.6 percentage points). However, changes attributable to aBi Trust-supported interventions are much smaller for other SWC practices

(grass bands, trash lines, hedge rows & contour planting) and soil fertility management practices such as leguminous cover crop.

A smaller proportion of treatment farmers were trained on different aspects of post harvest handling practices such as: use of drying shade/platform (17.6%); use of washing stations (38.6%); and certification (20%) between 2010 and 2013. However, the proportion of farmers trained on use of tarpaulins for drying (86.5%); use of coffee pulpers (50.4%); training in PHH and mentoring (63%); use of weighing scales (62.2%); and use of quality management standards (58.8%) was higher within the same period. The change in prevalence of training in different areas of post harvest handling attributable to aBi Trust support was as follows: use of coffee pulpers (23 percentage points); use of tarpaulins for drying (29 percentage points); weighing scales (22.6 percentage points); and quality management standards (14.7 percentage points); and training and mentoring in PHH (25.8%).

The study findings also show that the proportion of Treatment farmers trained in collective marketing increased from 39.5% (in 2010 or before) to 80.6% (2011-2013); representing an increase of 41.2 percentage points compared to an increase of 1.8 percentage points among the Control farmers within the same period. Thus, the change attributed to aBi Trust's intervention on training in collective marketing was estimated as 39.4 percentage points. The proportion of treatment farmers trained in record keeping, and business planning increased from 23.5 % and 14.3% in 2010 or before to 60% and 37.8%, respectively. Treatment farmers trained and sensitized on use market information boards increased from 6.7% in 2010 or before to 13.5% in 2011-2013. The change attributed to the increase in prevalence of training on record keeping and business planning was 36.1 and 23.5 percentage points, respectively. The change in training on use of market information boards attributed to aBi Trust's support was rather small (4.9 percentage points). Similarly, a small proportion of treatment farmers were trained on sms market information service; and a slight increase of 5 percentage points in prevalence of training in this area is attributed to aBi Trust support.

Results for training under Gender for Growth (G4G) component indicate that a fairly large proportion of treatment farmers were trained on Gender Mainstreaming and Village Saving and Loan Association (VSLA). The number of treatment farmers trained in gender mainstreaming increased from 21.8% in the period 2010 or before to 58% in the period between 2011 and 2013. The change attributable to aBi Trust's support in the prevalence of training in gender mainstreaming was 33 percentage points. The proportion of treatment farmers that were trained on VSLA increased from 34.5% in 2010 or before to 75.6% in the period between 2011 and 2013. This represents an increase of 30 percentage points attributed to aBi Trust's intervention. A smaller proportion of Treatment farmers were trained on

entrepreneurship skills (28.5%); and the change in prevalence of training in this area attributed to aBi Trust's support is 15 percentage points.

Under the Financial Service Development (FDS) component, two thirds Treatment farmers (67.2%) received training on savings and loans between 2011 and 2013. Prior to aBi Trust's intervention (2010 or before), only 32.8% of the Treatment farmers had been trained on loans and savings. The change attributed to aBi Trust's support in the prevalence of training on savings and loans was 21.7 percentage points. Fewer Control farmers reported receiving training on loans and credit services, with the proportion of farmers receiving training in this area increasing from 10.9% in 2010 or before to 23.6% in 2011-2013.

Most of the treatment farmers that received training in the areas highlighted above between 2011 and 2013 were trained by District Farmer Associations (DFAs) in the target districts; and the rest received training from other organizations particularly HRNS in Luwero, and only a handful reported receiving training from NAADS.

Table 59: Institutions Involved in Farmer Training on Coffee Technologies and Practices

Type of technology/practice	% HHs reporting DFA extension staff		% HHs reporting NAADS staff		% HHs reporting Other NGO	
	Treatment	Control	Treatment	Control	Treatment	Control
Improved varieties						
01 Improved or clean planting materials for coffee	81.25	11.1	0	11.1	12.5	11.1
Soil fertility improvement						
01 Chemical Fertilisers	83.9	14.3	0.0	0.0	11.5	28.6
02 Compost/ Manure	85.7	16.7	0.0	0.0	10.0	33.3
03 Leguminous cover crop	86.5	100.0	0.0	0.0	5.4	0.0
04 Animal manure	84.3	12.5	0.0	0.0	10.1	50.0
Crop husbandry practices						
01 Timely planting	76.7	50.0	1.1	0.0	14.4	25.0
02 Timely weeding	76.5	33.3	1.2	0.0	15.3	33.3
04 Chemical spraying	81.6	16.7	0.0	0.0	12.6	33.3
05 Line planting	80.8	36.4	0.0	0.0	13.1	9.1
06 Spacing	80.8	30.0	0.0	0.0	13.1	20.0
08 Coffee tree Training	81.5	37.5	1.1	0.0	13.0	50.0
09 Pruning	81.1	33.3	0.0	11.1	11.6	33.3
Soil and water conservation						
01 Grass bands	89.3	0.0	0.0	0.0	10.7	0.0
02 Trenches	81.9	40.0	0.0	0.0	14.5	40.0
03 Trash lines	85.2	100.0	0.0	0.0	14.8	0.0
04 Mulching	82.6	33.3	0.0	0.0	14.5	50.0
05 Hedge rows	80.0	50.0	0.0	0.0	13.3	0.0
06 Contour planting	100.0	0.0	0.0	0.0	0.0	0.0
07 Soil conservation basins	86.2	25.0	0.0	0.0	10.3	25.0
Post harvest handling						
1 Use of Improved Storage facility such as Cribs, Granaries	83.9	100.0	1.8	0.0	14.3	0.0
2 Use of Tarpaulins for drying	81.6	22.2	0.0	11.1	13.6	22.2
3 Use of Collapsible driers	100.0	0.0	0.0	0.0	0.0	0.0
4 Use of drying shade/platform	81.0	100.0	0.0	0.0	4.8	0.0
5 Use of drying and grading racks	100.0	0.0	0.0	0.0	0.0	0.0
6 Storage pest control	93.3	100.0	0.0	0.0	6.7	0.0
7 Threshing equipment	66.7	0.0	0.0	0.0	33.3	0.0
9 Use of coffee pulpers	95.0	50.0	0.0	0.0	3.3	25.0
10 Washing stations for coffee	91.3	50.0	0.0	0.0	6.5	0.0
11 Screening or Sieving	90.2	100.0	0.0	0.0	7.3	0.0
12 Cocoons	100.0	0.0	0.0	0.0	0.0	0.0
13 Use of Aflatoxin Machines	57.1	0.0	0.0	0.0	28.6	0.0
14 Use of weighing scales	83.8	40.0	0.0	0.0	9.5	20.0
15 Quality Mgt Standards	75.7	33.3	0.0	0.0	17.1	33.3
16 Certification	70.8	50.0	0.0	0.0	29.2	50.0
17 Training and mentoring in PHH	77.3	33.3	0.0	0.0	18.7	33.3
Farming as a business						

1 Collective Marketing	83.3	75.0	0.0	0.0	12.5	25.0
2 Record keeping	90.1	50.0	0.0	0.0	7.0	25.0
3 Business planning	88.9	50.0	0.0	0.0	8.9	50.0
4 Information boards	87.5	100.0	0.0	0.0	6.3	0.0
5 Sms mkt information service	90.0	100.0	0.0	0.0	10.0	0.0
Gender for growth						
1. Training on gender mainstreaming	84.1	50.0	0.0	0.0	13.0	33.3
2. Entrepreneurship training	91.2	50.0	0.0	0.0	8.8	50.0
3. Training in VSLA	83.3	30.0	0.0	0.0	5.6	20.0
Financial service dev't						
1.Training on Savings & Loans	81.3	38.5	0.0	0.0	7.5	30.8

The proportion of Treatment farmers using improved or clean planting materials for coffee between 2011 and 2013 was 70.6% compared to 62.2% in 2010 or before. Whereas 80.6% of Treatment farmers received training on improved/clean coffee planting materials between 2011 and 2013; 70.6% used the technology. Among the Control farmers, the proportion using improved/clean coffee planting materials increased from 47.3% in 2010 or before to 50.9%; representing a 3.6 percentage point increment. Thus, the increase in use of improved/clean coffee planting materials attributed to aBi Trust support is 4.8 percentage points; which is much smaller than the attributable change in prevalence of training this area. This is also true for several other practices because while several farmers denied receiving training in some practices, they claimed applying these on their farms. This was also observed among maize farmers; and the plausible explanation is that while several farmers do not directly participate in demonstrations and training sessions conducted by the IPs and other agencies, they may later on pick the good practices and technologies from their neighbors through farmer-to-farmer extension.

Table 60: Application of Improved Coffee Technologies and Agronomic Practices

Type of technology/practices	% HHs/Farmers that applied in 2011-1023		% HHs/Farmers that applied in 2010 or before		Attributable change (DD)
	Treatment	Control	Treatment	Control	
Improved varieties of seeds					
01 Improved or clean planting materials for coffee	70.6	50.9	62.2	47.3	4.77
Soil fertility improvement					
01 Chemical Fertilisers	33.6	18.2	20.2	16.4	11.63
02 Compost/ Manure	33.6	25.5	28.6	18.2	-2.23
03 Leguminous cover crop	29.4	21.8	26.9	20.0	0.70
04 Animal manure	59.7	50.9	55.5	43.6	-3.07
Crop husbandry practices					
01 Timely planting	71.4	58.2	62.2	58.2	9.24
02 Timely weeding	73.1	67.3	67.2	65.5	4.06
04 Chemical spraying	40.3	30.9	30.3	29.1	8.27
05 Line planting	71.4	60.0	61.3	60.0	10.08
06 Spacing	79.8	69.1	69.7	67.3	8.27
08 Coffee tree Training	78.2	58.2	67.2	56.4	9.11
09 Pruning	87.4	81.8	78.2	80.0	7.43
Soil and water conservation					
01 Grass bands	18.5	14.5	15.1	12.7	1.54
02 Trenches	65.5	38.2	56.3	34.5	5.61

03 Trash lines	14.3	7.3	14.3	5.5	-1.82
04 Mulching	46.2	40.0	40.3	38.2	4.06
05 Hedge rows	6.7	3.6	5.9	3.6	0.84
06 Contour planting	9.2	9.1	8.4	7.3	-0.98
07 Soil conservation basins	41.2	25.5	34.5	21.8	3.09
Post harvest handling	0.0	0.0	0.0	0.0	0.00
1 Use of Improved Storage facility such as Cribs, Granaries	12.6	3.6	10.9	1.8	-0.14
2 Use of Tarpaulins for drying	66.4	58.2	58.8	52.7	2.11
3 Use of Collapsible driers	2.5	0.0	1.7	0.0	0.84
4 Use of drying shade/platform	4.2	3.6	5.0	5.5	0.98
5 Use of drying and grading racks (works like sieve)	5.0	1.8	5.0	1.8	0.00
6 Storage pest control	5.0	1.8	7.6	1.8	-2.52
7 Threshing equipment	1.7	1.8	0.8	1.8	0.84
9 Use of coffee pulpers	25.2	16.4	24.4	16.4	0.84
10 Washing stations for coffee	21.0	7.3	16.0	5.5	3.22
11 Screening or Sieving	21.0	9.1	17.6	9.1	3.36
12 Cocoons	1.7	0.0	1.7	0.0	0.00
13 Use of Aflatoxin Machines	1.7	1.8	0.8	1.8	0.84
14 Use of weighing scales	79.8	70.9	74.8	72.7	6.86
15 Quality Mgt Standards	54.6	23.6	43.7	20.0	7.29
16 Certification	10.9	0.0	9.2	0.0	1.68
17 Training and mentoring in PHH	55.5	25.5	40.3	21.8	11.49
Farming as a business					
1 Collective Marketing	31.1	9.1	22.7	10.9	10.22
2 Record keeping	26.1	10.9	17.6	10.9	8.40
3 Business planning	17.6	5.5	10.9	3.6	4.90
4 Information boards	10.1	5.5	7.6	3.6	0.70
5 Sms mkt information service	5.0	1.8	4.2	0.0	-0.98
Gender for growth					
1. Training on gender mainstreaming	56.3	27.3	36.1	25.5	18.35
2. Entrepreneurship training	22.7	3.6	9.2	3.6	13.45
3. Training in VSLA	73.1	21.8	42.9	18.2	26.62
Financial service devt					
1.Training on Savings & Loans	67.2	29.1	43.7	21.8	16.26

For Treatment households that did not apply the technologies and practices promoted under aBi Trust-supported programs; the main reasons include mainly high cost of the technology (19.8%); unavailability of the technology (17.6%); lack of interest (13.6%); not being required (12.4%); and difficulty in applying the technology (10.5%), among others.

Table 61: Reasons for Non-Application of Coffee Technologies and Agronomic Practices

Reasons	**% Households Reporting**		
	Entire sample (%)	**Treatment (%)**	**Control (%)**
1. Not available	15.81	17.55	11.58
2.Difficult to make/apply	9.44	10.51	6.84
5. Not trained	4.60	5.31	2.89
6. Expensive	20.26	19.83	21.32
10.Not interested	13.43	13.65	12.89
13.Not required	13.35	12.35	15.79

Farmers in the Control category cited high cost of the technology as the most important reason (21.3%), followed by the technology not being required (15.8%); lack of interest (12.9%); and unavailability of the technology (11.6%).

6.5.6: Farmer Perceptions on Impact of Applied Coffee Technologies and Practices

Over three quarters of the Treatment and Control farmers (78.6%) who used improved coffee seed said it had a positive and large impact. Equally high proportions of Treatment farmers who applied pruning (77%); coffee tree training (75.3%), spacing (71.6%) and timely weeding (79.3%) and planting (75.3%) also mentioned that they had a positive and large impact arising from their use. Between 50-100% of those who used different PHH practices also said that they had positive and large impacts; and similar remarks were made over several farming as a business practices as well as G4G and FSD practices.

Table 62: Perceived Impact of the Applied Coffee Technologies and Practices

Type of technology/practice	% HHs reporting *Positive & Large*		% HHs reporting *Positive but Small*		% HHs reporting No Impact		% HHs reporting Negative and large	
	Treatment	**Control**	**Treatment**	**Control**	**Treatment**	**Control**	**Treatment**	**Control**
Improved varieties of seeds/seedlings								
01 Improved or clean planting materials for coffee	78.6	78.6	2.4	10.7	0.0	0.0	2.4	0.0
Soil fertility	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
01 Chemical Fertilisers	40.0	50.0	7.5	0.0	0.0	0.0	0.0	0.0
02 Compost/ Manure	65.0	57.1	7.5	7.1	0.0	7.1	0.0	0.0
03 Leguminous cover crop	71.4	66.7	5.7	16.7	5.7	0.0	0.0	0.0
04 Animal manure	74.6	71.4	5.6	10.7	0.0	0.0	0.0	0.0
Crop husbandry								
01 Timely planting	75.3	68.8	7.1	12.5	2.4	0.0	0.0	0.0
02 Timely weeding	79.3	75.7	8.0	13.5	1.1	0.0	0.0	0.0
04 Chemical spraying	54.2	70.6	14.6	17.6	0.0	0.0	0.0	0.0
05 Line planting	64.7	72.7	11.8	21.2	1.2	0.0	0.0	0.0
06 Spacing	71.6	73.7	9.5	18.4	1.1	0.0	0.0	0.0
08 Coffee tree Training	75.3	84.4	7.5	9.4	1.1	0.0	0.0	0.0
09 Pruning	76.9	82.2	7.7	6.7	1.0	0.0	0.0	0.0
Soil and water conservation								
01 Grass bands	68.2	87.5	4.5	0.0	0.0	0.0	0.0	0.0
02 Trenches	78.2	85.7	2.6	0.0	0.0	0.0	0.0	0.0
03 Trash lines	100.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0
04 Mulching	80.0	86.4	3.6	4.5	0.0	0.0	0.0	0.0
05 Hedge rows	87.5	50.0	0.0	50.0	0.0	0.0	0.0	0.0
06 Contour planting	90.9	60.0	0.0	20.0	0.0	0.0	0.0	0.0
07 Soil conservation basins	79.6	78.6	2.0	0.0	0.0	7.1	0.0	0.0
Post harvest handling								
1 Use of Improved Storage facility such as Cribs, Granaries	86.7	50.0	0.0	0.0	0.0	0.0	0.0	0.0
2 Use of Tarpaulins for drying	83.5	81.3	1.3	6.3	0.0	0.0	0.0	0.0
3 Use of Collapsible driers	66.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 Use of drying shade/platform	80.0	100.0	20.0	0.0	0.0	0.0	0.0	0.0
5 Use of drying and grading racks	83.3	100.0	16.7	0.0	0.0	0.0	0.0	0.0
6 Storage pest control	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
7 Threshing equipment	50.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
9 Use of coffee pulpers	83.3	77.8	0.0	11.1	3.3	0.0	0.0	0.0
10 Washing stations for coffee	68.0	50.0	0.0	25.0	0.0	0.0	0.0	0.0
11 Screening or Sieving	72.0	60.0	4.0	40.0	0.0	0.0	0.0	0.0
12 Cocoons	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 Use of Aflatoxin Machines	50.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
14 Use of weighing scales	86.3	84.6	4.2	15.4	3.2	0.0	0.0	0.0
15 Quality Mgt Standards	73.8	61.5	3.1	15.4	0.0	0.0	0.0	0.0

16 Certification	69.2	0.0	7.7	0.0	0.0	0.0	0.0	0.0
17 Training and mentoring in PHH	66.7	50.0	3.0	28.6	0.0	0.0	0.0	0.0
Farming as business								
1 Collective Marketing	56.8	100.0	8.1	0.0	0.0	0.0	0.0	0.0
2 Record keeping	61.3	66.7	3.2	16.7	0.0	0.0	0.0	0.0
3 Business planning	61.9	33.3	0.0	33.3	0.0	0.0	0.0	0.0
4 Information boards	75.0	66.7	0.0	0.0	0.0	0.0	0.0	0.0
5 Sms mkt information service	83.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gender for growth								
1. Training on gender mainstreaming	58.2	86.7	3.0	0.0	0.0	0.0	0.0	0.0
2. Entrepreneurship training	40.7	100.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Training in VSLA	52.9	66.7	4.6	0.0	1.1	0.0	0.0	0.0
Financial service Dev't								
1.Training on Savings & Loans	53.8	75.0	7.5	0.0	1.3	0.0	0.0	0.0

6.5.7: Participation in Coffee Production and Marketing Farmer Groups

The proportion of Treatment farmers in groups engaged in the production and marketing of coffee increased from 42.8% in 2010 to 93.2% in 2013; while that of Control farmers remained constant at 5.5% (only three farmers out of 55). Activities that farmers in groups engaged in include production of coffee (22.13%); processing of other crops other than coffee (17.6%); and training and extension (18.8%). There is literally no collective (group) processing of coffee, yet nearly one fifth (17.6%) of the Treatment farmers participate in organizations whose main activities include the processing of other crops.

Table 63: Major Group Activities of Coffee Producing and Marketing Groups

	Treatment		**Control**	
	2013	**2010**	**2013**	**2010**
8.1 & 8.2: % HHds/Farmers belonging to organization dealing in the production and/or marketing of coffee	93.28	42.86	5.45	5.45
Main activities/enterprises that group members engage in collectively (% HHds/Farmers Reporting….)				
Production of ***Coffee***	22.13	19.17	0	0.00
Production of ***other crop***	9.02	26.67	40	16.67
Marketing of Coffee	8.61	15.00	60	0.00
Marketing of ***other crop***	1.23	0.00	0	0.00
Processing of ***Coffee***	2.46	0.00	20	33.33
Processing of ***other crop***	17.62	14.17	20	16.67
Training and extension	18.85	15.83	20	116.67

6.5.8. Financial Services (Credit and Savings) in Coffee Production

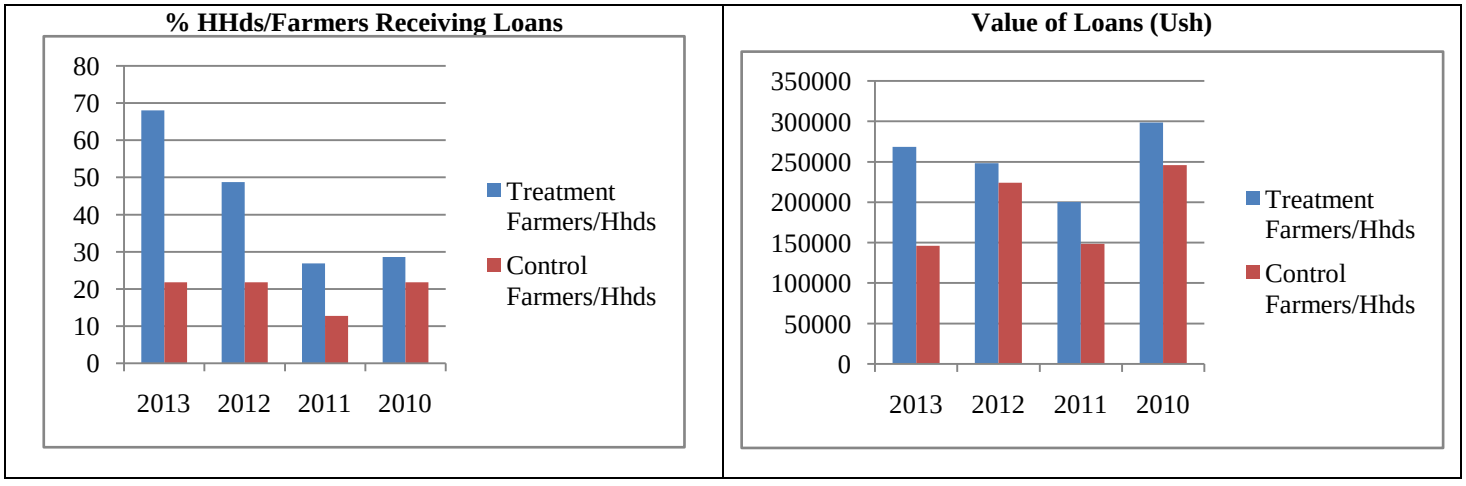
The proportion of Treatment farmers who received loans increased from 28.6% in 2010 to 48.7% in 2012 and 68.1% in 2013; while the proportion of Control farmers who received loans decreased from 21.8% in 2010 to 12.7% in 2011, before rising back to 21.8% in 2012 and 2013. Overall, the average value of loans received by Treatment and Control farmers decreased slightly during the intervention period. However, the drop in value of loans received by the Control farmers was higher compared to their cohorts in the Treatment group. Among Treatment farmers, the value of laons accessed decreased from Ush 298,624 in 2010 to about Ush 268,451 in 2013; representing a 10% decline. Meanwhile, the average

value of loans received by Control farmers decreased from Ush 245,779 to Ush 146,054 between 2010 and 2013; translating into a 40.5% decline.

Loans acquired by both Control and Treatment farmers were put to various uses. The most commonly reported purpose for the loans acquired in 2013 (in order of importance) was: investment in education/school fees (45.7%); agricultural investment (29.6%); non-agricultural investment (13.6%); consumption (3.7%); medical related issues (1.2%) and other household needs including business (6.2%). Similarly, for the loans acquired in 2013, Control farmers prioritised investment in education (41.7%); followed by consumption (25%); agricultural investment (16.7%); non-agricultural investment (8%); and medical related issues (8%). Among the Treatment farmers; loans received for agricultural investment were invested in expanding the coffee enterprise (52.9%) and production of other food crops (23.5%). Most Treatment farmers obtained loans from farmer groups/organizations (70%) and SACCOs (17.5%); and the impact of the acquired loans was reported to be moderate (5%) to major (93.8%) by the majority of the Treatment farmers. All the control farmers (100%) who acquired loans reported major impact.

Reasons cited among treatment farmers for not receiving loans mainly include having no need for credit (28.2%; feared borrowing (15.4%); ignorance about application process (7.6%); lack of ability to pay back (7.6%); and unfavorable terms and conditions (5.1%), among others. The major reason cited by the Control farmers was no need for credit (45%); and lack of ability to payback the loans (12.5%). The level of satisfaction about credit services varied slightly between the treatment and control farmers. The study findings show that there was a significant improvement in the availability of credit services. The overall rating of availability of credit services as very satisfactory increased from 3.4% (in 2010) to 33.6% in 2013 among Treament farmers.

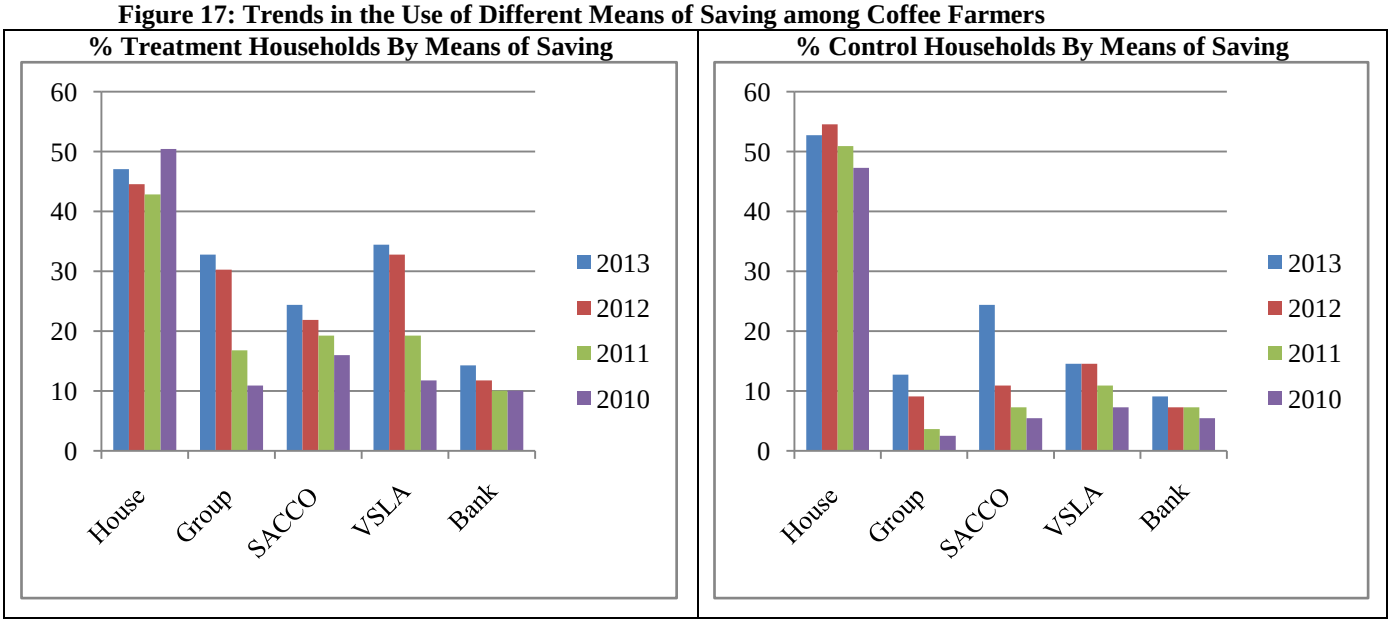
Figure 16: Trends in Credit Access and Loan Values among Coffee Farmers



Within the Control category, the rating increased from 5.6% of the respondents in 2010 to 29.6% in 2013. Most farmers who assessed the level of satisfaction with interest rate charged on credit said ir was satisfactory; and this proportion increased from 23.5% in 2010 to 42.8% in 2013. Few farmers assessed level of satisfaction with interest charged on credit as very satisfactory. Similarly, most Treatment (52%) and Control (24.4%) farmers rated the level of satisfaction with application process/procedure for credit services as satisfactory. Overall, there was a significant improvement in the satisfaction/rating of credit services in the surveyed communities in terms services availability, interest rates charged, application procedures and stringency of the terms and conditions of the credit. The average distance from the homes of the sampled farmers to the nearest banking institution also decreased by 0.75 kms for Treatment farmers and 1.07 kms for Control farmers between 2010 and 2013, implying that financial services were brought closer to the farmers during this period.

The percentage of Treatment farmers saving money in their homes reduced slightly from 50.42% in 2010 to 47.1% in 2013, while the percentage of Control farmers doing so increased slightly from 47.3% to 52.7% between 2010 and 2012. Meanwhile, the percentage of those saving with farmer groups, SACCOs, and VSLAs increased between 2010 and 2013. The use of Banks to save money also increased slightly among Treatment and Control farmers between 2010 and 2013.

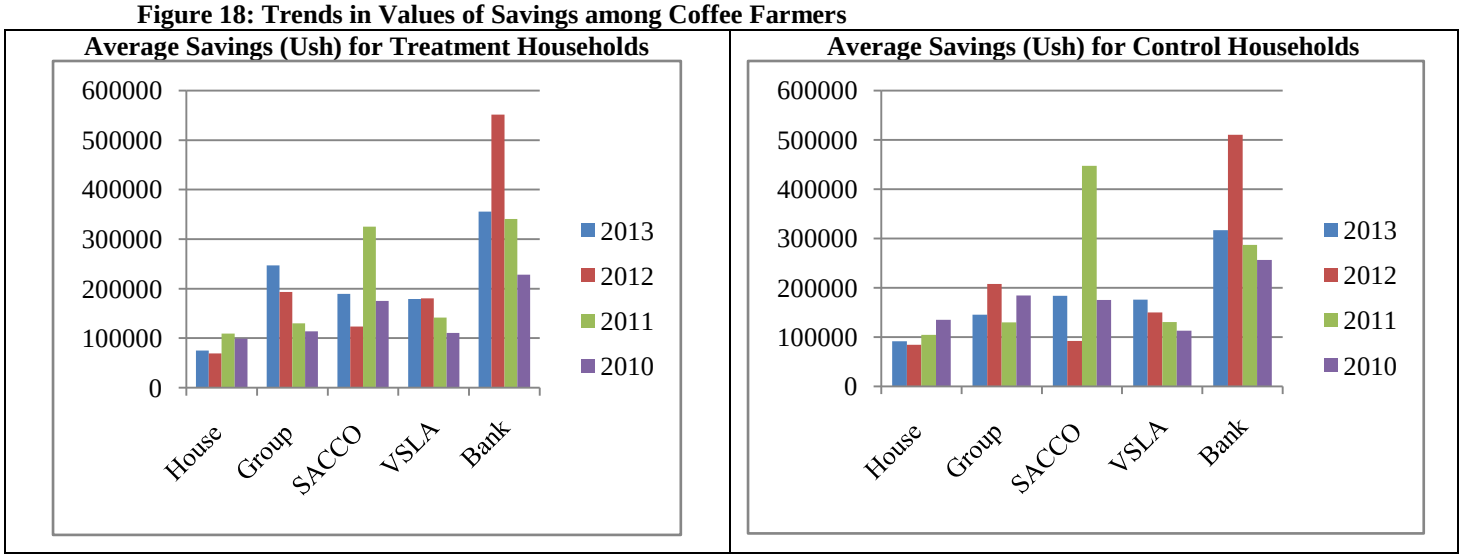
Figure 17: Trends in the Use of Different Means of Saving among Coffee Farmers



The average amount of cash saved at home in 2013 was Ush 75,122 and Ush 91,428 by Treatment and Control farmers, respectively; while the amount saved with farmer groups by Treatment and Control farmers was Ush 247,038 and Ush 145,658, respectively. These findings show that Treatment farmers are saving more of their cash with institutions compared to saving in their houses. The amount saved with groups rose steadily among

Treatment farmers between 2010 and 2013 but declined among those in the Control group, except in 2012 when it increased before decreasing again in 2013. The amount saved with VSLA also increased slightly but steadily in both farmer categories; while savings kept with banks increased sharply from 2010 to 2012, before falling in 2013.

Figure 18: Trends in Values of Savings among Coffee Farmers



6.5.9. Status of Performance Indicators for the Coffee Value Chain in 2012 and 2013

The 2012 annual report shows that 45% of the Treatment farmers in the coffee value chain adopted the recommended practices. The AI study findings, however, show that significantly higher percentages of beneficiary farmers applied key practices in 2013, which include use of improved or clean planting materials for coffee (70.6%), manure (59.7%), correct spacing (79.8%), pruning (87.4%), and mulching (46.2%). For fertilizer application and pest and disease control, however, the AI reported figures of 33.6% and 40.3%, respectively, are lower than the 45% figure reported in the 2012 Annual Report. The 2012 Annual Report figure on acreage is lower than the AI finding by 0.34acres and 0.46acres for Arabica and Robusta coffee, respectively; while the IA study report figures on average income per farmer and yield are also lower than those of the 2012 Annual report by Ush1,026,568 for Robusta coffee and Ush 1,212,464 for Arabica coffee; 128kg/acre for Robusta coffee and 278kg/acre for Arabica coffee. The sales prices in the IA report of Ush 3,517/kg and Ush 2,661/kg for Arabica and Robusta coffee, respectively are also lower than the 2012 Annual report figures of Ush 5,000/kg for parchment and Ush 4,600/kg for FAQ. The fact that 74% of beans Treatment farmers based their interview responses on the poor-performing 2013A season may partly explain the deterioration in these performance indicators. However, poor memory and difficulty to accurately estimate quantitative indicators also contributed to the disparity between reported figures in the IA Report and the 2012 Annual Report.

6.6 Soybean

6.6.1 General Characteristics of the Sampled Soybean Farmers

A total of 48 Soybean farmers (33 Treatment and 15 Control) drawn from the sub-counties of Bukatube, Buwaya, Kityerera and Busakira in Mayuge district were sampled for participation in this study. The Treatment farmers are members of Mayuge District Farmer's Association—the Implementing Partner (IP) of aBi Trust-supported interventions in the Soybeans value chain.

Table 64: Characteristics of the Soybeans Farmers/Household Heads and their households

Variable	Entire Sample N=48	Treatment (N=33)	Control (N=15)
% Male Farmers/Headed-Households	50.00	48.48	53.33
Main Occupation of Farmer/HH Head (% HHds/Farmers Reporting….)			
Production of crops	85.42	81.82	93.33
Salary employment	2.08	3.03	0.00
Trading	4.17	3.03	6.67
Taylor	2.08	3.03	0.00
Restaurant	2.08	3.03	0.00
Welding	2.08	3.03	0.00
Camera man/ photographer	2.08	3.03	0.00
Average age (years) of Farmer/HH Head	44.21 (12.96)	44.91 (13.15)	42.67 (12.85)
Highest school grade completed by Farmer/ HH Head	7.79 (2.87)	7.29 (3.09)	8.79 (2.12)
Marital status of Farmer/HH Head (% HHds/Farmers….)			
Married	93.75	90.91	100.00
Widowed	2.08	3.03	0.00
Divorced	4.17	6.06	0.00
Average family size	8.96 (4.37)	8.24 (3.98)	10.53 (4.90)
Dependency Ratio	0.57 (0.35)	0.62 (0.38)	0.45 (0.24)

Half (50%) of the sampled households/farmers are male-headed, but the proportion of male-headed households was slightly higher among Control (53.3%) than Treatment (48.48%) farmers. Treatment farmers were slightly older (44.9 years) than their cohorts in the Control group (42.6 years). The Control farmers were more educated (8.79 years of schooling) than those in the Treatment category(7.29 years of schooling). The main occupation for most the sampled households/farmers (85.4%) is crop farming, but the proportion of those engaged in crop farming as their main occupation is significantly higher in the Control (93.3%) the Treatment (81.8%) category. The average household has 8.96 people, with Treatment households having significantly smaller families (8.24 people) than those in the Control group (10.53 people). However, the dependency ratio (No. of productive/No. of unproductive family members) was significantly higher among Treatment (0.62) than Control (0.45) farmers.

6.6.2 Asset Accumulation

Treatment and Control households accumulated assets in the form of communication equipment and livestock during the intervention period (between 2011 and 2013), with Treatment households performing better than those in the Control category in accumulation of communication equipment, but the converse is true for livestock. The asset value of farm equipment increased among Treatment farmers but decreased in the Control group; but for transport equipment, the value declined in both categories, but with Control farmers experiencing a bigger decline than their cohorts in the Treatment category. The change in value of farm, transport, and communication equipment and livestock during the intervention period was Ush 6,401; 3,291; 11,118; and -37,082 per farmer, respectively.

Table 65: Household Asset Endowment in 2010 (Before Intervention) and 2013

Variable	**Treatment**		**Control**		**Attributable Changes (DID)**
	Now(2013)	***2010***	***Now(2013)***	***2010***	
Total value of Farm Equipment (Ush)	68182.81 (46631.61)	63538.72 (42979.81)	59702.17 (40662.18)	61459.26 (41928.43)	6,401
Total value of Transport Equipment (Ush)	118777.8 (79250.5)	131948.2 (54278.49)	98234.97 (49591.8)	114696.1 (46125.11)	3,291
Total value of Communication Equipment (TV, Radio, Mobile Phone) (Ush)	103520.2 (59222.02)	87008.62 (50815.06)	75866.67 (32980.22)	70473.21 (41486.8)	11,118
Total value of Livestock (Ush)	767742.7 (444580.4)	749502 (452190.2)	579627.5 (547021.1)	524304.7 (535853.4)	-37,082

6.6.3. Job Creation at the Household/Farmer Level

None of the sampled Soybean farmers employed farm workers on permanent terms. On average, the number of short-term employees working with the Treatment farmers did not change between 2010 and 2013; while that of Control farmers increased from 2.5 in 2010 to 2.8 in 2013. Treatment farmers created more Fulltime Equivalents (FTEs) of short-term jobs (15.375) than their cohorts in the Control group (1.125).

Table 66: Number of Farm Empoyees and Expenditure on Labor in 2010 and 2013

	Treatment		**Control**		**Attributable Changes (DID)**
	2013	**2010**	**2013**	**2010**	
Number of Temporary/short-term workers currently employed	3.44 (1.37)	3.43 (1.62)	2.80 (1.30)	2.50 (1.00)	-0.29
Number of Months the farmer uses Temporary/short-term workers	2.32 (1.11)	1.73 (0.59)	1.60 (0.55)	1.68 (0.47)	0.67
Additional Fulltime Equivalent (FTE) Jobs Created		15.375		1.125	14.25
Total annual payment to Temporary/short-term workers **(Ush)**	325113.1 (212350.7)	278820.5 (196345)	222000 (122556.1)	145000 (44347.12)	-30,707.4

However, the annual wage-bill for farmers in both categories increased significantly during this period, with that of Treatment farmers increasing by a lower magnitude (Ush 46,292.6) than the one for Control farmers (Ush 77,000). However, the wage-bill for

Treatment farmers exceeded the one for Control farmers by over Ush 100,000 both before and after intervention by aBi Trust.

6.6.4. Production and Sales of Soybeans in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

For both Treatment and Control farmers, the average number of soybean plots planted per year did not change much following aBi Trust-supported interventions (2011-2013) However, the average area allocated to soybeans increased by 52% (from 0.6 acres to 0.91 acres) among the Treatment farmers but decreased by 30% (from 0.73 acres to 0.51 acres) among farmers in the Control category. The change in total land area allocated to soybeans production attributed to aBi's Trust's intervention was 0.53 acres per farmer. Because of the increase in land allocation to soybean production, the quantity of soybean seed planted by both Treatment and Control farmers increased by close to 4kg per farmer. Surprisingly, the value of seed planted increased in the Control category from (Ush 8,347 to Ush 11,260) but declined among Treatment farmers from (Ush 11,711 to Ush 8,952). This could be explained by the fact that Control farmers mostly sourced seed from fellow farmers (53.9%) and input traders (23%) at a cost; while most Treatment farmers used own seed (46.9%) or obtained seed from district or low-lever farmer organizations (40.6%) between 2011-2013, possibly at a lower cost. While none of the Treatment farmers purchased seed from input traders, none of those in the Control category used own seed in 2011-2013. There was a significant decline in the proportion of Treatment farmers sourcing seed from fellow farmers (from 17.65% in 2010 to only 6.25% in 2013); while the proportion of Control farmers sourcing seed from fellow farmers significantly increased from 16.67% in 2010 to 53.85% in 2013.

Table 67: Land Allocation and Input Use in Soybeans Production

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Separate plots/gardens of soybeans grown	1.03 (0.19)	1.00 (0)	1.08 (0.29)	1.00 (0)	-0.05
Total land area (acres) planted to soybeans	0.91 (0.56)	0.60 (0.47)	0.51 (0.34)	0.73 (0.69)	0.53
Total quantity of soybeans seed planted (kgs)	13.92 (8.46)	10.03 (6.52)	10.03 (6.52)	6.61 (3.79)	0.47
Total Value of soybeans seed planted (Ush)	8951.98 (4642.95)	11711.28 (6689.82)	11260.2 (6409.40)	8346.77 (4939.87)	-5,672.73
Total quantity of main fertilizer applied (kg)	1.67 (0.58)	0.00	2.75 (3.18)	0.00	-1.08
Total Value of main fertilizer applied (Ush)	30000 (20000)	0.00	18750 (9545.94)	0.00	11,250
Total quantity of organic input applied (kg)	260 (62.93)	0.00	400 (N=1)	0.00	-
Total Value of organic input applied (Ush)	53000 (27129.32)	0.00	50000 (N=1)	0.00	-
Total Cost of pesticides applied (Ush)	19414.71 (11434.8)	40000 (N=1)	13500 (10598.74)	0.00	-
Total Cost of Herbicides applied (Ush)	27000 (12727.92)	26000 (N=1)	26666.67 (N=1)	0.00	-
Main Source of Seed (% HHds/Farmers Reporting….)					
1=own seed,	46.88	35.29	0.00	33.33	44.92
2=input trader	0.00	11.76	23.08	16.67	-18.17
4=District or Lower-Level Farmers organization	40.63	35.29	15.38	16.67	6.63
5=market vendor/ local market	6.25	0.00	7.69	16.67	15.23

7=Fellow farmer	6.25	17.65	53.85	16.67	-48.58
Perceived quality of seed (% HHds/Farmers Reporting….)					
Very good	59.38	64.71	53.85	66.67	7.49
Good	31.25	29.41	30.77	33.33	4.4
Poor	3.13	5.88	7.69	0.00	-10.44
Very poor	6.25	0.00	7.69	0.00	-1.44
Main Source of Fertilizer (% HHds/Farmers Reporting….)					
Own fertilizer	0.00	50.00	100.00	0.00	-150
Input trader	33.33	0.00	0.00	0.00	33.33
District or Lower-Level Farmers organization	66.67	50.00	0.00	0.00	16.67
Perceived quality of Fertilizer (% HHds/Farmers Reporting….)					
Very good	66.67	75.00	50.00	0.00	-58.33
Good	33.33	25.00	50.00	0.00	-41.67
Credit Sources for Fertilizer (% HHds/Farmers Reporting….)					
Input trader	0.00	3.03	0.00	0.00	-3.03
DFA	0.00	0.00	6.67	0.00	-6.67

A few Treatment and Control farmers used chemical fertilizers in soybean production in 2011-2013 albeit in very small quantities (1.67 Kg- 2.5Kg). On average, farmers in the Treatment category invested more money (Ush 30,000) in the purchase of fertilizers during this period than the Control farmers (Ush 18,750). Only 1 Treatment farmer (out of 33) reported using pesticides and herbicides in soybean production in 2010 or before. Similarly, only 1 Control farmer (out of 15) reported applying herbicides on soybean production in 2011-2013. There was no use of organic inputs in soybean production in 2010 or before; while only one Control farmer used organic inputs in 2011-2013. Treatment farmers, however, used an average of 260kgs of organic inputs valued at Ush 53,000 in 2011-2013.

The average quantity of soybeans harvested increased in both farmer categories during the project period. Among Treatment farmers, soybean output increased from 105.99kgs in 2010 or before to 140.56kgs in the period 2011-2013; representing an increase of 32.6% compared to a 6% increment (from 101.58kgs to 107.99kgs) in the Control group. The change in quantity of soybean output attributed to aBi Trust's intervention is 28.27kgs. The quantity of soybean sales also increased by 28.5% among Treatment farmers but declined by 7% in the Control category; and the change in soybean sales attributed to aBi Trust's intervention is 36.5kgs per farmer.

Table 68: Harvests and Sales of Soybeans

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Total quantity of soybeans harvested (kgs)	140.56 (84.80)	105.99 (44.68)	107.88 (76.26)	101.58 (70.99)	28.27
Total quantity of soybeans sold (kgs)	137.14 (86.41)	106.71 (75.90)	78.63 (64.39)	84.72 (73.00)	36.52
Selling Price (Ush/kg)	1407.80 (197.99)	1372.30 (236.86)	1435.37 (161.00)	1421.22 (130.18)	21.35
Main Mode of Sale (% HHds/Farmers Reporting….)					
Collectively through group	39.29	35.71	0.00	0.00	3.58
Individually	60.71	64.29	100.00	100.00	-3.58

Main Buyer Type (% HHds/Farmers Reporting….)					
1=Consumer,	3.57	7.14	16.67	0.00	-20.24
2=Trader,	64.29	50.00	83.33	100.00	30.96
3=NGO	3.57	0.00	0.00	0.00	3.57
4=Institution	21.43	21.43	0.00	0.00	0
6=Processor	7.14	21.43	0.00	0.00	-14.29
Average distance to main buyer (km)	1.37 (1.12)	3.00 (N=1)	3.2 (1.74)	2.00 (N=1)	-2.83
Mode of transport to point of sale (% HHds/Farmers Reporting….)					
2=bicycle,	71.43	100.00	75.00	0.00	-103.57
3=motorbike,	28.57	0.00	25.00	100.00	103.57
Average Transport Cost (Ush) *(6.41+6.42)*	3428.57 (1902.38)	2000 (N=1)	2400 (1140.2)	4000 (N=1)	3,028.57
Who made sales decisions (when and how much to sell)? (% HHds/Farmers Reporting….)					
1=Husband;	28.57	35.71	50.00	60.00	2.86
2=Wife;	17.86	28.57	16.67	0.00	-27.38
3=Both Husband& Wife;	53.57	35.71	33.33	40.00	24.53
Who made decisions on the use of revenue from this crop? (% HHds/Farmers Reporting….)					
1=Husband;	32.14	42.86	50.00	60.00	-0.72
2=Wife;	14.29	21.43	16.67	0.00	-23.81
3=Both Husband& Wife;	53.57	35.71	33.33	40.00	24.53
How was the revenue from this crop used? (List the top three) (% HHds/Farmers Reporting….)					
1=Consumption;	25.93	38.46	41.67	40.00	-14.2
2=Investment in Agricultural enterprise	25.93	38.46	8.33	0.00	-20.86
3=Investment in non-agricultural enterprise;	7.41	0.00	0.00	0.00	7.41
4=Medical expenses;	3.70	0.00	8.33	0.00	-4.63
5=Household durables;	0.00	0.00	8.33	0.00	-8.33
7=School fees	37.04	23.08	25.00	0.00	-11.04
13= Buying land	0.00	0.00	8.33	60.00	51.67

Treatment farmers reported an increase in the price at which they sell soybeans of Ush 36/kg between 2010 and 2013; while those in the Control category reported a price increment of Ush14/kg. The average sales price received by Control farmers was higher than that of the Treatment group by about Ush 28/kg after aBi Trust's interventions (2011-2013), and by Ush 49/kg before aBi Trust's interventions (2010 or before). The proportion of Treatment farmers selling soybean collectively increased marginally from 39.29% to 35.71% after aBi Trust-supported interventions, representing a 3.6 percentage point increase. Soybean yield (kgs/Acre) declined significantly among Treatment farmers by 39.6% from 317.5 kgs/Acre in 2010 or before to 191.63 kgs/Acre after aBi Trust-supported interventions but increased by 39.8% from 199.01 kgs/Acre in 2010 or before to 278.3 kgs/Acre in the Control group. It is surprising that soybean yield declined among Treatment farmers but increased in the Control category; and that while Treatment farmers had higher yields than those in the Control category before intervention, this was reversed after intervention to place Control farmers in a better performance position, contrary to apriori expectation. It is important to conduct further investigations into the underlying cause of these counter-intuitive findings.

Table 69: Costs and Returns to Soybeans Production

	Treatment		Control		Attributable Changes
	2011-2013	***2010&B4***	***2011-2013***	***2010&B4***	
Productivity of Soybeans (Kg/Acre)	191.63 (136.79)	317.50 (256.99)	278.30 (234.15)	199.01 (166.74)	-205.16
Input Costs per Kg (Ush/Kg	155.18 (83.13)	156.05 (85.63)	189.11 (117.73)	130.21 (77.20)	-59.77
Input Costs per Acre(Ush/Acre)	23470.39 (8796.60)	26387.83 (14710.71)	31076.39 (13236.69)	31108.81 (15294.1)	-2,885.02
Input Costs per Farmer (Ush/Farmer)	16293.21 (8687.15)	13215.72 (5704.36)	16249.34 (7501.02)	10517.62 (4428.42)	-2,654.23
Hired Labor costs of Soybeans Production per Kg (Ush/Kg)	359.42 (69.77)	247.14 (148.220	497.03 (239.90)	133.33 (N=1)	-251.42
Hired Labor costs of Soybeans Production per Acre (Ush/Acre)	43750 (26978.97)	40165.95 (22523.1)	78570.72 (40405.1)	40000 (N=1)	-34,986.7
Hired Labor costs Soybeans Production per Farmer (Ush/Farmer)	49125 (15994.98)	30200 (25223.01)	65000 (21213.2)	30000 (N=1)	-16,075
Total Cost of Production per Kg	193.73 (154.30)	213.99 (176.26)	208.57 (126.29)	152.43 (74.39)	-76.4
Total Cost of Production per Acre (Ush/Acre)	23962.91 (8693.02)	29331.62 (13681.2)	30977.18 (13388.48)	38300.85 (17574.76)	1,954.96
Total Cost of Production per Farmer (Ush/Farmer)	19697.36 (12884.88)	18171.86 (12762.33)	15795.44 (6795.926)	15517.62 (14946.55)	1,247.68
Gross Margin per farmer (Ush)	182884.4 (111094.9)	154772.5 (117262.3)	160521.2 (119208)	81557.96 (51830.53)	-50,851.3
Gross Margin per acre (Ush)	191124.1 (160108.4)	206221.8 (224583.8)	238184.9 (210778.6)	91271.57 (94135.4)	-162,011
% of Treatment Farmers with positive Gross Margins			**66.67**		
Average income growth for Treatment Farmers with positive Gross Margins			**162187.1 (99667.41)**		

On the other hand, input costs per kilogram used in the production of soybeans did not change among the Treatment farmers; but increased substantially by over Ush 59/kg among Control farmers. Input costs per Acre declined in both farmer categories but by a bigger margin among Treatment than Control farmers. However, input costs per farmer increased by a greater margin among Control than Treatment farmers. Hired labor costs per Kg, Acre and farmer also increased in both farmer categories, but by a greater margin among Control than Treatment Farmers. These findings suggest that during the intervention period (2011-2013), Control farmers invested more in soybean production than their cohorts in the Treatment group; which explains why soybean yield declined among Treatment farmers but increased in the Control group.

The Total cost of production per kg decreased in the Treatment group from Ush214/kg in 2010 or before to Ush 193.7/Kg in 2011-2013; while that of Control farmers increased from Ush 152.4/kg to Ush 208.6/kg. This led to a reduction in production cost of Ush 76.4/Kg attributable to aBi Trust intervention. However, the total cost of production per Acre declined in both farmer categories, but by a bigger margin among Control (Ush 7, 323 per Acre) than Treatment farmers (Ush 5,269 per Acre); leading to an increase in cost of Ush 1,955/Acre attributed aBi Trust-supported interventions. On the other hand, the total production costs per

farmer increased in both farmer categories but by a bigger margin in the Treatment group (Ush 1,525) than the Control group (Ush 278); leading to an increase in cost of Ush 1,248 per farmer attributed aBi Trust-supported interventions.

Income from soybean per farmer increased in both farmer categories but by a bigger margin among Control (Ush 78,963) than Treatment farmers (Ush 28,112); leading to a drop in income per farmer of Ush 50,851 attributable to aBi Trust intervention. Income per acre on the other hand fell among Treatment farmers by Ush 15,098 but increased in the Control category by Ush 146,913; leading to a drop in income per acre of Ush 162,011 attributable to aBi Trust intervention. The large disparity in the per acre income changes is attributed to the yield changes reported earlier, whereby Control farmers registered an increase in yield of close to 40%, yet the yield for Treatment farmers fell by the same magnitude. The yield change disparities are themselves attributed to the fact that Control farmers invested more per acre in soybean production than their cohorts in the Treatment group; and as a result their income per acre grew by a greater magnitude, notwithstanding their reduction in soybean area during the intervention period of aBi Trust. However, despite the seemingly poor performance of Treatment relative to Control farmers, 66.7% of the Treatment farmers (N=33) registered positive income growth following intervention by aBi Trust, estimated at an average of Ush 162,187 per farmer.

6.6.5 Training and Application of Improved Soy bean Technologies and Agronomic practices in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

The proportion of Treatment farmers who received training on improved soybean varieties increased from 33.3% in 2010 or before to 42.4% between 2011 and 2013—an increase of 9.1 percentage points compared to the 6.7 percentage point increase in the Control group during the same period. Thus, the change in prevalence of training on the use of improved soybean seed attributable to aBi Trust support is 2.4 percentage points. The change in prevalence of training in soil fertility improvement attributed to aBi Trust support is 3 percentage points for Compost/Manure use; 18.2 percentage points for use of chemical fertilizer; 3 percentage points for leguminous cover crops; and 6.1 percentage points for animal manure use.

Moderate to high proportions of treatment farmers reported receiving training in crop husbandry practices, such as timely weeding (60.6%) and planting (57.6%); seed rate (60.6%); chemical spraying (60.6%); line planting (72.7%) and spacing (69.7%). The changes in prevalence of training in these areas attributed to aBi Trust-supported interventions were: 10.9 percentage points; 20.6 percentage points; 10.9 percentage points;

20.6 percentage points; 17.6 percentage points; and 7.9 percentage points for line spacing; seed rate; line planting; chemical spraying; timely weeding and planting, respectively. Attributable changes to aBi Trust-supported interventions in training are however much smaller for soil and water conservation practices, such as trenches (9.1 percentage points) and mulching (6.1 percentage points); and are non-existent in the use of trash lines and hedgerows.

Table 70: Prevalence of Training on Improved Soybean Technologies and Agronomic practices.

Type of technology/practices	**Number of HHs/ Farmers Trained to Use 2011-1023**		**Number of HHs/ Farmers Trained to use in 2010 or before**		**Attributable Changes (DID)**
	Treatment (N=33)	**Control (N=15)**	**Treatment (N=33)**	**Control (N=15)**	
Improved varieties of seeds/seedlings					
01 Improved seed for soybeans	42.4	6.7	33.3	0.0	2.4
Soil fertility improvement					
01 Chemical Fertilisers	48.5	0.0	30.3	0.0	18.2
02 Compost/ Manure	30.3	0.0	27.3	0.0	3.0
04 Animal manure	36.4	6.7	30.3	6.7	6.1
Crop husbandry practices					
01 Timely planting	57.6	20.0	36.4	6.7	7.9
02 Timely weeding	60.6	13.3	36.4	6.7	17.6
03 Crop rotation	42.4	13.3	27.3	6.7	8.5
04 Chemical spraying	60.6	13.3	33.3	6.7	20.6
05 Line planting	72.7	20.0	48.5	6.7	10.9
06 Spacing	69.7	20.0	45.5	6.7	10.9
07 Seed rate	60.6	6.7	33.3	0.0	20.6
Soil and water conservation					
01 Grass bands	3.0	0.0	0.0	0.0	3.0
02 Trenches	24.2	0.0	15.2	0.0	9.1
03 Trash lines	3.0	0.0	3.0	0.0	0.0
04 Mulching	9.1	0.0	3.0	0.0	6.1
05 Hedge rows	3.0	0.0	3.0	0.0	0.0
Post harvest handling					
1 Use of Improved Storage facility such as Cribs, Granaries	15.2	0.0	6.1	0.0	9.1
2 Use of Tarpaulins for drying	63.6	13.3	33.3	6.7	23.6
4 Use of drying shade/platform	6.1	0.0	0.0	0.0	6.1
6 Storage pest control	21.2	0.0	3.0	0.0	18.2
14 Use of weighing scales	18.2	0.0	12.1	0.0	6.1
15 Quality Mgt Standards	27.3	13.3	21.2	0.0	-7.3
16 Certification	12.1	0.0	9.1	0.0	3.0
17 Training and mentoring in PHH	48.5	13.3	24.2	0.0	10.9
Farming as a business					
1 Collective Marketing	72.7	0.0	45.5	0.0	27.3
2 Record keeping	21.2	0.0	9.1	0.0	12.1
3 Business planning	12.1	0.0	3.0	0.0	9.1
4 Information boards	6.1	0.0	0.0	0.0	6.1
5 Sms mkt information service	3.0	0.0	0.0	0.0	3.0
Gender for growth					
1. Training on gender mainstreaming	66.7	0.0	33.3	0.0	33.3
2. Entrepreneurship training	30.3	0.0	15.2	0.0	15.2
3. Training in VSLA	72.7	13.3	36.4	0.0	23.0
Financial service dev't					
1.Training on Savings & Loans	57.6	26.7	33.3	0.0	-2.4

For post-harvest handling practices, the attributable changes to aBi Trust supported training is moderate in the use of tarpaulins for drying (23.6 percentage points); and storage pest control (18.2 percentage points). In the case of other post harvest practices (Certification; Training in PHH; weighing scales; drying shades/platforms; use of weighing scales; use of quality magement standards; etc) the attributable change ranges from 10 percentage points and below.

The proportion of Treatment farmers who received training on collective marketing of soy beans increased from 45.5% in 2010 or before to 72.7% between 2011 and 2013; representing an increase of over 27.2 percentage points compared to the unchanged position in the Control group where no farmer was trained in collective marketing of soybean before and after intervention by aBi Trust. Hence the change attributable to aBi Trust-supported training in collective marketing is 27.3 percentage points. The proportion of Treatment farmers trained in record-keeping increased from 9.1% in 2010 or before to 21.1% between 2011 and 2013; while those trained in business planning increased from 9.1% in 2010 or before to 12.1% between 2011 and 2013. The change attributable to aBi Trust-supported interventions in prevalence of training in record keeping and business planning was 12.1 and 9.1 percentage points, respectively. The change in training on the use of information boards; sms market information services attributable to aBi Trust support was below 10 percentage points.

Two thirds of Treatment farmers received training in gender mainstreaming between 2011 and 2013; while 30.3% received entrepreneurship training; The change in prevalence of training in gender mainstreaming and entrepreneurship attributed to aBi Trust support was 33.3 and 15.2 percentage points, respectively. On the other hand; a high proportion of Treatment farmers (72.7%) received training in village savings and loans associations (VSLA) compared to only 13.3% in the Control category. The change in training in VSLA attributed to aBi Trust support was 23 percentage points. The proportion of Treatment farmers who received training on savings and loans under the financial service development (FSD) component increased from 33.3% in 2010 or before to 57.6% in 2011-2013; representing an increase of 24.3 percentage points which is lower than the 26.7 percentage point increment in the Control category.

The majority of Treatment farmers who received training in the above-listed practices and technologies in 2011-2013 were trained by Mayuge District Farmers Association (MADFA)—the IP of aBi Trust-supported interventions in the Soybean value chain; while the few Control farmers who received similar training were trained by NAADS, and other NGOs. Some control farmers also reported receiving training from MADFA.

Table 71: Institutions Involved in Farmer Training on Soybeans Technologies and Practices

Type of technology/practice	% HHs reporting DFA extension staff		% HHs reporting NAADS staff		% HHs reporting Other NGO	
	Treatment	Control	Treatment	Control	Treatment	Control
Improved varieties						
01 Improved seed for soybean	100.0	0.0	0.0	0.0	0.0	0.0
Soil fertility improvement						
01 Chemical Fertilisers	87.5	0.0	0.0	0.0	12.5	0.0
02 Compost/ Manure	80.0	0.0	0.0	0.0	20.0	0.0
04 Animal manure	83.3	0.0	0.0	100.0	16.7	0.0
Crop husbandry practices						
01 Timely planting	84.2	0.0	0.0	33.3	10.5	0.0
02 Timely weeding	85.0	0.0	0.0	0.0	10.0	0.0
03 Crop rotation	78.6	0.0	0.0	0.0	14.3	0.0
04 Chemical spraying	85.0	0.0	0.0	0.0	10.0	0.0
05 Line planting	87.5	33.3	0.0	0.0	8.3	0.0
06 Spacing	91.3	33.3	0.0	0.0	4.3	0.0
07 Seed rate	95.0	0.0	0.0	0.0	0.0	0.0
Soil and water conservation						
01 Grass bands	100.0	0.0	0.0	0.0	0.0	0.0
02 Trenches	87.5	0.0	0.0	0.0	12.5	0.0
03 Trash lines	100.0	0.0	0.0	0.0	0.0	0.0
04 Mulching	100.0	0.0	0.0	0.0	0.0	0.0
Post harvest handling						
1 Use of Improved Storage facilities	100.0	0.0	0.0	0.0	0.0	0.0
2 Use of Tarpaulins for drying	95.2	50.0	0.0	0.0	4.8	0.0
4 Use of drying shade/platform	100.0	0.0	0.0	0.0	0.0	0.0
6 Storage pest control	100.0	0.0	0.0	0.0	0.0	0.0
14 Use of weighing scales	83.3	0.0	0.0	0.0	0.0	0.0
15 Quality Mgt Standards	77.8	0.0	0.0	0.0	0.0	0.0
16 Certification	100.0	0.0	0.0	0.0	0.0	0.0
17 Training and mentoring in PHH	93.8	50.0	0.0	0.0	0.0	0.0
Farming as a business						
1 Collective Marketing	91.7	0.0	0.0	0.0	4.2	0.0
2 Record keeping	100.0	0.0	0.0	0.0	0.0	0.0
3 Business planning	100.0	0.0	0.0	0.0	0.0	0.0
4 Information boards	100.0	0.0	0.0	0.0	0.0	0.0
5 Sms mkt information service	100.0	0.0	0.0	0.0	0.0	0.0
Gender for growth						
1. Training on gender mainstreaming	100.0	0.0	0.0	0.0	0.0	0.0
2. Entrepreneurship training	100.0	0.0	0.0	0.0	0.0	0.0
3. Training in VSLA	87.5	0.0	0.0	0.0	4.2	0.0
Financial service dev't						
1.Training on Savings & Loans	89.5	0.0	0.0	0.0	0.0	50.0

There were varying proportions of farmers (both Treatment and control) who applied the technologies that were promoted under the Soybean value chain through aBi Trust supported training. Information gathered indicates that there was low to medium adoption rates among Treatment farmers (ranging from 3% to 73% of the farmers) for practices such as use of improved varieties (improved seed for Soybean at 39.4%); soil fertility management practices (use of chemical fertilizers at 24.2%); crop husbandry practices (timely weeding at 60.6%; timely planting at 54.5%; crop rotation at 36.4%; chemical spraying at 48.5%; line planting at 72.7%; spacing at 69.7%; and seed rate at 60.6%); soil and water conservation

practices (trenches at 24.2%); post harvest handling practices (quality management standards at 21.2%; certification at 12.1%; training and mentoring in PHH at 42.4%; use of tarpaulins at 27.3%; and weighing scales at 12.1%); and farming as a business (collective marketing at 36.4%; record keeping at 21.2%; information boards at 6.1%; and sms market information services at 3%). Reported application of G4G and FSD practices is also moderate (gender mainstreaming at 60.6%; VSLA at 66.7%; entrepreneurship at 21.2%; and training on savings and loans at 54.5%).

Because some Treatment farmers reported using several of the promoted improved technologies and practices before intervention by aBi Trust; and because some Control farmers also claimed to be using these improved practices, the change in proportion of farmers using the promoted technologies and practices attributed to aBi trust support were low to moderate, ranging from 0 to 36.4 percentage points. The change in use of improved soybean technologies and practices attributed to aBi Trust support was moderate for practices such as application of chemical fertilizers (18.2 percentage points); timely weeding (17 percentage point); chemical spraying (23.6 percentage points); seed rate (26.7 percentage points); trenches (15.2 percentage points); use of tarpaulins for drying (21.6 percentage points); collective marketing (21.2%) and training in gender main streaming (36.4 percentage points) and VSLA (29.1%). Changes in use of technologies and practices attributed to aBi Trust support in other areas were generally low, ranging from 0 to 13.3 percentage points. Based on the above-listed results, it is evident that the levels of impact indicators in the soybean value chain are much lower than those for coffee, maize, beans and sunflower.

Table 72: Application of Improved Soybeans Technologies and Agronomic Practices

Type of technology/practices	% HHs/Farmers that applied in 2011-2013		% HHs/Farmers that applied in 2010 or before		Attributable Changes (DID)
	Treatment (N=33)	Control (N=15)	Treatment (N=33)	Control (N=15)	
Improved varieties of seeds					
01 Improved seed for soybeans	39.4	6.7	18.2	0.0	14.5
Soil fertility improvement					
01 Chemical Fertilisers	24.2	0.0	6.1	0.0	18.2
04 Animal manure	15.2	0.0	6.1	0.0	9.1
Crop husbandry practices					
01 Timely planting	54.5	20.0	30.3	0.0	4.2
02 Timely weeding	60.6	13.3	30.3	0.0	17.0
03 Crop rotation	36.4	13.3	15.2	0.0	7.9
04 Chemical spraying	48.5	6.7	18.2	0.0	23.6
05 Line planting	72.7	20.0	42.4	0.0	10.3
06 Spacing	69.7	20.0	39.4	0.0	10.3
07 Seed rate	60.6	6.7	27.3	0.0	26.7
Soil and water conservation					
01 Grass bands	3.0	0.0	0.0	0.0	3.0
02 Trenches	24.2	0.0	9.1	0.0	15.2
03 Trash lines	3.0	0.0	3.0	0.0	0.0
04 Mulching	9.1	0.0	3.0	0.0	6.1
Post harvest handling					

1 Use of Improved Storage facilities	9.1	0.0	3.0	0.0	6.1
2 Use of Tarpaulins for drying	27.3	6.7	6.1	6.7	21.2
4 Use of drying shade/platform	3.0	0.0	0.0	0.0	3.0
6 Storage pest control	6.1	0.0	3.0	0.0	3.0
14 Use of weighing scales	12.1	0.0	9.1	0.0	3.0
15 Quality Mgt Standards	21.2	13.3	12.1	6.7	2.4
16 Certification	12.1	0.0	6.1	0.0	6.1
17 Training and mentoring in PHH	42.4	13.3	18.2	0.0	10.9
Farming as a business					
1 Collective Marketing	36.4	0.0	15.2	0.0	21.2
2 Record keeping	21.2	0.0	6.1	0.0	15.2
3 Business planning	12.1	0.0	0.0	0.0	12.1
4 Information boards	6.1	0.0	0.0	0.0	6.1
5 Sms mkt information service	3.0	0.0	0.0	0.0	3.0
Gender for growth					
1. Training on gender mainstreaming	60.6	0.0	24.2	0.0	36.4
2. Entrepreneurship training	21.2	0.0	15.2	0.0	6.1
3. Training in VSLA	66.7	13.3	24.2	0.0	29.1
Financial service devt					
1.Training on Savings & Loans	54.5	20.0	21.2	0.0	13.3

For Households/farmers that did not apply the aBi Trust-supported technologies and practices in sunflower production, the major reasons cited include the technologies being expensive (22.01%); being unavailable (10.53%); and not being required (11.96%), lack of training (13.4%) and interest (7.18%), difficulty to apply (5.26%) and the perception that the soils are still fertile (8.6%).

Table 73: Reasons for Non-Application of Soybeans Technologies and Agronomic Practices

Reasons	**Entire sample (%) (N=48)**	**Treatment (%) (N=33)**	**Control (%) (N=15)**
1= Not available	10.53	10.27	11.11
2=Difficult to apply	5.26	7.53	0.00
5= Not trained	13.40	8.22	25.40
6= Expensive	22.01	22.60	20.63
10= Not interested	7.18	5.48	11.11
11=Soils still fertile	8.61	10.96	3.17
13=Not required	11.96	15.07	4.76

6.6.6: Farmer Perceptions on Impact of Applied Soybean Technologies and Practices

Generally; a large proportion of the few Treatment and Control farmers who used the improved technologies and practices reported a large and positive impact after using them. A high proportion of Treatment farmers said that they had a large positive impact after applying storage pest control (100% Treatment and 0% Control); animal manure (60% Treatment and 0% Control) and leguminous cover crop (100% Treatment and 0% Control). A small proportion of treatment farmers reported a positive and large impact after applying soil fertility improvement technologies such as chemical fertilizer (12.5%) and mulching (33.3%).

Fairly large proportion of farmers (in the range of 30 to 50%) who applied agronomic practices (spacing, line planting, timely planting and improved soybean seed) also reported a positive and large impact. Among post harvest handling practices, moderate proportions of

Treatment farmers (40-57%) who applied the same practices such as quality management standards and training and mentoring in post harvest handling reported a large and positive impact. In other areas of post harvest handling; a smaller proportion of farmers reported a positive and large impact after using improved storage facilities (33.3% Treatment and 0% Control); tarpaulins for drying (22.2% Treatment and 100% Control); and weighing scales (25% Treatment and 100% Control).

Table 74: Perceived Impact of the Applied Soybean Technologies and Practices

Type of technology/practice	% HHs reporting *Positive & Large*		% HHs reporting *Positive but Small*	
	Treatment	**Control**	**Treatment**	**Control**
Improved varieties of seeds/seedlings				
01 Improved seed for coffee	46.2	100.0	0.0	0.0
Soil fertility	0.0	0.0	0.0	0.0
01 Chemical Fertilisers	12.5	0.0	0.0	0.0
04 Animal manure	60.0	0.0	0.0	0.0
Crop husbandry				
01 Timely planting	55.6	66.7	0.0	0.0
02 Timely weeding	50.0	100.0	0.0	0.0
03 Crop rotation	50.0	50.0	0.0	50.0
04 Chemical spraying	31.3	100.0	0.0	0.0
05 Line planting	54.2	66.7	4.2	0.0
06 Spacing	56.5	66.7	4.3	0.0
07 Seed rate	40.0	100.0	5.0	0.0
Soil and water conservation				
02 Trenches	50.0	0.0	0.0	0.0
04 Mulching	33.3	0.0	0.0	0.0
Post harvest handling				
1 Use of Improved Storage facilities	33.3	0.0	0.0	0.0
2 Use of Tarpaulins for drying	22.2	100.0	0.0	0.0
6 Storage pest control	100.0	0.0	0.0	0.0
14 Use of weighing scales	25.0	0.0	25.0	0.0
15 Quality Mgt Standards	57.1	100.0	0.0	0.0
16 Certification	50.0	0.0	0.0	0.0
17 Training and mentoring in PHH	42.9	50.0	7.1	50.0
Farming as business				
1 Collective Marketing	33.3	0.0	0.0	0.0
2 Record keeping	28.6	0.0	14.3	0.0
3 Business planning	25.0	0.0	25.0	0.0
Gender for growth				
1. Training on gender mainstreaming	75.0	0.0	0.0	0.0
2. Entrepreneurship training	57.1	0.0	14.3	0.0
3. Training in VSLA	31.8	50.0	9.1	0.0
Financial service Dev't				
1.Training on Savings & Loans	44.4	0.0	0.0	0.0

Under farming as a business, record keeping had the highest proportion of farmers reporting a positive and large impact (33.3% Treatment and 0% Control). The rest of the practices had slightly lower proportions of farmers who reported a positive and large impact for example record keeping (28.6% Treatment and 0% Control); and business planning (25% Treatment and 0% Control). Gender for Growth practices also had fairly large proportions of

farmers reporting a large and positive impact, with training in gender main streaming (75% Treatment and 0% Control) performing better than VSLA (31% Treatment and 50% Control). Close to half of the Treatment farmers (44%) and none of the Control farmers reported that training on savings and loans had a large and positive impact on their performance.

6.6.7: Participation in Soybean Production and Marketing Farmer Groups

The percentage of farmers/households in organizations involved in the production and/or marketing of soybean increased from 51.5% in 2010 to 96.97% in 2013, an increase of 45.5% percentage points. No farmers in the Control category belonged to organizations involved in the production and/or marketing of soybeans.

Table 75: Major Group Activities of Soybeans Producing and Marketing Groups

	Treatment		**Control**	
	2013	**2010**	**2013**	**2010**
8.1 & 8.2: % HHds/Farmers belonging to organization dealing in the production and/or marketing of Soybeans	96.97	51.52	0.00	0.00
Main activities/enterprises that group members engage in collectively (% HHds/Farmers Reporting…)				
1=Production of ***Soybeans***	20.00	18.18	0.00	0.00
2=Production of ***other crop***	20.00	22.73	0.00	0.00
3=Marketing of ***Soyeans***	6.67	4.55	0.00	0.00
5=processing of soybeans	3.33	0.00	0.00	0.00
6=Processing of ***other crop***	46.67	45.45	0.00	0.00

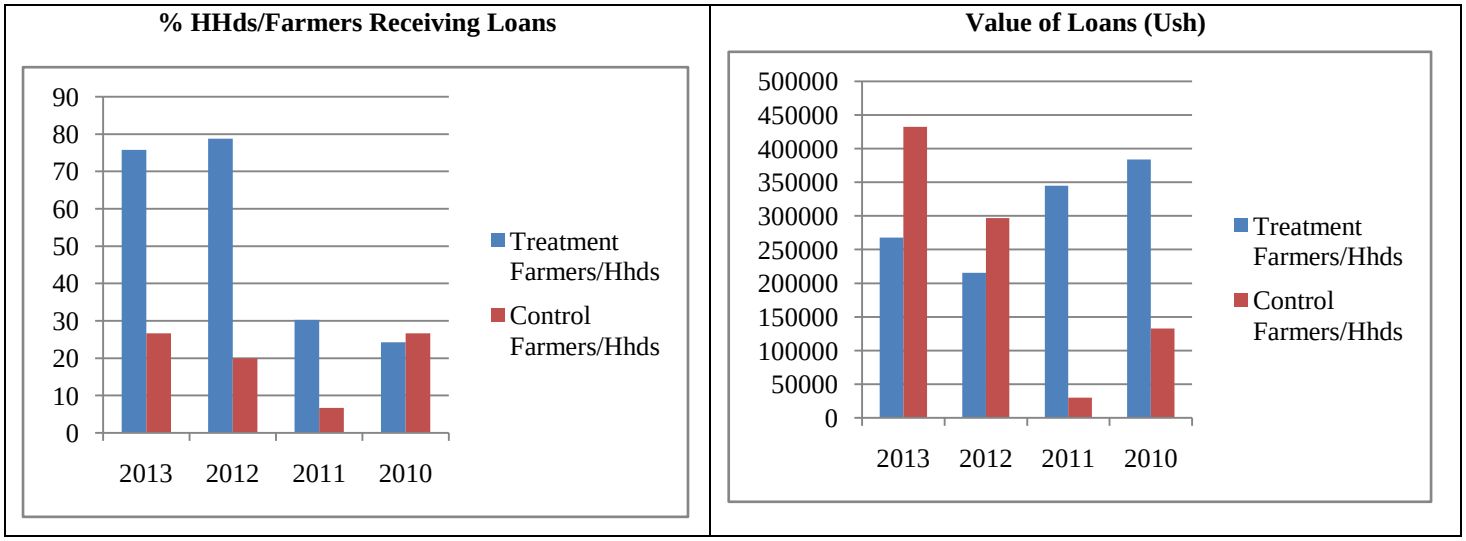
Based on the figures in Table 75 below, group production of soybean is more popular than group marketing; and the proportion of Treatment farmers that participate in group production and marketing of soybean increased marginally (by only 2 percentage points) between 2010 and 2013. Group processing of soybean is very minimal (with only one Treatment farmer (3.3%) involved in group processing of soybean), yet nearly half (46.7%) of the Treatment farmers participate in organizations whose main activities include the processing of other crops.

6.6.8. Financial Services (Credit and Savings) in Soybean Production

The proportion of Treatment farmers receiving loans increased from 24.24% in 2010 to 75.76% in 2013—a percentage point increase of 51.5%; while loan seeking among farmers in the Control category decreased from 26.7% in 2010 to 6.7% in 2011 before rising back to 26.7% in 2013. These results show a large improvement in loan-seeking behavior among Treatment farmers between 2010 and 2013, which is partly attributed to intervention in financial service delivery by aBi Trust. The average value of loans received by Treatment farmers decreased from Ush 383,750 in 2010 to Ush 267,780 in 2013; while that of Control farmers increased from Ush 132,500 in 2010 to Ush 432,500 in 2013. Therefore while the

Treatment category did better in terms of proportions of farmers receiving loans, the Control category had better performance in terms of loan amounts received.

Figure 19: Trends in Credit Access and Loan Values among Soybean Farmers



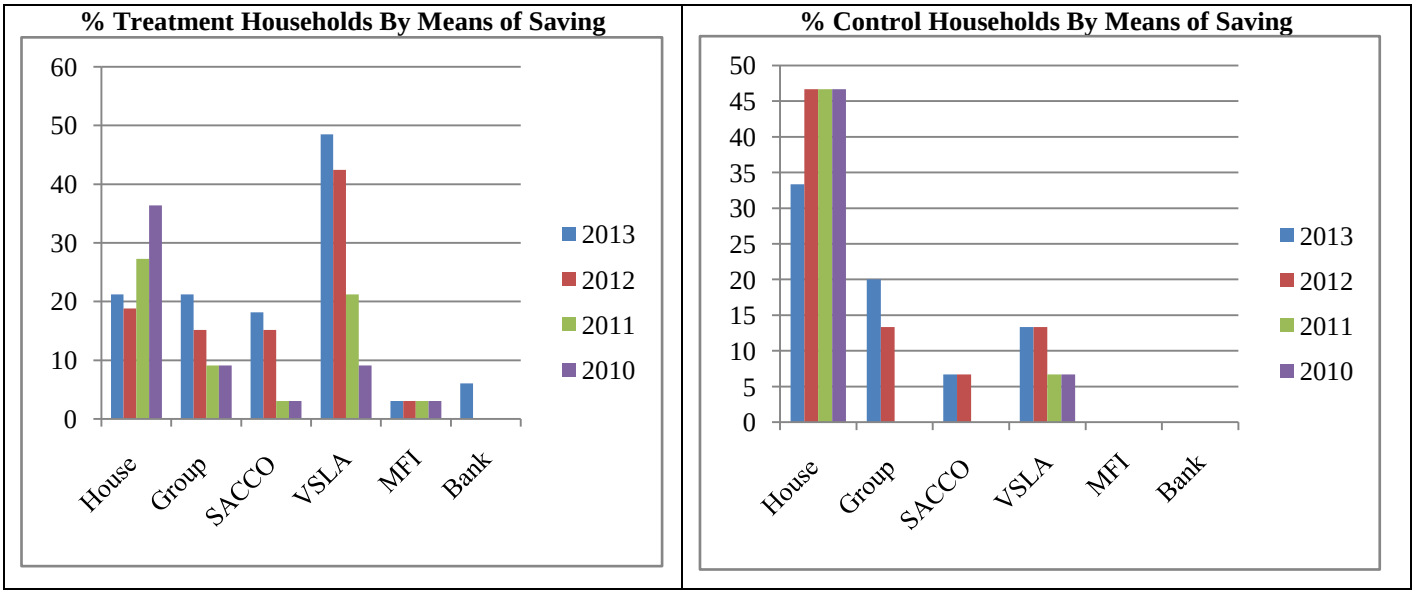
For those that acquired loans, the most commonly reported purpose was investment in agriculture, education (school fees) and non-agricultural ventures and other household needs. Among Treatment farmers, the proportions receiving loans for agricultural purposes steadily increased between 2010 and 2013. Those who received loans for investing in agriculture mainly spent the money on purchasing seed or fertilizer and hiring labor for the production of soybean and other food crops, as well as the purchase of livestock. The majority of farmers obtained loans from farmer groups/organizations, SACCOs and friends. The impact of the acquired loans was reported to be major to moderate by the majority (80-100%) of the Treatment and Control farmers who acquired loans *(See Table SA61, Statistical Appendix for Soybean).*

Most of the farmers who didn't acquire loans either felt they didn't need credit or lacked ability to pay back; while a few said they had no collateral or were detered by unfavorable terms and conditions. In general In general, there was a significant improvement in the satisfaction/rating of credit services in the surveyed communities in terms services availability, interest rates charged, application procedures and stringency of the terms and conditions of the credit. Most respondents said the credit services are currently satisfactory in various attributes compared to 2010 when the majority felt they were unsatisfactory. The average distance from the homes of the sampled farmers to the nearest banking institution also decreased by 0.6 kms for both Treatment and Control farmers between 2010 and 2013.

The percentage of Treatment farmers saving money saving money in their homes significantly reduced between 2010 and 2013; while that for farmers in the Control category did not change until 2013 when it dropped by 13 percentage points. The percentage of

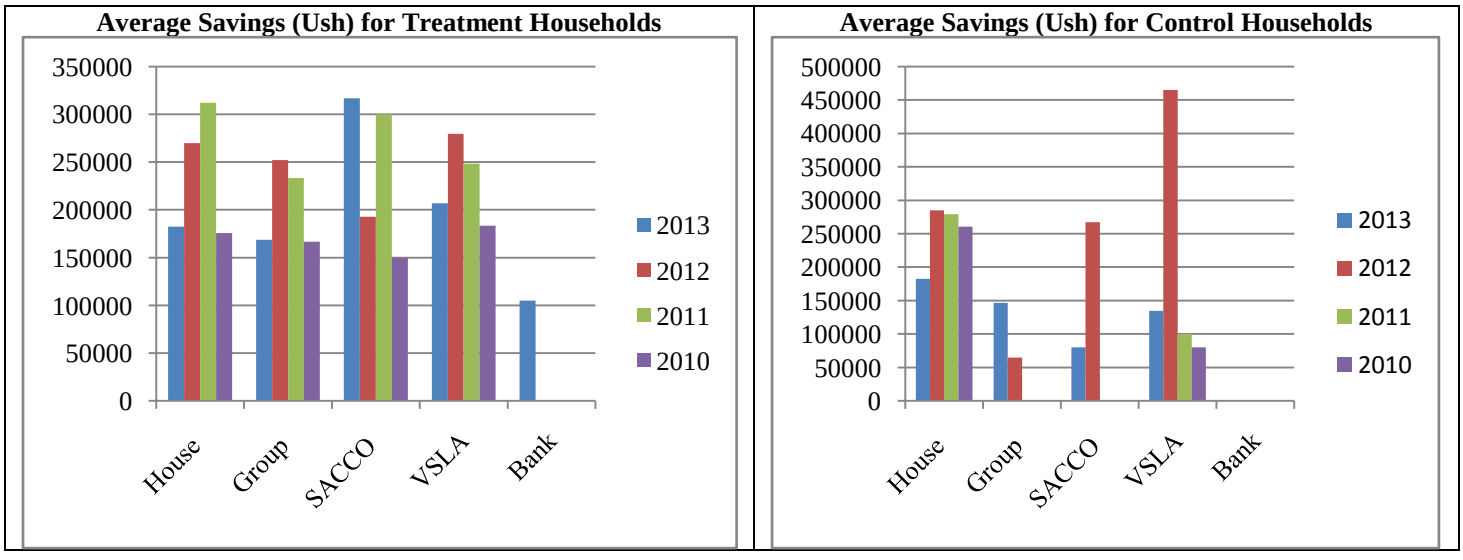
Treatment farmers saving with institutions (VSLA, SACCOs, and Groups) steadily increased between 2010 and 2013—particularly with VSLA. Among Control farmers, however, the increase was more modest and erratic. The proportion of those saving with VSLA was much higher among Treatment than Control farmers—partly because of the intervention of aBi Trust in financial service delivery, especially in the area of VSLA.

Figure 20: Trends in the Use of Different Means of Saving among Soybean Farmers



The use of Banks as a means to save money was only reported among Treatment farmers in 2013, and was used by only 2 farmers. Between 2010 and 2012, the amount of money saved with VSLAs increased steadily among both Treatment and Control farmers, but dropped sharply in 2013. Among Treatment farmers, the same trend was observed in group savings, while savings with SACCOS were erratic between 2010 and 2013.

Figure 21: Trends in Values of Savings among Soybean Farmers



6.6.9. Status of Performance Indicators for the Soybean Value Chain in 2012 and 2013

The 2012 annual report shows that 79% of the Treatment farmers in the soybean value chain adopted the recommended practices. The AI study findings, however, show that much lower percentages of beneficiary farmers applied key practices in 2013, which include use of improved seed (39.4%), correct spacing (69.7%), seed rate (60.6%), application of fertilizer (24.2%) and manure (15.2%) as well as the use of pest and disease control (48.5%). The IA study report figures on acreage, average income per farmer and yield are also lower than those of the 2012 Annual report by 0.1acres, Ush 297,116, Ush 231/kg and 408kg/acre, respectively. It is only sales price for which the IA study report figures are higher than those of the 2012 Annual report by Ush 608/kg. While poor memory and difficulty to accurately estimate quantitative indicators may be partly to blame as is the case in the other value chains, less than a quarter (24.2%) of soybean farmers based their interview responses on the 2013A poor-performing season, so this can't be a major reason for the deterioration in most of the performance indicators. **In fact, soybean is the only value chain for which the adoption figure for GAPs of 79% reported in the 2012 Annual Report is higher than the IA findings for all key GAPs.**

6.7 Financial Service Development (FSD)

Financial Services Development (FSD) is one of the three intervention components (the other two being VCD and G4G) through which aBi Trust channels its support for strengthening the competitiveness of the Agricultural and Agro-processing sectors in Uganda. The immediate objective of FSD is to increase the availability and use of financial services needed for wealth creation in various sectors (not limited to agribusiness) through wider and deeper delivery mechanisms. In the agribusiness sector, FSD's strategy is to underpin the development of the value chains supported by aBi Trust (maize, pulses, coffee, oilseeds, dairy and horticulture) with appropriate financial services offered by financial institutions—and not directly by aBi Trust. This means that aBi Trust works in partnership with financial institutions (FIs) to implement the FSD interventions.

Although the mandate of the FSD component of aBi Trust is to increase access to financial services in various sectors and not just agribusiness, the IA study purposed to sample FSD beneficiaries who received loans for investing in one of the six commodities (coffee, maize, beans, soybean, sunflower, and sesame) supported by aBi Trust; to allow for use of the same survey tool to gather farmer-level data across the three intervention components (VCD, G4G and FSD) as well as assess extent and impact of integration between FSD on the one hand and VCD and G4G on the other. It is for this reason that the IA study tied FSD to VCD, even though FSD is in practice a stand-alone intervention component.

6.7.1 General Characteristics of the Sampled FSD Beneficiaries and Non-Beneficiaries

The FSD component of this study originally planned to survey 90 farmers, of which 60 farmers are beneficiaries of agricultural loans from FIs supported by aBi Trust under the FSD component; and the rest (30) are Control. However, as explained earlier, only 69 farmers were sampled (45 Treatment and 24 Control) because of the difficulty in finding FSD beneficiaries who received loans for investing in the commodities supported by aBi Trust. The sampled farmers were randomly drawn from the districts of Agago (Bank of Africa); Gulu (Pride Microfinance); Buyende (Development Microfinance); Kyenjojo (Opportunity Uganda); and Sembabule (Mateete SACCO). The Treatment farmers received agricultural loans for investing in various commodities, which include coffee in Sembabule; sesame in Agago; rice in Gulu; and maize in Buyende and Kyenjojo districts. Because of the commodity diversity and the small number of observations per commodity, it was impossible to do meaningful commodity-specific analysis. Instead, all commodities were lumped together through weighting by their respective prices to compare aggregate values and income (gross margins) from the harvested quantities and sales of all the commodities.

Table 76 below shows information on the demographic characteristics of the sampled farmers. This information shows that three quarters of the sampled farmers (73% Treatment and 75% Control) are male-headed. A significantly higher proportion of Control farmers (91.7%) were engaged in crop production as their main occupation compared to Treatment farmers (62.2%); while a higher proportion of Treatment farmers (17.8%) were engaged in Trading as their main occupation compared to those in the Control group (8.3%).

Table 76: Socio-economic Characteristics of Sampled FSD Beneficiaries and Non-Beneficiaries.

Variable	Entire Sample (N=69)	Treatment (N=45)	Control (N=24)
% Male Farmers/Headed-Households	73.91	73.33	75.00
Main Occupation of Farmer/HH Head (% HHds/Farmers Reporting….)			
Production of crops	72.46	62.22	91.67
Production of livestock	1.45	2.22	0.00
Salary employment	2.90	4.44	0.00
Wage earner	1.45	2.22	0.00
Operating a bar	4.35	6.67	0.00
Trading	14.49	17.78	8.33
Tailoring	1.45	2.22	0.00
Fishing	1.45	2.22	0.00
Average age (years) of Farmer/HH Head	43.64 (15.43)	44.11 (14.78)	42.75 (16.88)
Highest school grade completed by Farmer/HH Head	6.82 (3.78)	6.73 (3.67)	7.00 (4.06)
Marital status of Farmer/HH Head (% HHds/Farmers….)			
Single	4.35	2.22	8.33
Married	84.06	84.44	83.33
Widowed	7.25	8.89	4.17
Divorced	4.35	4.44	4.17
Average family size	7.51 (3.68)	7.89 (4.12)	6.79 (2.62)
Dependency Ratio	0.76 (0.61)	0.76 (0.61)	0.74 (0.64)

The average age of the farmer household heads was slightly higher among Treatment (44.1 years) than Control (42.75 years) farmers; while the heads of Control households had slightly higher education levels (7 years of schooling) than those in the Treatment group (6.73 years of schooling). The average household size among the Treatment households (7.89 people) was above the national average of 6.5 people and was also significantly higher than in the Control group (6.79 household members); and the dependency ratio was also slightly higher among Treatment farmers (0.76) compared to those in the Control group (0.74).

6.7.2 Asset Accumulation

The survey findings on asset accumulation indicate that both categories of farmers accumulated different forms of assets between 2010 and 2013, with exception of livestock. Although farmers in both categories accumulated farm and communication equipment during the intervention period (2011-2013), Control farmers out-performed their cohorts in the

Treatment group; hence the negative change in the values of these assets during the intervention period. For transport equipment, however, Treatment farmers performed better than those in the Control group. Regarding livestock, both farmer categories experienced a reduction in value of livestock holding, but by a greater magnitude among Treatment than Control farmers.

Table 77: Household Asset Endowment in 2010 (Before Intervention) and 2013

	Treatment		**Control**		**Attributable Changes (DID)**
	Now(2013)	***2010***	***Now(2013)***	***2010***	
Total value of Farm Equipment (Ush)	198344 (143289)	159456.5 (145397.6)	208076.4 (129783.8)	132711.9 (87776.75)	-36,477
Total value of Transport Equipment (Ush)	197658.7 (134936.5)	185250.7 (128128.7)	165977.4 (83960.77)	155596.2 (81176.33)	2,026.8
Total value of Communication Equipment (TV, Radio, Mobile Phone) (Ush)	120298.4 (63357.2)	105323.9 (57123.03)	123330.4 (57628.16)	99957.49 (55002.89)	-8,398.41
Total value of Livestock (Ush)	325757.1 (162792.5)	620672.1 (285995.6)	420718.2 (169291)	687962.9 (333251.4)	-27,670.3

6.7.3. Job Creation at the Household/Farmer Level

The study findings show that in 2013, the number of workers (both permanent and short-term) employed by the sampled households was slightly higher among Treatment farmers than those in the Control group.

Table 78: Number of Farm Empoyees and Expenditure on Labor in 2010 and 2013

	Entire Sample		**Treatment**		**Control**		**Attributable Changes (DID)**
	2013	**2010**	**2013**	**2010**	**2013**	**2010**	
Number of Permanent workers	3 (2.24)	2.83 (1.34)	3.67 (2.89)	2.77 (1.48)	2.00 (0.00)	3.00 (1.41)	1.9
Number of short-term workers	8.31 (5.66)	6.75 (4.19)	8.57 (6.28)	6.82 (4.68)	7.07 (2.91)	6.54 (2.39)	1.22
Total Monthly payment to Permanent workers **(Ush)**	157500 47103.61	97500 (56697.3)	169166.7 (18085.45)	108500 61987.9	140000 (84852.8)	70000 (42426.41)	-9,333.3
On average, for how many months in a year do you use short-term workers?	2.92 (1.33)	2.98 (1.34)	2.92 (1.31)	2.91 (1.27)	2.92 (1.49)	3.16 (1.59)	0.25
Additional Fulltime Equivalent (FTE) Jobs Created			46.375		26.875		19.5
Total annual payment to Temporary/short-term workers **(Total in Ush)**	283946.8 (176377.1)	311600 (208351.9)	288910.3 (174205.6)	320805.7 (229266.3)	285409.6 (184883.4)	284750 (134205.8)	-32,555

There was a slight increase in number of permanent workers employed by the Treatment households, but a reduction in the Control group. On the other hand, both farmer categories increased the number of short-term workers, but by a bigger margin among Treatment (from 6.8 to 8.6 workers) than Control farmers (from 6.5 to 7 workers). In terms of Fulltime Equivalents (FTEs) of the short-term jobs, Treatment farmers created more FTE jobs (46.375) than their cohorts in the Control group (26.875). The monthly payment to permanent workers increased among both categories of farmers but by a greater magnitude in the Control group; while annual wages paid out to short-term workers increased in the Treatment group but did not change much among Control farmers.

6.7.4. Production and Sales of Target Crop in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

As mentioned earlier, the surveyed FSD beneficiary farmers received agricultural loans for investing in various commodities, which include coffee, sesame, rice and maize. These were the reference commodities during the interviews for both beneficiary (Treatment) and non-beneficiary (Control) farmers. In all study districts, beneficiary farmers were matched with non-beneficiary farmers growing the same crop in the same geographical location and under similar conditions—the major difference being that unlike the beneficiaries, they didn't receive agricultural loans for investing in the target crop.

Table 79: Production and Utilization for Target Crop under FSD

	Treatment		**Control**		**Attributable Changes (DID)**
	2011-2013	***2010 or Before***	***2011-2013***	***2010 or Before***	
Separate plots/gardens of crop grown	1.43 (0.69)	1.41 (0.63)	1.23 (0.42)	1.23 (0.42)	0.02
Total land area (acres) planted to crop	2.63 (2.05)	2.81 (1.99)	2.76 (2.01)	2.40 (1.59)	-0.54
Total value of crop harvested (Ush)	1,259,644 (1,005,162)	1,265,065 (878,315.5)	873,940.2 (648,741.6)	1,089,345 (588,013.8)	209,983.8
Total value of crop sold (Ush)	1,225,701 (1036348)	1,230,368 (1197456)	804,408.3 (584109.9)	1,014,612 (584,653)	205,536.7
Gross Margin per farmer (Ush)	750293 (415880.8)	814119.2 (604995.9)	692714.9 (579167.3)	789017 (520683.3)	32475.9
Gross Margin per acre (Ush)	464816.8 (279261.7)	519705.6 (354806.1)	380063.9 (180917.2)	489803.3 (273101.1)	54850.6
% of Treatment Farmers with positive Gross Margins			**24.44**		
Average income growth for Treatment Farmers with positive Gross Margins			**906,898 (460,816.8)**		

On average, both Treatment and Control farmers grew less than 2 plots of the target crop in the period before and after intervention by aBi Trust. The average number of plots grown by Treatment farmers (1.4) was slightly higher than that of Control farmers (1.2 plots) both before and after intervention by aBi Trust; but none of the two farmer categories changed the average number of plots after aBi Trust intervention. However, the total land area planted to the target crop decreased by 0.18 Acres among Treatment farmers from 2.81 to 2.63 acres, while increasing by twice as much (0.36 Acres) in the Control category from 2.4 to 2.76 acres. On the other hand, the total value of the target crop harvested as well as the sales declined in both farmer categories but by a greater magnitude among Control than Treatment farmers. Because of this, there was an increase in the total value of the target crop harvests and the sales attributed to aBi Trust intervention to the tune of Ush 209,984 and Ush 205,537, respectively.

Income in terms of gross margin per farmer from the target crop declined in both farmer categories between 2011 and 2013, but by a greater margin among Control farmers (Ush 96,302) than Treatment farmers (Ush 63,826); leading to an increase in income of Ush

32,476 per farmer attributed to intervention by aBi Trust. Also, the gross margin per Acre decreased among Control farmers by Ush 109,739 but decreased by a smaller margin among Treatment farmers (Ush 54,889). Because of this, there was an increase in income of Ush 54,851 per Acre attributed to aBi Trust-supported interventions in FSD. Based on these findings, it is clear that the FSD interventions supported by aBi Trust contributed to the increase in value of harvests and sales enjoyed by the beneficiaries over and above what would be possible without intervention. In fact, about one quarter of the FSD beneficiaries (N=45) registered positive income growth following intervention by aBi Trust, estimated at an average of Ushs 906,898.

However, the fact that income in terms of gross margin per farmer and per acre declined in both farmer categories between 2011 and 2013 is also informative. During the survey, we found that some of the FSD beneficiaries diverted money from the commodities against which they applied for loans; and it is partly because of this that the target sample of 60 FSD beneficiaries investing loan money in the supported commodities was not realized. It also possible that even those who invested in the supported commodities diverted some of the money to other enterprises, leading to diversion of attention away from the target commodity and, thus, the decline in income.

6.7.5 Training and Application of Improved Agricultural Technologies and Agronomic practices in 2010 or Before (Pre-Intervention) and Between 2011 and 2013

Compared to Treatment farmers under the VCD and G4G intervention components of aBi Trust, much smaller proportions of the beneficiaries under the FSD component received training in the Good Agricultural Practices (GAPs) promoted with support from aBi Trust. For most GAPs, less than one fifth (20%) of the FSD beneficiary farmers received training in these areas between 2011 and 2013, with the exception of training on savings and loans under FSD (64.4%); VSLA (42.2%); use of chemical fertilizers (35.6%); timely planting and weeding (33.3% each); line planting (35.6%); spacing (37.8%); use of tarpaulins for drying (33.3%); use of animal manure (28.9%) and improved seed (22.2%); seed rate, pruning, training and mentoring in PHH and gender mainstreaming (20% each). Also, for many of the promoted GAPs, many of the sampled Treatment farmers claimed to have received similar training before aBi Trust intervention (in 2010 or before); and some Control farmers reported having received similar training before and after aBi Trust intervened. As a result, the attributable change to aBi Trust in terms of percentage of farmers receiving training in various GAPs during the intervention period is either small, non-existent or even negative.

For the farmers who received training in GAPs, various institutions provided the training, including extension staff of district farmers associations (DFAs), NAADs, other

NGOs and financial institutions (FIs). With the exception of training on loans and savings and VSLA, very few farmers received training in GAPs from the FIs that gave them agricultural loans[7]; and it is not clear if the FIs make effort to ensure that the knowledge gaps farmers have in critical GAPs in agriculture are filled by other institutions. For example it is not clear if the FSD beneficiaries who received training in GAPs from DFAs, NAADS, and other NGOs did this with the prompting of the FIs that gave them loans or out of their own volition.

Table 80: Prevalence of Training on Improved Agricultural Technologies and Agronomic practices.

Type of technology/practices	**% HHs/Farmers Trained to Use 2011-2013**		**%HHs/Farmers Trained to use in 2010 or before**		**Attributable Changes (DID)**
	Treatment (N= 45)	**Control (N= 24)**	**Treatment (N= 45)**	**Control (N= 24)**	
Improved varieties of seeds/seedlings					
01 Improved seed for crop	22.2	29.2	15.6	16.7	-5.83
Soil fertility improvement					
01 Chemical Fertilisers	35.6	16.7	22.2	4.2	0.83
02 Compost/ Manure	17.8	12.5	15.6	0.0	-10.28
03 Leguminous cover crop	15.6	8.3	11.1	0.0	-3.89
04 Animal manure	28.9	12.5	15.6	4.2	5.00
Crop husbandry practices					
01 Timely planting	33.3	37.5	24.4	12.5	-16.11
02 Timely weeding	33.3	37.5	22.2	12.5	-13.89
03 Crop rotation	17.8	25.0	17.8	4.2	-20.83
04 Chemical spraying	28.9	12.5	22.2	4.2	-1.67
05 Line planting	35.6	29.2	31.1	8.3	-16.39
06 Spacing	37.8	29.2	28.9	8.3	-11.94
07 Seed rate	20.0	25.0	22.2	4.2	-23.06
08 Coffee tree Training	13.3	0.0	4.4	0.0	8.89
09 Pruning	20.0	8.3	8.9	8.3	11.11
Soil and water conservation					
01 Grass bands	2.2	4.2	2.2	0.0	-4.17
02 Trenches	11.1	8.3	13.3	4.2	-6.39
03 Trash lines	6.7	0.0	6.7	0.0	0.00
04 Mulching	13.3	12.5	13.3	8.3	-4.17
05 Hedge rows	0.0	4.2	0.0	4.2	0.00
06 Contour planting	0.0	0.0	0.0	0.0	0.00
07 Soil conservation basins	15.6	4.2	8.9	4.2	6.67
Post harvest handling					
1 Use of Improved Storage facilities	15.6	8.3	13.3	0.0	-6.11
2 Use of Tarpaulins for drying	33.3	16.7	24.4	4.2	-3.61
3 Use of Collapsible driers	2.2	0.0	0.0	0.0	2.22
4 Use of drying shade/platform	11.1	4.2	8.9	0.0	-1.94
5 Use of drying and grading racks	2.2	4.2	0.0	0.0	-1.94
6 Storage pest control	8.9	12.5	11.1	0.0	-14.72
7 Threshing equipment	4.4	4.2	4.4	0.0	-4.17
8 Use of Shellers (Maize&Gnuts)	6.7	4.2	4.4	0.0	-1.94
9 Use of coffee pulpers	4.4	0.0	2.2	0.0	2.22
10 Washing stations for coffee	2.2	0.0	0.0	0.0	2.22
11 Screening or Sieving	2.2	0.0	0.0	0.0	2.22
12 Cocoons	4.4	4.2	0.0	0.0	0.28

[7] For other practices where the percentages of those receiving training appear to be high (e.g., 50% for cocoons), the number of farmers trained is very low (N=2)

14 Use of weighing scales	17.8	16.7	15.6	12.5	-1.94
15 Quality Mgt Standards	13.3	8.3	8.9	4.2	0.28
16 Certification	4.4	4.2	4.4	0.0	-4.17
17 Training and mentoring in PHH	20.0	12.5	15.6	4.2	-3.89
Farming as a business					
1 Collective Marketing	31.1	12.5	24.4	8.3	2.50
2 Record keeping	22.2	8.3	20.0	4.2	-1.94
3 Business planning	11.1	12.5	8.9	8.3	-1.94
4 Information boards	6.7	8.3	2.2	4.2	0.28
5 Sms mkt information service	4.4	0.0	2.2	0.0	2.22
6 Voice message mkt information service	6.7	0.0	4.4	0.0	2.22
Gender for growth					
1. Training on gender mainstreaming	20.0	12.5	11.1	4.2	0.56
2. Entrepreneurship training	13.3	0.0	6.7	0.0	6.67
3. Training in VSLA	42.2	20.8	31.1	8.3	-1.39
Financial service dev't					
1.Training on Savings & Loans	64.4	8.3	42.2	4.2	18.06

It is important that the FIs giving out agricultural loans make a deliberate effort to ensure that their clients receive supporting services in extension advice and training as well as modern inputs, to boost their earnings from the agricultural investments for which they received loans and increase their ability to pay back.

Table 81: Institutions Involved in Farmer Training on Improved Agricultural Technologies and Practices

Type of technology/practice	**% HHs reporting DFA extension staff**		**% HHs reporting NAADS staff**		**% HHs reporting Other NGO**		**% HHs reporting Financial institution**	
	Treatment	**Control**	**Treatment**	**Control**	**Treatment**	**Control**	**Treatment**	**Control**
Improved varieties								
01 Improved seed	30.0	0.0	30.0	57.1	10.0	28.6	10.0	0.0
Soil fertility improvement								
01 Chemical Fertilisers	25.0	0.0	18.8	25.0	18.8	50.0	6.3	0.0
02 Compost/ Manure	0.0	0.0	37.5	33.3	50.0	66.7	0.0	0.0
03 Leguminous cover crop	0.0	0.0	42.9	0.0	28.6	100.0	0.0	0.0
04 Animal manure	23.1	0.0	23.1	0.0	30.8	66.7	0.0	0.0
Crop husbandry practices	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
01 Timely planting	13.3	0.0	40.0	55.6	20.0	44.4	6.7	0.0
02 Timely weeding	20.0	0.0	40.0	55.6	13.3	44.4	6.7	0.0
03 Crop rotation	0.0	0.0	62.5	50.0	25.0	50.0	0.0	0.0
04 Chemical spraying	0.0	0.0	38.5	33.3	23.1	66.7	7.7	0.0
05 Line planting	18.8	0.0	31.3	42.9	18.8	42.9	6.3	0.0
06 Spacing	17.6	0.0	35.3	42.9	17.6	42.9	5.9	0.0
07 Seed rate	11.1	0.0	55.6	50.0	22.2	50.0	0.0	0.0
08 Coffee tree Training	50.0	0.0	0.0	0.0	16.7	0.0	16.7	0.0
09 Pruning	33.3	0.0	11.1	50.0	11.1	0.0	11.1	0.0
Soil and water conservation								
01 Grass bands	0.0	0.0	0.0	100.0	100.0	0.0	0.0	0.0
02 Trenches	60.0	0.0	0.0	50.0	40.0	0.0	0.0	0.0
03 Trash lines	66.7	0.0	0.0	0.0	33.3	0.0	0.0	0.0
04 Mulching	33.3	0.0	16.7	66.7	16.7	0.0	0.0	0.0
05 Hedge rows	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
06 Contour planting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
07 Soil conservation basins	42.9	0.0	0.0	0.0	42.9	0.0	0.0	0.0
Post harvest handling								
1 Use of Improved Storage facilities	0.0	0.0	42.9	50.0	42.9	50.0	14.3	0.0
2 Use of Tarpaulins for drying	26.7	0.0	26.7	75.0	26.7	25.0	0.0	0.0
3 Use of Collapsible driers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 Use of drying shade/platform	40.0	0.0	40.0	0.0	0.0	100.0	20.0	0.0

5 Use of drying and grading racks	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
6 Storage pest control	0.0	0.0	100.0	33.3	0.0	33.3	0.0	0.0
7 Threshing equipment	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0
8 Use of Shellers	0.0	0.0	0.0	0.0	66.7	100.0	0.0	0.0
9 Use of coffee pulpers	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0
10 Washing stations for coffee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 Screening or Sieving	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Cocoons	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
14 Use of weighing scales	50.0	0.0	25.0	0.0	12.5	25.0	0.0	0.0
15 Quality Mgt Standards	33.3	0.0	16.7	50.0	33.3	0.0	0.0	0.0
16 Certification	0.0	0.0	50.0	100.0	50.0	0.0	0.0	0.0
17 Training and mentoring in PHH	22.2	0.0	22.2	66.7	33.3	33.3	0.0	0.0
Farming as a business								
1 Collective Marketing	14.3	0.0	21.4	0.0	28.6	100.0	7.1	0.0
2 Record keeping	0.0	0.0	20.0	0.0	40.0	100.0	10.0	0.0
3 Business planning	0.0	0.0	0.0	33.3	60.0	66.7	0.0	0.0
4 Information boards	33.3	0.0	33.3	0.0	0.0	100.0	0.0	0.0
5 Sms mkt information service	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
6 Voice message mkt information service	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Gender for growth								
1. Training on gender mainstreaming	22.2	0.0	0.0	0.0	33.3	66.7	11.1	0.0
2. Entrepreneurship training	50.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0
3. Training in VSLA	31.6	20.0	10.5	0.0	0.0	60.0	15.8	0.0
Financial service dev't								
1.Training on Savings & Loans	34.5	0.0	3.4	0.0	17.2	0.0	31.0	50.0

However, the proportions of Treatment and Control farmers applying various GAPs are much higher than those who reported to have received training in the respective GAPs. For example, the proportion of Treatment farmers using improved seed increased from 57.8% in 2010 or before to 62.2% in 2011-2013 (4.4 percentage point increase); yet the proportion of Treatment farmers who received training on improved seed increased from 15.6% in 2010 or before to 22.2% in 2011-2013 (6.6 percentage point increase). The same trend is observed among Control farmers who used improved seed. This is also true for several other practices such as use of leguminous cover crops for soil fertility improvement; crop husbandry practices such as timely planting and weeding, crop rotation, line planting, spacing, seed rate, coffee tree training and pruning; SWC practices such as use of grass bands and trenches; PHH practices such as use of improved storage facilities, use of tarpaulins for drying, use of drying shades, storage pest control, use of threshing equipment, use of shellers, use of weighing scales, quality management standards and training and mentoring in PHH; FaaFB practices such as collective marketing and record-keeping; G4G practices such as training on gender-mainstreaming, entrepreneurship training and training in VSLA; and training on loans and savings under FSD. For all the above-listed GAPs, while several farmers denied receiving related training in 2011-2013, they claimed applying these on their farms in the same period. Similar observations were made among farmers in the maize and coffee value

chains; and the plausible explanation is that while several farmers do not directly participate in demonstrations and training sessions conducted by the IPs and other agencies, they may later on pick the good practices and technologies from their neighbors through farmer-to-farmer extension.

Table 82: Application of Improved Agricultural Technologies and Agronomic Practices

Type of technology/practices	% HHs/Farmers Applied 2011-2013		% HHs/Farmers Applied 2010 or before		Attributable Changes (DID)
	Treatment (N= 45)	Control (N= 24)	Treatment (N= 45)	Control (N= 24)	
Improved varieties of seeds/seedlings					
01 Improved seed for crop	62.2	62.5	57.8	58.3	0.28
Soil fertility improvement	0.0	0.0	0.0	0.0	0.00
01 Chemical Fertilisers	22.2	12.5	15.6	12.5	6.67
02 Compost/ Manure	13.3	0.0	11.1	0.0	2.22
03 Leguminous cover crop	26.7	12.5	24.4	12.5	2.22
04 Animal manure	20.0	12.5	17.8	12.5	2.22
Crop husbandry practices	0.0	0.0	0.0	0.0	0.00
01 Timely planting	93.3	91.7	88.9	87.5	0.28
02 Timely weeding	91.1	83.3	88.9	83.3	2.22
03 Crop rotation	68.9	66.7	44.4	66.7	24.44
04 Chemical spraying	20.0	8.3	20.0	8.3	0.00
05 Line planting	68.9	50.0	62.2	50.0	6.67
06 Spacing	71.1	66.7	64.4	66.7	6.67
07 Seed rate	51.1	45.8	48.9	45.8	2.22
08 Coffee tree Training	15.6	0.0	11.1	0.0	4.44
09 Pruning	24.4	16.7	22.2	16.7	2.22
Soil and water conservation	0.0	0.0	0.0	0.0	0.00
01 Grass bands	4.4	0.0	4.4	0.0	0.00
02 Trenches	20.0	12.5	17.8	12.5	2.22
03 Trash lines	4.4	0.0	4.4	0.0	0.00
04 Mulching	6.7	4.2	6.7	4.2	0.00
05 Hedge rows	2.2	8.3	2.2	8.3	0.00
06 Contour planting	0.0	0.0	0.0	0.0	0.00
07 Soil conservation basins	15.6	4.2	8.9	4.2	6.67
Post harvest handling					
1 Use of Improved Storage facilities	20.0	25.0	20.0	29.2	4.17
2 Use of Tarpaulins for drying	60.0	41.7	57.8	41.7	2.22
3 Use of Collapsible driers	0.0	0.0	0.0	0.0	0.00
4 Use of drying shade/platform	20.0	16.7	20.0	16.7	0.00
5 Use of drying and grading racks	2.2	0.0	2.2	0.0	0.00
6 Storage pest control	22.2	29.2	24.4	25.0	-6.39
7 Threshing equipment	15.6	25.0	15.6	25.0	0.00
8 Use of Shellers (Maize&Gnuts)	20.0	12.5	15.6	8.3	0.28
9 Use of coffee pulpers	0.0	0.0	0.0	0.0	0.00
10 Washing stations for coffee	0.0	0.0	0.0	0.0	0.00
11 Screening or Sieving	2.2	0.0	2.2	0.0	0.00
12 Cocoons	0.0	0.0	0.0	0.0	0.00
13 Use of Aflatoxin Machines	0.0	0.0	0.0	0.0	0.00
14 Use of weighing scales	88.9	75.0	84.4	75.0	4.44
15 Quality Mgt Standards	28.9	16.7	28.9	8.3	-8.33
16 Certification	0.0	4.2	0.0	0.0	-4.17
17 Training and mentoring in PHH	26.7	16.7	26.7	12.5	-4.17
Farming as a business					
1 Collective Marketing	2.2	0.0	2.2	0.0	0.00
2 Record keeping	31.1	16.7	28.9	12.5	-1.94

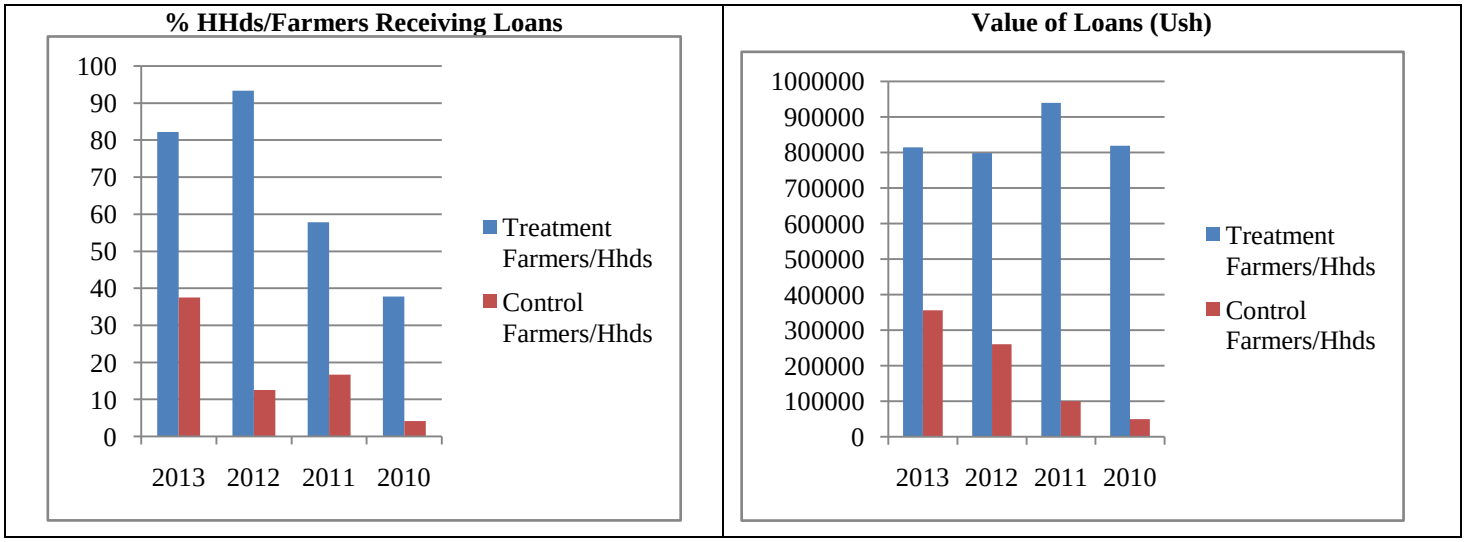
3 Business planning	31.1	16.7	26.7	16.7	4.44
4 Information boards	2.2	0.0	2.2	0.0	0.00
5 Sms mkt information service					
6 Voice message mkt information service	2.2	0.0	4.4	0.0	-2.22
Gender for growth					
1. Training on gender mainstreaming	28.9	20.8	22.2	20.8	6.67
2. Entrepreneurship training	24.4	4.2	17.8	4.2	6.67
3. Training in VSLA	55.6	33.3	33.3	20.8	9.72
Financial service dev't					
1.Training on Savings & Loans	75.6	25.0	44.4	16.7	22.78

6.7.8. Financial Services (Credit and Savings)

The proportion of Treatment farmers who received loans increased from 37.8% in 2010 to 93.3% in 2012 and 82.2% in 2013; while that of Control farmers increased from 4.17% in 2010 to 37.5% in 2013. This implies that loan-seeking behavior grew among farmers in both categories, but at a much faster rate among Treatment farmers than their cohorts in the Control group. Overall, the average value of loans received by Control farmers increased steadily from Ush 50,000 in 2010 to Ush 355,555 in 2013; while that of Treatment farmers increased by about Ush 120,000 from 2010 to 2011, before dropping back to the 2010 level of about Ush 800,000 in 2012 and 2013. However, although loan values in the Treatment group were fairly constant during the intervention period, the values were well above those in the Control category.

Loans acquired by both Control and Treatment farmers were put to various uses; the predominant ones being investment in agricultural and non-agricultural ventures and consumption. Among the Treatment farmers, loans received for agricultural investment were invested mainly in the production of coffee, maize and beans; while the majority of the Control farmers who received loans invested the money in production of other food crops and traditional cash crops.

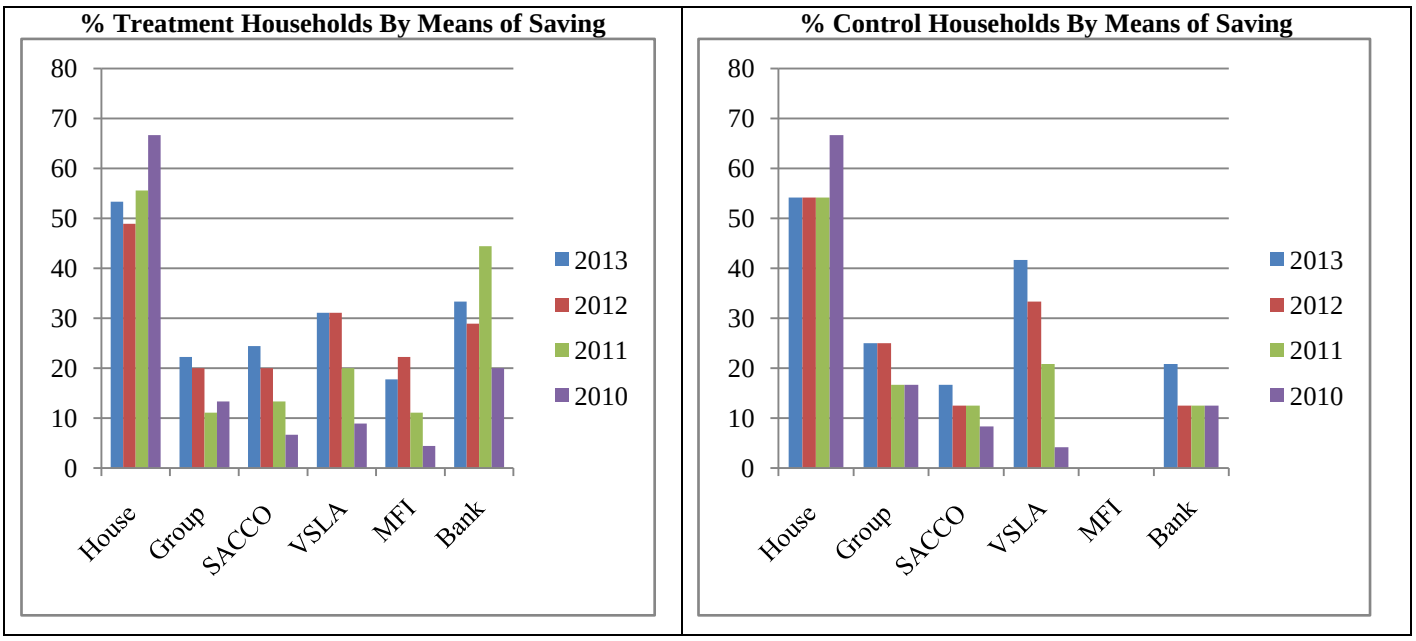
Figure 22: Trends in Credit Access and Loan Values among FSD Beneficiaries of Non-Beneficiaries



The average distance from the homes of the sampled farmers to the nearest banking institution also decreased by 1.68 kms for Treatment farmers and 1.08 kms for Control farmers between 2010 and 2013, implying that financial services were brought closer to the farmers during the period of intervention in FSD by aBi Trust. But still, Control farmers remained further away from financial institutions in 2013 (4.53 kms) than their cohorts in the Treatment group (4.1 kms) by about half a kilometer.

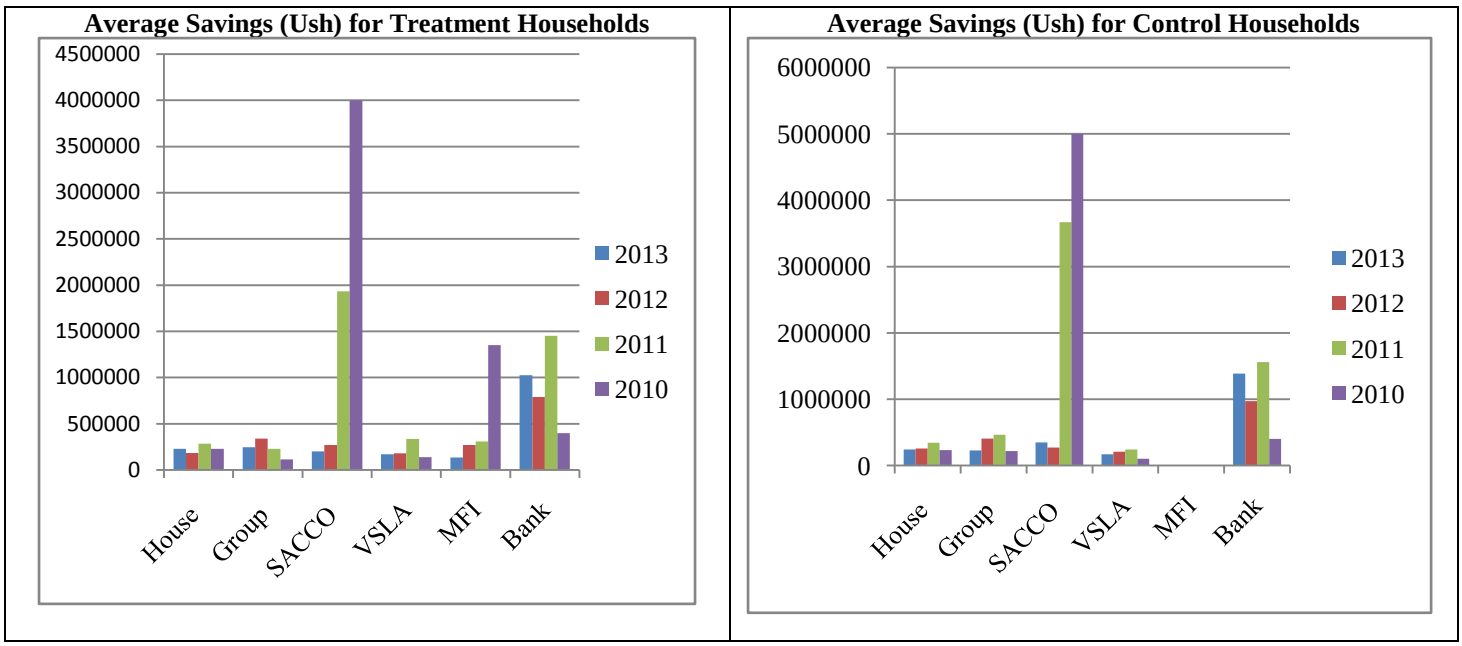
The percentage of Treatment farmers saving money in their homes reduced from 66.7% in 2010 to 48.9% in 2012 before rising again to 53.3% in 2013. The percentage of Control farmers saving money at home also decreased from 66.7% to 54.17% between 2010 and 2013. Meanwhile, the percentage of those saving with farmer groups, SACCOs, and VSLAs increased steadily between 2010 and 2013 in both farmer categories. The use of Banks and Microfinance Institutions (MFIs) to save money also increased among Treatment farmers between 2010 and 2013, but rather erratically; while in the Control category, no farmers saved with MFIs and the proportion of those using banks to save money remained constant at 12.5% between 2010 and 2012 but increased in 2013 to 20.8%.

Figure 23: Trends in the Use of Different Means of Saving among FSD Beneficiaries of Non-Beneficiaries



The average amount of cash saved at home in 2013 was Ush 226,967 and Ush 241,692 by Treatment and Control farmers, respectively; having changed erratically during the intervention period by first increasing from 2010 to 2011 then falling thereafter to values that are close to the 2010 mean values.

Figure 24: Trends in Values of Savings among FSD Beneficiaries of Non-Beneficiaries



In the Treatment category, the amount saved with groups increased steadily from Ush 114,286 in 2010 to Ush 339,487 in 2012 before dropping to Ush 245,679 in 2013. In the Control category, the amount saved with groups increased from an average of slightly over Ush 200,000 in 2010 to above Ush 400,000 in 2011 and 2012 before dropping back to the 2010 levels in 2013. The amount saved with VSLAs in both farmer categories sharply increased from 2010 to 2011 but dropped thereafter to levels that are above those of 2010. The value of savings with MFIs by Treatment farmers dropped steadily from Ush 1,350,000 in 2010 to Ush 135,714 in 2013; and the same trend was observed for savings with SACCOs among both Treatment and Control farmers. The value of savings with banks in both farmer categories also changed erratically by first increasing from 2010 to 2011, then dropping in 2012 before rising again in 2013 to levels that are 2-3 times the 2010 levels.

6.8 Findings of Key Informant Interviews (KII) with Implementing Partners (IPs)

As mentioned earlier, this impact assessment study was conducted at two levels, namely; (1) the farmer level (among beneficiaries and non-beneficiaries), and (2) the Implementing Partner (IP) level. At the IP level, the study included 18 IPs, of which 11 are District Farmers Associations (DFAs); one is a Private Organization (Hanns R. Neumann Stiftung) involved in implementation of the VCD and G4G intervention components among farmers involved in the production of the 6 commodities (coffee, maize, beans, soybean, sunflower, and sesame) supported by aBi Trust; and the remaining 6 are Financial Institutions (FIs) implementing the FSD intervention component. FSD is intended to support the development of these 6 value chains (and others supported by aBi Trust) with appropriate financial services through financial institutions working in partnership with aBi Trust. However, the information presented in this report is based on 15 IPs because 3 IPs (Opportunity Uganda, Kyenjojo; Kashongi SACCO, Kiruhura; and Bank of Africa, Agago) provided incomplete or no information to the study team and were, therefore, dropped during the analysis.

6.8.1. Main Areas of Partnership

As indicated in Table 82 below, the main areas of partnership between aBi Trust and the IPs include training in VCD, G4G and financial management skills (FMS); and provision of PHH equipment, marketing and financial services, and agricultural inputs. The majority of the IPs provided training in GAPs under VCD (80%), while just over half (53%) provided training in G4G and FMS. Nine out of the 15 IPs (60%) reported partnering with aBi Trust in the provision of marketing services; and post-harvest handling (PHH) equipment; while less than half said they support farmers with financial services (40%) and agricultural inputs (46.7%).

Table 82: Main areas of Partnership between IPs and aBi Trust

	Main areas of Partnership	% IPs Reporting (N=15)
1	Training in Value Chain Development/Good Agric. Practices	80.00
2	Training in Gender for Growth	53.33
3	Training in Financial Management Skills	53.33
4	Providing Management Information Systems	20.00
5	Providing Financial Services	40.00
6	Providing Marketing Services	60.00
7	Providing Agricultural Inputs	46.67
8	Providing Post Harvest handling Technologies/Equipment	60.00
9	Providing General Agricultural Equipment	20.00
10	Providing Transport	13.33
11	Providing health related services	6.67

6.8.2. Perceived Impact of Implemented Activities on Agricultural Production and Productivity

During the Key Informant Interviews (KIIs) with the IPs, they were asked to provide their opinions on the perceived impacts of their implemented activities on key performance indicators (production, productivity, acreage, cost of production, output prices and quality, among others) among beneficiary farmers. All 11 IPs (100%) who reported on impact of training in GAPs said it had a positive impact on production and productivity; while 71.4% of the IPs (N=7) who reported on impact of training on PHH said it had no impact on production, but over half of these (57.14%) said it had a positive impact on productivity. All those who spoke about establishment of demonstrations (N=6) and provision of marketing services (N=6) said they had a positive impact on production and productivity.

Table 83: Perceived Impact of Implemented Activities on Production and Productivity

Implemented Activity	% of Implementing Partners (IPs) Reporting							
	Perceived impact on **production** of intervention crop at household level				Perceived impact on **productivity** of intervention crop at household level			
	+Ve	**No Impact**	**-Ve**	**Don't know**	**+Ve**	**No Impact**	**-Ve**	**Don't know**
1.Training on GAPs (N=11)	100	0.00	0.00	0.00	100	0.00	0.00	0.00
2.Training on post harvest handling (N=7)	14.29	71.43	0.00	14.29	57.14	42.86	0.00	0.00
3.Training on record keeping (N=2)	50.00	50.00	0.00	0.00	0.00	50.00	0.00	50.00
4. Establishment of Demos (N=6)	100	0.00	0.00	0.00	100	0.00	0.00	0.00
5. Providing marketing services/market research	100 (N=5)	0.00	0.00	0.00	100(N=6)	0.00	0.00	0.00
6. Quality assurance(weighing scales, tarpaulins etc)	40.0 (N=5)	40.00 (N=5)	0.00	20.00 (N=5)	100(N=4)	0.00	0.00	0.00
7.Establishment of Nursery (N=2)	100	0.00	0.00	0.00	100	0.00	0.00	0.00
9.Technical assistance to staff (N=1)	100	0.00	0.00	0.00	100	0.00	0.00	0.00
10.Formation of farmers organization/ producers cooperatives (N=1)	100	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.Training in animal traction (N=1)	100	0.00	0.00	0.00	100	0.00	0.00	0.00
15.Processing and value addition (N=3)	66.67	0.00	0.00	33.33	66.67	0.00	0.00	0.00
16.Collective marketing/bulking	100(N=2)	0.00	0.00	0.00	100(N=3)	0.00	0.00	0.00
18.Gender mainstreaming/G4G (N=4)	100	0.00	0.00	0.00	75.00	25.00	0.00	0.00
19.Training on financial management (N=4)	75.00	25.00	0.00	0.00	50.00	50.00	0.00	0.00
20.Providing Financial services (N=1)	100	0.00	0.00	0.00	100	0.00	0.00	0.00
21.Provision of transport equipment (N=2)	100	0.00	0.00	0.00	100	0.00	0.00	0.00
22. Provision of agricultural inputs (N=2)	100	0.00	0.00	0.00	100	0.00	0.00	0.00
23.Provision of agric equipments (N=1)	100	0.00	0.00	0.00	100	0.00	0.00	0.00
24.Provision of health services (N=1)	100	0.00	0.00	0.00	100	0.00	0.00	0.00

All the 4 IPs who spoke about the impact of training in gender mainstreaming under the G4G component reported a positive impact on production; while only 3 of these (75%) thought training in gender mainstreaming had a positive impact on productivity. Three of the 4 IPs (75%) who reported on the impact of financial management training said this had a positive impact on production; while half (50%) thought it had a positive impact on productivity. For quality assurance, 50% (N=4) thought it impacted production positively, while all (100%) felt quality assurance had a positive impact on productivity; and for processing and value addition, two thirds of the IPs (N=3) thought it had a positive impact on production and productivity. See Table 83 above for impact of other activities on production and productivity. In the eyes of the IPs, therefore, the implemented activities are relevant and effective; which corroborates the perceptions of the beneficiary farmers since moderate to

high proportions of farmers who used the promoted GAPs for ALL the aBi Trust target commodities said their use had a positive and large impact.

6.8.3. Perceived Impact of Implemented Activities on Acreage and Sales

Training on GAPS, PHH and gender mainstreaming as well as the provision of marketing services, establishment of demonstrations, and processing and value addition had high proportions of IPs (50-100%) reporting a positive impact of their use on the acreage and sales of the intervention crop (see Table 84). Only one out of the four IPs who spoke about quality assurance reported a positive impact on acreage and sale of the intervention crop.

Table 84 Perceived Impact of Implemented Activities on Acreage and Sales of Intervention Crop

	Implemented Activity	**B3:** Perceived impact on **acreage planted** of intervention crop at household level **(% of IPs Reporting….)**				**B4:** Perceived impact on **Sales** of intervention crop at household level **(% of IPs Reporting….)**			
		+ve	**No Impact**	**-ve**	**Don't know**	**+ve**	**No Impact**	**-ve**	**Don't know**
1	Training on GAPs	77.78(N=9)	0.00	0.00	22.22 (N=9)	100.0 (N=8)	0.00	0.00	0.00
2	Training on post harvest handling	0.00	85.71 (N=7)	0.00	14.29 (N=7)	71.43 (N=7)	14.29 (N=7)	0.00	14.29 (N=7)
3	Training on record keeping	0.00	100.0 (N=1)	0.00	0.00	50.00(N=2)	50.00 (N=2)	0.00	0.00
4	Establishment of Demos	85.71(N=7)	0.00	0.00	14.29 (N=7)	40.00(N=2)	40.00 (N=2)	0.00	20.00 (N=1)
5	Providing marketing services/ market research	50.00(N=6)	33.33 (N=6)	0.00	16.67 (N=6)	85.71 (N=7)	14.29 (N=7)	0.00	0.00
6	Quality assurance(standard weighing scales, tarpaulins etc) (N=4)	25.00	50.00	0.00	25.00	25.00	25.00	0.00	50.00
7	Establishment of Nursery	100.00(N=2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	Training in animal traction	100.00(N=1)	0.00	0.00	0.00	100.0 (N=1)	0.00	0.00	0.00
15	Processing and value addition	66.67 (N=3)	33.33 (N=3)	0.00	0.00	100.00 (N=1)	0.00	0.00	0.00
16	Collective marketing/ product pooling	33.33(N=3)	66.67 (N=3)	0.00	0.00	100.00 (N=1)	0.00	0.00	0.00
17	Field mapping	0.00	100. (N=1)	0.00	0.00	100.00(N=3)	0.00	0.00	0.00
18	Gender mainstreaming/G4G	100.00(N=4)	0.00	0.00	0.00	100.00(N=3)	0.00	0.00	0.00
19	Training on financial management	25.00(N=1)	75.00 (N=3)	0.00	0.00	100.00 (N=3)	0.00	0.00	0.00
20	Providing Financial services	100(N=1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Provision of transport equipment	100(N=2)	0.00	0.00	0.00	0.00	100.00 (N=3)	0.00	0.00
22	Provision of agricultural inputs (N=2)	100	0.00	0.00	0.00	50.00	50.00	0.00	0.00
23	Provision of general agric equipments	100 (N=1)	0.00	0.00	0.00	50.00 (N=2)	50.00 (N=2)	0.00	0.00
24	Provision of health (N=1)	100	0.00	0.00	0.00	100.00	0.00	0.00	0.00

6.8.4. Perceived Impact of Implemented Activities on Cost of Production and Adoption of GAPs

For several implemented activities (such as training on GAPS, PHH, provision of marketing services, gender mainstreaming, processing and value addition, and collective marketing), 40-100% of the IPs who spoke about the impact of these interventions felt it was positive on cost of production and adoption of GAPs (see Table 85). For training in record-keeping and financial management, the proportions of IPs reporting these to have had a

positive impact on adoption of GAPs (50-100%) was higher than that reporting a positive impact on cost of production (33.3%)

Table 85 Perceived Impact of Implemented Activities on Cost of Production and Adoption of GAPs

	Implemented Activity	**B3: Perceived impact on Cost of Production of intervention crop at household level (% of IPs Reporting….)**				**B8:** Perceived impact on Adoption of **GAPs** of intervention crop at household level **(% of IPs Reporting….)**			
		+ve	**No Impact**	**-ve**	**Don't know**	**+ve**	**No Impact**	**-ve**	**Don't know**
1	Training on GAPs	90.0 (N=10)	0.00	0.00	10.00 (N=10)	100.00 (N=9)	0.00	0.00	0.00
2	Training on post harvest handling	50.0 (N=6)	33.33 (N=6)	16.67 (N=6)	0.00	87.50 (N=8)	0.00	0.00	12.50 (N=8)
3	Training on record keeping	33.3 (N=3)	66.67 (N=3)	0.00	0.00	50.00 (N=2)	50.00 (N=2)	0.00	0.00
4	Establishment of Demos	20.0 (N=5)	60.00 (N=5)	0.00	20.00 (N=5)	83.33 (N=6)	16.67 (N=6)	0.00	0.00
5	Providing marketing services/ market research	40.0 (N=5)	60.00 (N=5)	0.00	0.00	100.00 (N=6)	0.00	0.00	0.00
6	Quality assurance(standard weighing scales, tarpaulins etc) (N=4)	25.0	75.0	0.00	0.00	50.00	0.00	0.00	50.00
7	Establishment of Nursery	50.0 (N=2)	50.00 (N=2)	0.00	0.00	0.00	0.00	0.00	0.00
14	Training in animal traction (N=1)	100.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00
15	Processing and value addition	100.00 (N=3)	0.00	0.00	0.00	0.00	100 (N=1)	0.00	0.00
16	Collective marketing/ product pooling	66.67 (N=3)	33.3 (N=3)	0.00	0.00	100.00 (N=1)	0.00	0.00	0.00
17	Field mapping	0.00	100.0 (N=1)	0.00	0.00	100.00 (N=3)	0.00	0.00	0.00
18	Gender mainstreaming/G4G (N=3)	66.67	33.33	0.00	0.00	66.67	33.33	0.00	0.00
19	Training on financial management (N=3)	33.33	66.67	0.00	0.00	100.00	0.00	0.00	0.00
21	Provision of transport equipment	100.0 (N=2)	0.00	0.00	0.00	33.33 (N=3)	66.67 (N=3)	0.00	0.00
22	Provision of agricultural inputs (N=2)	100	0.00	0.00	0.00	50.00	50.00	0.00	0.00
23	Provision of general agric equipments	100 (N=1)	0.00	0.00	0.00	100.00 (N=2)	0.00	0.00	0.00
24	Provision of health (N=1)	100	0.00	0.00	0.00	100.00	0.00	0.00	0.00

6.8.5. Perceived Impact of Implemented Activities on Commodity Prices and Quality

For several implemented activities (such as training on GAPS, PHH, provision of marketing services, quality assurance, processing and value addition, and collective marketing), between two thirds (66.7%) to all (100%) of the IPs who spoke about the impact of these interventions felt they had a positive impact on commodity prices and quality (see Table 86).

Table 86: Perceived Impact of Implemented Activities on Price and Quality of Intervention Crop

Implemented Activity	% of IPs Reporting							
	Perceived impact on **average price** of intervention crop at household level				Perceived impact on **quality of produce** of intervention crop at household level			
	+ve	**No Impact**	**-ve**	**Don't know**	**+ve**	**No Impact**	**-ve**	**Don't know**
1.Training on GAPs (N=9)	66.67	33.33	0.00	0.00	100.00	0.00	0.00	0.00
2.Training on post harvest handling	100.0(N=6)	0.00	0.00	0.00	100.00(N=8)	0.00	0.00	0.00
3.Training on record keeping (N=1)	0.00	100.00	0.00	0.00	0.00	100.0	0.00	0.00
4.Establishment of Demos (N=5)	0.00	100.00	0.00	0.00	60.00	40.00	0.00	0.00
5. Providing marketing services/ market research	87.50 (N=8)	12.50 (N=8)	0.00	0.00	80.00 (N=5)	20.00 (N=5)	0.00	0.00
6.Quality assurance(standard weighing scales, tarpaulins etc)	100.0 (N=4)	0.00	0.00	0.00	80.00 (N=5)	20.00 (N=5)	0.00	0.00
7.Establishment of Nursery (N=1)	0.00	100.00	0.00	0.00	0.00	100.0	0.00	0.00
9. Technical assistance to staff (N=1)	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
10. Establishment of bulky centers (N=1)	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
11. Formation of farmers organization/ producers cooperatives (N=1)	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
14. Training in animal traction (N=1)	0.00	100.00	0.00	0.00	0.00	100.0	0.00	0.00

15.Processing and value addition (N=3)	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
16.Collective marketing/product-pooling(N=4)	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
18.Gender mainstreaming/G4G (N=3)	33.33	33.33	0.00	33.33	50.00	50.00	0.00	0.00
19.Training on financial management (N=3)	33.33	66.67	0.00	0.00	0.00	100.0	0.00	0.00
20.Providing Financial services (N=1)	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21.Provision of transport equipment (N=2)	100.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00
22.Provision of agricultural inputs (N=2)	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00
23.Provision of agric equipments (N=1)	0.00	100.00	0.00	0.00	0.00	100.0	0.00	0.00
24.Provision of health (N=1)	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00

For perceived impacts of implemented activities on other performance indicators as reported by IPs, see Table SA81: Statistical Appendix #8 for Implementing Partners.

6.8.6. Job Creation at the Implementing Partner Level

A cumulative total of 1,235 new jobs were created at the IP level during the period of intervention by aBi Trust (2011-2013). The number of new jobs created increased by 90% from 240 in 2011 to 456 in 2012, and by an additional 17% to 535 in 2013. However, the information presented in Table 85 below shows that out of the 1,231 new jobs created, the were at lower ranks, including lead farmers (23.9% or 294 jobs); change agents (22.3% or 275 jobs); farm supply attendants or agents (16% or 197 jobs) drivers (10.6% or 131 jobs); and porters (10.4% or 128 jobs). At the managerial level, only 9 new jobs were created (7 managers and 1 assistant manager). Also only one job for marketing officer (0.08%) and 25 jobs for supervisors and project coordinators (2.03%) were created between 2011 and 2013.

Table 87: Number of Jobs Created at IP Level

	% of Jobs Created After aBi Support (2011-2013)			
	2011	**2012**	**2013**	**Entire Intervention Period (2011-2013)**
Total Number of Jobs Created **(N=)**	**240**	**456**	**535**	**1,231**
Type of Jobs Created				
1.Managers	0.83	0.44	0.56	0.57
2. Assistant managers	0.00	0.44	0.00	0.16
3. Marketing officer	0.00	0.22	0.00	0.08
4. Supervisors/project Coordinators	2.92	1.97	1.68	2.03
5.Trainers	1.25	0.00	0.00	0.24
6. Secretary	0.00	0.22	0.00	0.08
7. Receptionist	0.00	0.44	0.00	0.16
8. Drivers	0.00	17.76	9.35	10.64
9. Mechanic	0.00	0.22	0.00	0.08
10.Cleaners	3.33	0.44	0.00	0.81
11.Porters	17.5	7.46	9.72	10.40
12.Change agents	51.67	32.02	0.93	22.34
14.Guards	3.33	1.20	0.19	1.14
15.Accountants/cashiers/loan officers	0.83	1.75	2.06	1.71
16.Advisors/gender officers	5.00	0.44	0.37	1.30
17.Farm supply attendants/ agents	0.83	13.16	25.23	16.00
18.Quality assurance officers /monitoring and evaluation officers	0.83	0.22	0.19	0.32
19.Field agents/data collectors/ volunteers	11.67	3.73	9.35	7.72
20.Auditors	0.00	0.66	0.00	0.24
21.Customer care	0.00	0.22	0.00	0.08
22.Lead farmers	0.00	17.12	40.37	23.88

6.8.7. Impact of G4G Implemented Activities on Performance Indicators

The majority (63%-100%) of the IPs who reported about the impact of G4G training activities (VSLA, gender mainstreaming and entrepreneurship) on performance indicators had a positive impact.

Table 88: Perceived Impact of Implemented Activities on Performance Indicators

Program Indicator	% of IPs reporting			
	Positive impact	No Impact	Negative impact	Don't know
1. Production (N=8)	100.00	0.00	0.00	0.00
2. Productivity (N=7)	100.00	0.00	0.00	0.00
3. Acreage (N=7)	100.00	0.00	0.00	0.00
4. Cost of Production (N=8)	87.50	12.50	0.00	0.00
5. Average price (N=8)	62.50	37.50	0.00	0.00
6. Quality (N=8)	87.50	12.50	0.00	0.00
7. Sales (N=7)	85.71	14.29	0.00	0.00
8. Adoption rates of GAP (N=7)	100.00	0.00	0.00	0.00
9. Post harvest handling (N=7)	100.00	0.00	0.00	0.00
10. Collective marketing (N=7)	100.00	0.00	0.00	0.00
11.Farming as a family business(N=8)	100.00	0.00	0.00	0.00

It is only for cost of production, commodity price, quality and sales that a few IPs (12.5% to 37.5%) thought G4G training activities didn't have an impact.

6.8.8. Impact of IP-aBi Trust Partnership on Institutional Performance of the IPs

During the key informant interviews, IPs were asked if they have observed any changes in institutional performance indicators at their organizations since they started partnering with aBi Trust. With respect to governance indicators (accountability of officials, human rights observance, freedom of speech, etc.), 50%-100% of the IPs who spoke about these indicators said there has been positive change. This is also true for all other indicators in the various categories of measures of institutional performance, including organizational effectiveness; control of corruption; monitoring and evaluation; reporting and fundraising; among others (see Table 89 below).

Table 89: Perceived Impact On Institutional Performance Indicators

Measures of Institutional Performance	% of IP reporting change in inst performance	Nature of change (% of IP reporting)			
		+ve	No change	-ve	Don't know
Governance					
Accountability of officials	80.00 (N=12)	100.00	0.00	0.00	0.00
Human rights observance	53.33 (N=8)	77.78	0.00	22.22	0.00
Transparency in organizational policy making process	60.00 (N=9)	88.89	11.11	0.00	0.00
Favoritism in decisions made by officials	33.33 (N=5)	60.00	20.00	0.00	20.00
Freedom of speech	60.00 (N=9)	88.89	0.00	11.11	0.00
Freedom of association	26.67 (N=4)	100.00	0.00	0.00	0.00
Freedom of assembly and demonstration	13.33 (N=2)	50.00	0.00	50.00	0.00
Respect for minorities	46.67 (N=7)	85.71	0.00	14.29	0.00
Organizational Effectiveness					
Quality of bureaucracy	60.00 (N=9)	88.89	0.00	11.11	0.00
Quality of budgetary & financial management	80.00 (N=12)	100.00	0.00	0.00	0.00
Efficiency of revenue mobilization	53.33 (N=8)	100.00	0.00	0.00	0.00
Resource efficiency	33.33 (N=5)	100.00	0.00	0.00	0.00
Effectiveness of implementation of organizational decisions	80.00 (N=12)	100.00	0.00	0.00	0.00
Control of Corruption					

Measures of Institutional Performance	% of IP reporting change in inst performance	Nature of change (% of IP reporting)			
		+ve	No change	-ve	Don't know
Limiting of diversion of organization funds	53.33 (N=8)	100.00	0.00	0.00	0.00
Limiting of Irregular payments	53.33 (N=8)	100.00	0.00	0.00	0.00
Level of trust in management	53.33 (N=8)	100.00	0.00	0.00	0.00
Anti-corruption policy	20.00 (N=3)	100.00	0.00	0.00	0.00
Prosecution of office abusers	20.00 (N=3)	100.00	0.00	0.00	0.00
Regulatory Quality					
Organizational ability to formulate policies & regulations that promote development	60.00 (N=9)	100.00	0.00	0.00	0.00
Organizational ability to implement policies & regulations that promote development	40.00 (N=6)	100.00	0.00	0.00	0.00
Monitoring & Evaluation					
Formulation of Strategic Plan	53.33 (N=8)	100.00	0.00	0.00	0.00
Formulation of Operational Plan	53.33 (N=8)	100.00	0.00	0.00	0.00
Formulation of Organizational Policies	60.00 (N=9)	88.89	0.00	11.11	0.00
Formulation of Organizational Regulations	40.00 (N=6)	100.00	0.00	0.00	0.00
Defining of Logical frameworks with smart performance indicators	53.33 (N=8)	100.00	0.00	0.00	0.00
Design of tools for regular collection of data on indicators	73.33 (N=11)	100.00	0.00	0.00	0.00
Regular reporting on indicators	73.33 (N=11)	100.00	0.00	0.00	0.00
Regular organization program/project review/evaluation	46.67 (N=7)	100.00	0.00	0.00	0.00
Impact Evaluation	33.33 (N=5)	100.00	0.00	0.00	0.00
Comprehensive spending reviews and reporting	26.67 (N=4)	100.00	0.00	0.00	0.00
Utilization of M&E information to improve management and control	40.00 (N=6)	100.00	0.00	0.00	0.00
Implementation of Incentives for internal use of M&E information	13.33(N=2)	100.00	0.00	0.00	0.00
Reporting					
Monthly reports prepared	73.33 (N=11)	100.00	0.00	0.00	0.00
Quarterly reports prepared	66.67 (N=10)	100.00	0.00	0.00	0.00
Annual reports prepared	60.00 (N=9)	100.00	0.00	0.00	0.00
Financial reports prepared	73.33 (N=11)	100.00	0.00	0.00	0.00
End of project/program reports prepared	46.67 (N=7)	100.00	0.00	0.00	0.00
Fundraising					
Fundraising plan and activities implemented	13.33 (N=2)	100.00	0.00	0.00	0.00
Annual targets met	46.67 (N=7)	100.00	0.00	0.00	0.00

6.8.9. Financial Services (Loans and Savings) offered by IPs to Value Chain Actors

On average, the total number of loans given out by the financial institutions partnering with aBi Trust increased from 2,589.5 (23.4% to women and 76.6% to men) in 2010 to 4,623 (21.4% to women and 78.6% to men) in 2013. This represents an increase of 78.5% of the total loans given out between 2010 and 2013 by the aBi Trust-supported FIs interviewed during the survey.

Table 90: Loan Portfolio of sampled IPs between 2010 and 2013

Year	Loan Portfolio (Mean values)					
	Average No of loans given out			Average Value of loans (in '000'000 Ush)		
	Women	Men	Total	Women	Men	Total
2010	605.5 (451.84)	1984 (1360.47)	2589.5 (1812.32)	599 (424)	1640 (633)	2240 (1060)
2011	656 (404.47)	2764.5 (2088.09)	3420.5 (2492.55)	765 (439)	1940 (210)	2710 (649)
2012	1017 (790.55)	3683 (3115.51)	4560 (4104.05)	870 (360)	2450 (704)	3320 (1060)
2013	989 (857.01)	3634 (3358.76)	4623 (4215.77)	903 (450)	2340 (191)	3250 (641)

The average value of the loans significantly increased from Ush 2.24 billion (26.7% to women and 73.3% to men) in 2010 to Ush 3.32 billion (26.2% to women and 73.8% to men) in 2012; before reducing slightly to Ush 3.25 billion (27.8% to women and 72.2% to men) in 2013; with the women beneficiaries receiving just above one quarter of the total value of loans given out during the period of intervention by aBi Trust (2010-2013) in financial service delivery. The average number of new clients opening savings accounts with the sampled IPs increased from 2,351 to 4,264 between 2010 and 2013; representing an increase of 81.4%. The average number of new savings accounts opened by men increased by 87.5% from1,775.5 in 2010 to 3,329.5 in 2013; while the number of new savings accounts opened by women increased by a lower margin of 62.4% from 575.5 in 2010 to 934.5 in 2013.

Table 91: Savings Deposits with IPs between 2010 and 2011

Year	Savings (mean values)					
	Average No of savings accounts opened			Average Value of Deposits (in '000'000 Ush)		
	Women	Men	Total	Women	Men	Total
2010	575.5 (494.27)	1775.5 (1655.34)	2351 (2149.61)	125 (149)	280 (285)	405 (399)
2011	608.5 (471.64)	2527 (2423.96)	3135.5 (2895.60)	148 (165)	344 (259)	444 (450)
2012	936.5 (904.39)	3321.5 (3626.75)	4258 (4531.14)	194 (114)	344 (259)	481 (454)
2013	934.5 934.09)	3329.5 (3789.39)	4264 (4723.47)	154 (199)	329 (290)	481 (490)

The average value of savings deposits with the sampled FIs also increased from Ush 0.405 billion in 2010 (30.9% by women and 69.1% by men) to Ush 0.481 billion (32% by women 68% by men) in 2013; with women controlling just below one third of the total value of savings, which is higher than their share of the loans portfolio but still falling far below that of their male cohorts. Half of the loans given out by the sampled FIs between 2010 and 2013 were for purposes of investing in agriculture; and the share of agricultural loans increase from 48.5% in 2010 to 53.5% in 2013. This is consistent with the reports of the sampled beneficiaries, which show agricultural investment as the predominant purpose for acquiring loans by the beneficiaries. The second most prevalent purpose of loan acquisition is trade, but it's share dropped from 28.5% in 2010 to 25.5% in 2013.

Table 92: Average share of the different purposes for which IPs gave out loans

Purpose of the loan	**2010**	**2011**	**2012**	2013
Agriculture	48.5 (0.71)	52.5 (2.12)	52.5 (3.54)	53.5 (0.71)
Trade	28.5 (16.26)	27.5 (19.09)	23 (16.97)	25.5 (13.44)
Construction	6.4 (3.39)	7.0 (8.49)	8.5 (6.36)	11 (12.73)
Manufacturing	1.6 (1.98)	1.45 (0.64)	1.7 (0.42)	0.7 (0.42)
Services	14.1 (12.87)	10.5 (6.36)	13.5 (6.36)	8.65 (0.49)

Table 93 below shows that the majority of the agricultural loans given out in 2010 (97.5 to women and 459 to men) went into primary agricultural production, but with 3-4 times more men getting loans for agricultural production than women. A similar pattern is observed in 2011 and 2012. However, in 2013, most of the loans given out were for agricultural marketing; and 5 times more women than men received loans for investing in agricultural marketing. Agricultural processing received the lowest number of loans (lower than production and marketing) for the entire intervention period. During the intervention period (2010-2013), a higher proportion of men than women defaulted on the loans they took out. Going by the loans given out for the different purposes (production, marketing and processing), the default rates among women ranged from 3-6.5% compared to 4.15 to 9.35% for men. Higher default rates were observed for loans taken out for agricultural production than marketing and processing, likely because of the higher risks involved in agricultural production than marketing and processing. The average value of loans received by men was consistently higher than that of women for all areas of agricultural investment (production, marketing and processing), including 2013 when where women received a higher number of loans for agricultural marketing than men.

Table 93: Use and Value of the agricultural loans given out to the beneficiaries

Year	Purpose of Loan	Women		Default rate (%)	Men		Default rate (%)
		No of loans	Average Value (in '000000 Ush)		No of loans	Average Value (in '000000 Ush)	
2010	Agricultural Production	97.5 (14.85)	147 (75)	6.4 (6.51)	459 (203.65)	371 (17.3)	8.4 (9.33)
	Agricultural Marketing	82.5 (19.09)	115 (103)	2.9 (1.56)	152 (91.92)	181 (26.8)	6.4 (6.51)
	Agricultural Processing	24.0 (16.97)	142 (176)	3.9 (2.97)	81.5 (0.71)	229 (242)	5.4 (5.09)
2011	Agricultural Production	179.5 (41.72)	187 (32.1)	5.7 (6.79)	565.5 (248.19)	527 (17.8)	7.2 (8.91)
	Agricultural Marketing	76 .0 (36.77)	91.3(18)	3.15 (3.18)	137.5 (122.33)	457 (60.9)	6.2 (7.50)
	Agricultural Processing	24.5 (24.75)	44.4 (59.3)	3.2 (3.25)	30.5 (36.06)	158 (200)	4.15 (4.60)
2012	Agricultural Production	186 (14.14)	279 (74)	6.35 (2.33)	722 (224.86)	490 (288)	9.35 (6.58)
	Agricultural Marketing	87.5 (43.13)	172 (56.2)	3.85 (1.20)	254 (137.18)	396 (133)	9.2 (6.36)
	Agricultural Processing	21.0 (25.46)	21.3 (28.5)	4.85 (0.21)	56.0 (72.12)	112 (125)	7.8 (4.38)
2013	Agricultural Production	252 (137.18)	272(106)	5.35 (4.17)	661.5 (456.08)	565 (74.9)	6.2 (5.37)
	Agricultural Marketing	113.5 (89.8)	211 (153)	3.0 (.85)	234 (65.05)	456 (96.1)	6.95 (6.43)
	Agricultural Processing	37.0 (49.50)	106 (125)	3.2 (1.13)	86.0 (104.65)	150 (70.7)	5.1 (3.82)

7.0 Concluding Remarks and Recommendations

This study Impact Assessment (IA) was undertaken with the main objective of assessing the extent to which aBi Trust-supported IP-implemented activities have contributed to change in the beneficiary communities over the past three years (2011-2013). Research questions were set and questionnaires designed with the aim of gathering data for answering these questions, and by so doing meet the specific objectives of the IA study, which include to:

1. Measure changes in income of the beneficiaries of aBi Trust Supported interventions
2. Determine the new Jobs created for the benefiting communities by the respective IPs
3. Determine the relevancy of the aBi Trust supported programs and inform next steps

The first objective was achieved through analysis of the gross margins from production of the different intervention crops supported by aBi Trust; and comparison of the gross margins between beneficiary and non-beneficiary farmers using the difference in difference (DID) method. The second objective was achieved through computation of new jobs created at the farmer and IP levels. Most of the sampled farmers were found to employ workers on temporary/short-term contracts, with only a handful having permanent farm-workers. To determine the number of new jobs created, the additional short-term jobs created were converted to fulltime equivalents (FTEs) by summing up the total number of days worked by the added short-term workers and dividing it by 240—the number of days one must have worked to be considered fulltime. This number was then added to the number of additional permanent workers (for the few farmers who had them) employed to get the total number of new jobs created. The third objective was achieved through gathering and analysis of data on farmers' perceptions on impact of the technologies and practices they applied, following their promotion by IPs with support from aBi Trust. Assessment of income growth in objective 1 is also informative of the relevancy of the aBi Trust supported programs to the beneficiaries' livelihood goals of enhancing household income.

Since 2010, aBi Trust has supported IPs with grants to enable them to provide technical support to farmers in the areas of training in GAPs under VCD; G4G and FSD; and provision of PHH equipment, marketing and financial services, and agricultural inputs. The findings of the IA study show that:

(1) The majority of Treatment farmers who received training in these areas between 2011 and 2013 were trained by the IPs of aBi Trust. However, not all the trained farmers applied the GAPs on their land, which means that the change in application of the

promoted practices attributable to aBi Trust is smaller than the attributable change in prevalence of training in these practices.

(2) Besides aBi Trust-supported IPs, other NGOs and government agencies such as NAADS and NARO trained farmers (both Treatment and Control) in GAPs before and after aBi Trust intervention, which reduced the attributable impact of aBi Trust in prevalence of training in these areas.

(3) For several GAPs promoted by aBi Trust-supported IPs, more farmers (both Treatment and Control) reported using these GAPs than those who reported receiving training in the same. As a result, the estimated changes in percentage of farmers applying these GAPs in 2011-2013 (proportion of new adopters) following aBi Trust-supported intervention were much lower than the changes in trained farmers. It is possible that several farmers did not directly participate in the demonstrations and training sessions conducted by the IPs and other agencies, but later on picked the good practices and technologies from their neighbors through farmer-to-farmer extension.

The above-listed observations notwithstanding, the findings of this study show that, on average, Treatment farmers of most intervention crops performed better than Control farmers (some of whom applied similar practices before and after intervention by aBi Trust) with respect to various outcome indicators, including yield, production and production costs, sales and most importantly, income. This suggests that it matters who did the training and when the training was done. The fact that the average Treatment farmer trained (or retrained) by aBi Trust performed better than his/her cohort trained earlier by other organizations (or not trained at all) suggests that aBi Trust-supported training and subsequent application of the promoted practices made the difference and, thus, had an impact on the outcome indicators. Furthermore, the majority of farmers for who applied key promoted GAPs **(50-100%)** said they had a large and positive impact on the performance of their enterprises, which suggests that the aBi Trust-supported intervention programs are highly relevant to the farmers' needs. **The large proportions of Treatment farmers whose incomes grew during the intervention period as well as the large magnitude of income growth is further testimony to the relevance of aBi Trust-supported intervention programs.**

Also two important facts affected the magnitude of the estimated impact on outcome indicators attributable to aBi Trust. First due to absence of well documented baseline information, this study largely depended on recall for information on respondents farming practices and outcomes before intervention by aBi Trust (2010 or before). Although various

means were used to help farmers to recall the events as they happened before intervention (for example by using the last presidential election period as a reference for the pre-intervention period), the memories of some could have been stretched beyond their capacity to recall. **It is important therefore, that future interventions by aBi Trust are preceded by carefully done baseline studies to enable more accurate measurement of impact in the future.**

Second, the IA survey gathered information on the period "before" aBi Trust intervention (2010 or before) and "after" (2011- 2013). For the "after" scenario, the reference point for most farmers **(74% for coffee, 85% for maize, 88% for beans and 66.7% for FSD)** was the first cropping season of 2013, characterized by drought conditions and poor yields in most parts of the country. This likely had a negative effect on the observed impact on yield, production and income, among other indicators. **It is important to build the capacity of IPs to continuously track and report changes in performance indicators, to provide credible data for assessing impact over a period of time, rather than relying on cross-sectional IA studies that are prone to seasonality bias.**

The original plan for this study was to measure impact of aBi Trust-supported interventions using changes in application of promoted practices by the beneficiaries and the ensuing changes in outcome indicators. This would require prior categorization of farmers as adopters versus non-adopters, based on a set of key practices that a farmer must have applied to qualify as an adopter. However, it was not possible to group beneficiary farmers into the adopter and non-adopter categories before the survey because the IPs do not keep track of farmers implementing the different practices that they promote. **In addition to supporting IPs to build their capacities to train, monitor and track changes in performance indicators, it is also critical that aBi Trust puts more effort into monitoring the IPs to ensure that they follow the procedures, guidelines and practices as agreed upon in the partnership contracts. This of course will depend on the resource envelope of aBi Trust, which, if limited would require meticulous screening of potential IPs to choose only those that have sufficient capacity to implement what is agreed upon in the partnership contracts. Since the performance of aBi Trust vis-à-vis outcome indicators largely depends on the performance of the IPs in implementing and tracking progress of the intervention programs, it is only wise that aBi Trust chooses its IPs very carefully.**

The introduction of the interventions could have been better guided to make it easier to measure the impact of the different intervention components. For example, in most areas that received support from aBi Trust, the first interventions were in the VCD component. During the promotion of VCD practices; it was realized that there were gender issues that

could hamper the impact of promoted practices; and it was at this stage that a case was made for implementation of G4G practices. To enable measurement of the impact of G4G practices, it would have been wise to phase the introduction of G4G interventions, by introducing it in a few areas first and waiting until impact measurement has been done in those areas before rolling it out to the rest of the areas. This would have made it easier to apportion impact to the different intervention components, i.e., VCD alone and a combination of VCD and G4G. Unfortunately, this was not possible in this study because both VCD and G4G interventions had already been completed in the study areas, making it hard to isolate their individual impacts**. It is therefore important for** t**he introduction of future interventions by aBi Trust to be better guided, giving thought to how impact will be measured in future before introducing and implementing the interventions.**

Finally, the FSD component appears not to be well integrated with VCD and G4G even in areas where all intervention components are being implemented. For example, where FIs gave out agricultural loans under FSD for investing in the intervention crops covered in this study, no deliberate effort was made to ensure that the loan beneficiaries receive supporting services in extension advice and training in GAPs as well as modern inputs to boost their earnings from the enterprises for which they received loans and increase their ability to pay back. **It is important for aBi Trust to make extra effort beyond just introducing FSD interventions in areas where aBi Trust-supported DFAs are operating, to ensure that the beneficiaries of agricultural loans under FSD also receive technical support on their agricultural enterprises of choice.**

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APPENDIX #1: HOUSEHOLD SURVEY TOOL

ASSESSMENT OF IMPACTS OF aBi Trust SUPPORTED INTERVENTIONS

Introduction to the Respondents

The government of Uganda and its development partners are running a programme aimed at supporting farmers to increase their contribution to agricultural development by increasing market competitiveness and the productivity of land and labour. The ultimate goal of this programme is to reduce poverty, and to create wealth and employment. To achieve this goal, the government and its development partners are working through partnerships with Farmer Organizations such as District Farmers Associations, NGOs, and Small and Medium enterprises (SMEs), which work directly with farmers.

I am part of a team of Researchers from Makerere University collecting data to help the government and its development partners to establish the facts on the ground, and to better understand the changes occurring within the agricultural sector in various parts of the country, for purposes of guiding decision-making for future development. **The information you provide will guide future investment in the much-needed interventions in this area; and it will be treated with the highest confidentiality.**

Please Note: For the Treatment group, the respondent must be the beneficiary farmer. For the Control group, target respondent is the Household Head or Spouse but can be any knowledgeable adult member of the Household

A. GENERAL INFORMATION

A1	District name			**Date of Interview**	
A2	Sub-county name			**Name of Interviewer**	
A3	Parish name			Quality of questionnaire responses back-checked by ***(Name of Supervisor)***	
A4	Village/LC1 name			Date checked	
A5	Name of Implementing Partner			Completeness of all sections in questionnaire checked by ***(Name of Supervisor)***	
A6	Household name				
A7	Name of the **Farmer/Respondent** and **Telephone contact**			Date checked	
A8	Relationship of Farmer /Respondent to Household Head **(see codes)**			Enumerator response to Supervisor queries checked by ***(Name of Supervisor)***	
A9	Category of Household /Farmer ***(1=Treatment; 2=Control)***			Date checked	
A10	**Intervention Component** ***(1=VCD; 2=VCD&G4G; 3=FSD, 4=Control)***			Supervisor's final comments on quality of gathered data	
A11	**Intervention Crop** *(1=Coffee; 2=Maize; 3=Beans; 4=Soybean; 5=Sesame; 6=Sunflower)**:* **For Control Hhds, enter crop for Treatment Farmers in the area**				
A12	Gender of Farmer/ HHd Head ***(1=Male; 2=Female***				
A13	Main Occupation of Farmer/ HHd Head **(see codes)**		**A19**	Total No. of people in the Hhd of the Farmer/ Respondent	
A14	Age of Household Farmer/ HHd Head (years)		**A20**	Number of **productive adult females** in the household	
A15	Highest school grade completed by Farmer/ HHd Head		**A21**	Number of **productive adult males** in the household	
A16	Marital status of Farmer/ HHd Head **(see codes)**		**A22**	Number of **productive children** in the household	
A17	Tribe of Household Farmer/ HHd Head **(see codes)**		**A23**	Number of **unproductive children** in the household	
A18	Religion of Farmer/ HHd Head **(see codes)**		**A24**	Number of **unproductive adults** in the household	

Relationship codes: 1=Household head; 2=Spouse; 3=Son/daughter; 4=Parent; 5=Brother/sister; 6=Son/daughter in-law; 7= Grand child; 8= Other relative 9=Hired worker; 10=Other (specify)
Marital status codes: 1=Married; 2=Single; 3=Divorced; 4=Widowed
Occupation codes: 1=No occupation; 2= Prod. of crops; 3= Prod. of livestock; 4=Salary earner; 5=Wage earner (casual laborer); 6=Other (specify)
Tribe/Ethnicity codes: 1=Baganda; 2=Banyankore; 3=Acholi; 4=Langi; 5=Banyoro; 6=Bagisu; 7=Badama; 8=Alur; 9=Lugbara; 10=other (specify)
Religion Codes: 1=No religion; 2=Catholic; 3=Protestant; 4=Other Christian; 5=Hindu; 6=Muslim; 7=Traditional; 99= Other (specify)

2.0. INCOME SOURCES

List the top 5 sources of cash income for your household (starting with the most important one) in 2010 (Last Presidential Election Period) and Now (2013). Rank the Top 3

Cash Income Sources (see codes below)					Reasons for change, if changed
Period	**Now (2013)**	Code	2010	Code	
Most important					
Second most important					
Third most important					

Income source codes: 1=Production and sale of crops (specify main crop providing cash income); 2=Production and sale of animals & animal products, 3=Sale of land, 4=Salary, 5=Remittances, 6=Hiring out casual labor (wages), 7=Sale of forest products, 8=Brewing, 9= Trading, 10=Fishing, 11=Other (specify)

3.0 ASSET ACCUMULATION

3.1 List all equipment/durable goods and Livestock owned (number and estimated sale value) by your household; and your major expenditure items in 2010 (Last Presidential Election Period) and Now (2013)

Type of equipment **(such as motor vehicles, bicycles, radio, farm equipment, etc.**	Code	No. of items		Total Value (USh)			Code	No. of items		Total Value (USh)	
Farm Equipment		**HA1**		**HA2**		***Other Items***		**HA1**		**HA2**	
		Now	**2010**	**Now**	**2010**			**Now**	**2010**	**Now**	**2010**
Tractor Plough	1					Motorcycle					
Tractor	2					Vehicles					
Ox-Plough						Other Equipment (specify)					
Wheelbarrows						***Livestock***					
Pangas, slashers, axe, spade, saws, etc						Cattle local					
Hand hoe						Cattle improved					
Spray pumps						Goats and Sheep					
Water tanks						Indigenous Chicken					
Granary/Crib						Improved Chicken					
Grinders/Threshers						Pigs					
Tractor Trailer / Cart						Other Livestock (specify)					
Tarpaulin						***Materials Used 4 Main House (codes)#***		**Now**		**2010**	
Other Items		**Now**	**2010**	**Now**	**2010**						
Bicycle						Walls					
Radio						Roof					
TV						Floor					
Mobile Phones											

 # Codes for House materials:1= Concrete, 2=burned bricks, 3=Mud blocks, 4=Mud and straw, 5=Wood, 6=Plastic Shelter, 7=Tiles, 8=Straw (grass, papyrus, banana fibers), 9=Galvanized iron, 10=Mud, 11=Other (specify)

4. 0. Farm Labor/Jobs

4.1 How many workers in total do you currently employ? **_____(Now)** **_____(2010)**

		Now	**2010**
4.2	Number of Permanent workers		
4.3	Number of Temporary/short-term workers		
4.4	Monthly payment to Permanent workers **(Total in Ush)**		
4.5	On average, for how many months in a year do you use Temporary/short-term workers?		
4.6	**Total annual** payment to Temporary/short-term workers **(Total in Ush)**		

5.0. Land and Land Use

How many Parcels of land did your household **own** *(including those rented out or lent out)* **or operate** *(including those owned, rented-in, borrowed, etc)* in the following periods:

5.1. 2010 (***Last Presidential Election Period***) _____ **Parcels** **5.2.** Now (2013)_____ **Parcels**

(A parcel is defined as a continuous piece of land operated by the same household with no land operated by other households in between)

5.3. Reasons for change in number of parcels between 2010 and 2013 **(if changed)**_____

_____

_____

5.4 Total acreage of land parcels owned or operated in 2010**_____(acres)** and 2013**_____(acres)**

5.5. Reasons for change in **Total acreage** of land parcels between 2010 and 2013 **(if changed)**

_____

_____

For all parcels of land owned or operated by your **household NOW**, answer questions in the table below.

	Parcel #1		Parcel #2		Parcel #3		Parcel #4	
Parcel Name								
Parcel ID (PID)								
5.6 Do you (your HHd) own this parcel ***(1=Yes; 2=No)***								
5.7. How acquired/accessed **(codes)**								
Codes: *1=Purchased; 2=Rented in for fixed payment; 3=Sharecropped in; 4=Borrowed; 5=Received as inheritance/gift, 6=other (specify)*								
5.8 Year acquired								
5.9. Total Area of Parcel (acres) ***(confirm that total area for all parcels matches 5.4)***								
5.10. Did you own/operate this parcel in 2010? ***(1=Yes; 2=No)***								
5.11. If No to 5.9, why not?								
For all parcels of land owned or operated by your household in 2010 and Now, answer questions								
5.12. Proportion (%) of Parcel **Cultivated**	**NOW**	**2010**	**NOW**	**2010**	**NOW**	**2010**	**NOW**	**2010**
5.13. % of Cultivated Parcel Area **Planted to Intervention Crop** ***(see A11, page 1)***	**NOW**	**2010**	**NOW**	**2010**	**NOW**	**2010**	**NOW**	**2010**
5.14. % of Cultivated Parcel Area **Planted to Traditional Cash crops** ***(others if A11 is coffee)***	**NOW**	**2010**	**NOW**	**2010**	**NOW**	**2010**	**NOW**	**2010**
5.15. % of Cultivated Parcel Area **Planted to other Food crops** ***(exclude Intervention crop in A11 if food crop)***	**NOW**	**2010**	**NOW**	**2010**	**NOW**	**2010**	**NOW**	**2010**

6.0. Production and Utilization for Intervention Crops (Coffee, Maize, Beans, Soybeans, Sunflower, Sesame) produced and harvested on ALL parcels operated in the 2ND season of 2010 or last season Intervention Crop was grown before 2010; and 1ST season of 2013 or last season Intervention Crop was grown after 2010

6.1 What is the Intervention crop for this **Beneficiary Farmer/Control HHd**? _____ ***(1=Coffee; 2=Maize; 3= Beans; 4=Soybeans; 5=Sunflower; 6=Sesame):***

(Confirm that crop is the same as in A11, page 1. For Control Hhds, enter Intervention crop for Treatment Farmers in the area)

6.2: When was the last time ***(Season and Year)*** that **Beneficiary farmer/Control HHd** produced ***(crop in 6.1)*** after **2010 (2011-2013)#** **6.2_____*(Season)*_____*(Year)***

6.3: When was the last time ***(Season and Year)*** that **Beneficiary farmer/Control HHd** produced ***(crop in 6.1)*** in **2010 or before** **6.3_____*(Season)*_____*(Year)***

6.4: How many separate plots (gardens) **of *(crop in 6.1)*** did **Beneficiary farmer/Control HHd** grow in the season and year **reported in 6.2** **6.4_____** plots

6.5: How many separate plots (gardens) **of *(crop in 6.1)*** did **Beneficiary farmer/Control HHd** grow in the season and year **reported in 6.3** **6.5_____** plots

Answer these questions for ***(crop in 6.1)*** grown **(as sole crop or intercrop)** on all gardens (plots) planted to ***(crop in 6.1)*** in the **last year and season it was planted between 2011 and 2013 (Q6.4) and in 2010 or before (Q6.5).** ***Complete the left part of the table first.***

Season(1=2011-2013; 2=2010 and Before)	Parcel ID	Plot/ Garden ID (Enter all plots in 6.4 &6.5)	Main variety of crop grown	Code	Cropping method (1=sole crop, 2=Intercrop)	Plot area planted to Crop (acres)	Quantity of seed planted (kg)	Value (Ush) of seed planted	Application of Chemical fertilizer				Application of Organic soil inputs				Total cost of pesticides applied(Ush)	Total cost of herbicides applied (Ush)
									Main Type of fertilizer applied	Code	Quantity of main fertilizer applied (kg)	Total cost (value) of main fertilizer applied (Ush)	Main Type of Organic input applied	Code	Quantity of main Organic input applied (kg)	Total cost (value) of main Organic input applied (Ush)		
SID	PID	GID	6.6		6.7	6.8	6.9	6.10	6.11		6.12	6.13	6.14		6.15	6.16	6.17	6.18

#The period 2011-2013 can be referred to as Presidential Election Period up to today; while 2010 or before is the Last Presidential Elections period

Main variety codes for Crop: 1= 2= 3= 4= 5= 6= 7=Local varieties, 8=other (specify)

Fertilizer codes: 1=UREA; 2=DAP; 3=CAN; 4=TSP; 5=SSP; 6=NPK; 6=None; 8=Other (specify) **Organic inputs Codes:** 1=Animal manure; 2=Compost; 3=Other (specify)

6.0 Continued: Seed/planting materials for *(crop in 6.1)* used, their sources, use of credit services and Hired Labor and Rented Land

Season(1=2011-2013; 2=2010 and Before)	Parcel ID	Plot/ Garden ID	Main source of seed/planting material planted on plot (Code)	Code	Perceived quality of seed (1=Very good; 2=Good; 3=Poor; 4=Very poor)	Main source of fertilizer used on plot (Code)	Code	Perceived quality of fertilizer (1=Very good; 2=Good; 3=Poor; 4=Very poor)	Were any inputs used on this plot received on credit? 1=Yes, 2=No(▶6.29)	Which inputs were received on credit? (1=fertilizer, 2=seed/material, 3=both fertilizer & seed, 4=other (specify))	Code	Credit source (1=trader, 2=NGO, 3=Gov't program, 3=farmers' group, 4= other(specify)				Total Value (Ush) of inputs received on credit and used on plot.	Total Cost of HIRED LABOR (from production to marketing) (Ush)	Total cost of HIRED LAND (Ush)
												Fertilizer	Code	Seed/ Planting Material	Code			
SID	PID	GID	6.20		6.21	6.22		6.23	6.24	6.25		6.26		6.27		6.28	6.29	6.30

Codes for Main Source of Seed/Fertilizer (6.20 & 6.22): 1=own seed/material, 2=input trader, 3=NGO, 4= District or Lower-Level Farmers Association/group/organization (**specify name**), 5=other (specify))

6.0 Continued: Crop Harvests (fresh or dry) and Sales for *(crop in 6.1)*. *Complete the left part of the table first.*

Season(1=2011-2013; 2=2010 and Before	Parcel ID	Plot/ Garden ID	Form in which crop was harvested (F=Fresh; D=Dry)	Quantity Harvested	Units of Quantity Harvested (e.g., Bags; baskets; Ddebes, etc)	Conversion factor to Kgs (e.g., 1 bag = 50 kgs or 100 kgs)	Quantity sold (same units as in 6.32)	Sale price (Ush/unit specified in 6.32)	Primary/Main Mode of Sale (1=Collectively thru group, 2=Individually)	Code	Sold to whom/Main Buyer Type? 1=Consumer, 2=Trader, 3=NGO 4=Institution 5=Exporter 6=Processor 6=Broker 8=Other (specify)	Code	***Main* Reason for selling to main buyer** 1=Only buyer available 2=Better prices 3=Nearest 4=Contractual arrangement 5= Other (specify)	Distance (kms) to main Buyer	Mode of Transport to Point of Sale (codes)	Transport Cost (Ush) to point of sale (if Hired)	If used own means , what would it have cost to hire (Ush)	Who made sales decisions ***(when and how much to sell)?* (codes)**	Who made decisions on the use of revenue from this crop? (codes)	How was the revenue from this crop used? (List the top three) (codes)
SID	PID	GID	6.30	6.31	6.32	6.33	6.34	6.35	6.36		6.37		6.38	6.39	6.40	6.41	6.42	6.43	6.44	6.45

Codes for 6.40 (Modes of Transport): 1=foot, 2=bicycle, 3=motorbike, 4=Vehicle, 5=Other(specify)
Codes for 6.43 and 6.44 (Who makes decisions): 1=Husband; 2=Wife; 3=Both Husband& Wife; 4=Children; 5=Other(specify)

Codes for 6.45 (Use of revenue from crop): 1=Consumption; 2=Investment in Agricultural enterprise; 3=Investment in non-agricultural enterprise; 4=Medical expenses; 5=Household durables; 6=Clothing/Shoes; 7=Other (specify)

7.0 ADOPTION OF GAPs/PRODUCTIVITY ENHANCING TECHNOLOGIES AND PRACTICES ON INTERVENTION CROP (CROP IN 6.1)

Q7.1		Q7.2	Q7.3		Q7.4		Q7.5		Q7.6	Q7.7		Q7.8
Practice		Are you aware of? 1=Yes; 2=No	Were you trained on the use of.. ..? 1=Yes; 2=No		***If Yes to Q7.3 for 2011-2013***, who trained you? **(see codes)** and **when?**		Did you apply? (1=Yes; 2=No		If didn't apply **(Q7.5=No)**, reasons for not using	If applied, specify main variety/ fertilizer type/ manure type used		Perceived Impact of practice, **(if applied)** ***(5=Positive & Large; 4=Positive but Small 3=No Impact 2=Negative but Small 1=Negative and Large)***
			2011-2013	**2010 or B4**	**Who**	**When (year)**	**2011-2013**	**2010 or B4**		**2011- 2013**	**2010 or B4**	
Improved varieties of seeds/ Seedlings	01 **Intervention Crop in 6.1** ***(specify)_____***											
	02 Other crop (specify_____)											
Soil fertility improvement	01 Chemical Fertilisers											
	02 Compost/ Manure											
	03 Leguminous cover crop											
	04 Animal manure											
	05 Other (specify)											
Crop husbandry practices	01 Timely planting											
	02 Timely weeding											
	03 Crop rotation											
	04 Chemical spraying											
	05 Line planting											
	06 Spacing											
	07 Seed rate											
	08 Coffee tree Training											
	09 Pruning											
	10 Other (specify)											
Soil and water conservation	01 Grass bands											
	02 Trenches											
	03 Trash lines											
	04 Mulching											
	05 Hedge rows											
	06 Contour planting											
	07 Soil conservation basins											
	08 Other (Specify)											
Post harvest handling	1 Use of Improved Storage facility such as Cribs, Granaries											
	2 Use of Tarpaulins for drying											
	3 Use of Collapsible driers											

Q7.4 Codes: 1=NAADS Service providers, 2=Farmer Group members, 3= District Farmers Association (DFA) extension service providers; 4= other NGO, 5=Other farmers not in group, 6=Stockist, 7=Other

Q7.7 Codes: 1=Urea; 2=DAP; 3=NPK; 4=CAN; 5=Other (Specify)

Q7.1		Q7.2	Q7.3		Q7.4		Q7.5		Q7.6	Q7.7		Q7.8
Practice		Are you aware of? 1=Yes; 2=No	Were you trained on the use of.. ..? 1=Yes; =No		***If Yes to Q7.3 for 2011-2013***, who trained you? **(see codes)** and **when?**		Did you apply? (1=Yes; 2=No		If didn't apply (Q7.5=No), reasons for not using	If applied, specify main variety/ fertilizer type/ manure type used		Perceived Impact of practice, **(if applied)** ***(5=Positive & Large; 4=Positive but Small 3=No Impact 2=Negative but Small 1=Negative and Large)***
			2011-2013	**2010 or B4**	**Who**	**When (year)**	**2011-2013**	**2010 or B4**		**2011- 2013**	**2010 or B4**	
Post harvest handling Continued	4 Use of drying shade/platform											
	5 Use of drying and grading racks (works like sieve)											
	6 Storage pest Control											
	7 Threshing equipment											
	8 Use of Shellers (Maize&Gnuts)											
	9 Use of coffee pulpers											
	10 Washing stations for coffee											
	11 Screening or Sieving											
	12 Cocoons											
	13 Use of Aflatoxin Machines											
	14 Use of weighing scales											
	15 Quality Mgt Standards											
	16 Certification											
	17 Training and mentoring in PHH											
	18 Other (Specify)											
Farming as a business	1 Collective Marketing											
	2 Record keeping											
	3 Business planning											
	4 Information boards											
	5 Sms mkt information service											
	6 Voice message mkt information service											
	7 Other(specify)											
Gender for Growth	1. Training on gender mainstreaming											
	2. Entrepreneurship training											
	3. Training in VSLA ***(Village Savings and Loans Association)***											
	4. Other (specify)											
Financial Service Dev't	1.Training on Savings & Loans											
	2. Other(specify)											

Q7.4 Codes: 1=NAADS Service providers, 2=Farmer Group members, 3= District Farmers Association (DFA) extension service providers; 4= other NGO, 5=Other farmers not in group, 6=Stockist, 7=Other

Q7.7 Codes: 1=Urea; 2=DAP; 3=NPK; 4=CAN; 5=Other (Specify)

7.0 Continued: Quality Attributes

7.9	What quality attributes do buyers of ***(crop in 6.1)*** look for in the product? **Codes for Attributes:** ***1=Variety; 2=Size, 3=Maturity, 4=Cleanliness, 5=Colour, 6=Skin texture 7=Physical wholeness (no spots/bruises) 8=Dryness; 9=Other (specify)***	**1.**_____ **Code:**	**2.**_____ **Code:**	**3.**_____ **Code:**	**4.**_____ **Code:**
7.10	How do you rate your ability to meet these quality requirements **Now**? **Codes for Ability to supply quality attributes** : ***1=Very good; 2=Good; 3=Poor; 4=Very Poor***				
7.11	How do you rate your ability to supply these quality requirements in **2010 or before**? **Codes for Ability to supply quality attributes** : ***1=Very good; 2=Good; 3=Poor; 4=Very Poor***				
7.12	Describe the reasons for change in ability **(if changed)**				
7.13	Do the buyers penalize farmers for failure to meet for this quality attribute? (1=Yes; 2=No)				
7.14	If Yes to 7.13 above, describe the nature and magnitude of the penalty				
7.15	If you lack the ability to meet the quality requirement ***(answer to Q7.10 is poor or very poor)***, explain in as much detail as possible the reasons why				

8.0: PARTICIPATION IN FARMER GROUPS

8.1 : Did **you** (**Treatment farmer/Control HHd**) belong to any organization dealing in the production and/or marketing of the ***(crop in 6.1)*** **in 2010 or before?** *1=Yes 2=No* **8.1:**_____

8.2 : Did **you** (**Treatment farmer/Control HHd**) belong to any organization dealing in the production and/or marketing of the ***(crop in 6.1)*** **after 2010 (2011-2013)?***1=Yes 2=No* **8.2:**_____

If the answer to 8.1 and/or 8.2 is Yes, list the names of the groups **(up to two)** that the **Treatment farmer/Control HHd** belonged to and answer subsequent questions

Period	Name of Group	Number of members in group	Which two main activities/ enterprise do members of this group engage in collectively		Which year did you join the Group?	Which two main services does the person get from the group?		Are you satisfied with the services (in general) received from the group? 1=Satisfied; 2=Dissatisfied; 3=Indifferent (Neutral)	If you are dissatisfied with the services received from the group, give two reasons why?		What benefits do you derive from participating in the group? *(Rank them starting with the most important)*			
	8.3	**8.4**	**8.5**	**8.6**	**8.7**	**8.8**	**8.9**	**8.10**	**8.11**	**8.12**	**8.13**	**8.14**	**8.15**	**8.16**
2011-2013														
2011-2013														
2010 or before														
2010 or before														

Codes for 8.5/8.6: 1=production of ***(crop in 6.1)***; 2=production of other crop (specify); 3=Marketing of ***(crop in 6.1)***; 4=Marketing of other crop (specify); 5=Processing of ***(crop in 6.1)***; 6=Processing other crop 6=Other (specify)
Codes for 8.8/8.9: 1=credit/loan; 2= marketing ; 3= supply of inputs 4=savings ; 5=joint extension services; 6=market information; 6=water for production; 8=other (specify)
Codes for 8.11/8.12: 1=lack of skilled leadership; 2=mismanagement of resources; 3=lack of commitment by members; 4=lack of democracy; 5=Other (specify)_
Codes for 8.13 to 8.16: 0=None; 1= information; 2=higher prices; 3= credit/loan; 4=ready market; 5=other (specify)_____

9.0: FINANCIAL SERVICES - CREDIT

9.1: Did you (**Treatment farmer/Control HHd**) receive a loan in 2010 or before (**before last Presidential Election)** (*1 = Yes; 2 = No)*

9.2: Did you (**Treatment farmer/Control HHd**) receive a loan after 2010 (2011-2013) **(since last Presidential Election)** (*1 = Yes; 2 = No)*

If the answer to 9.1 and/or 9.2 is Yes, list the amounts received for the 3 largest loans (*include loan from aBi Trust IP in FSD among the top 3 for Beneficiary Farmers)* in each year and ask the subsequent questions

Year when loan was acquired	**9.3** Amount Received (Ush) *(List each loan amount for the largest 3 loans on a separate line).*	**9.4** Main Purpose for which loan was sought	**9.5** Loan Source (Person/institution applied from) *(Use codes below)*	**9.6** If main purpose was **agric. investment** , specify the enterprise *(Use codes below)*	**9.7** Were you **satisfied** with the terms and conditions of the loan? 1=Satisfied; 2=Dissatisfied 3=Indifferent (Neutral)	**9.8** If dissatisfied, main reason why? *(see codes)*	**9.9** Describe how the received credit affected your welfare *(see codes)*
2010							
2011							
2012							
2013							

Codes for Main Purpose (codes for 9.4): 1=agric. investment; 2=Non-agric. Investment; 3=Consumption; 4=school fees; **5**=medical; **6**=other household needs (Specify)__

Loan Source codes (9.5) : 1=Family member/relative; 2=Friend; 3=Employer; 4=Commercial bank; 5=SACCO; 6=Group (Registered/Unregistered); 6=MFI ; 8=Money lender; 9=aBi Trust supported IP in FSD; 10=Other (specify)

Enterprise Codes(9.6): 1=Coffee; 2=Beans; 3=Maize; 4=Soybeans; 5=Sunflower; 6=Sesame; 6=Other Traditional Cash crop; 8=Other food crop; 9=Other (specify)

Reasons for dissatisfaction (code 9.8) 1=High interest rate; 2=Stringent rules 3=Long process ; 4=Hidden information; 5=Got less money than requested; 6=Other (specify)____

Codes for welfare effect (Q9.9): 1= no impact, 2=minor impact; 3=moderate impact, 4=major impact, 5=negative impact

9.10. If answer to **9.6 is Intervention Crop in 6.1**, list the different activities on which the loan money was spent **and verify in section 6** that **indeed the Treatment farmer spent money** on these activities_____

Codes: 1=Purchase of seed; 2=Purchase of Fertilizer; 3=Renting Land; 4=Hiring Labor; 5=Purchase of farm tools; 6=processing; 7=other(specify)

9.11. If 9.1**=No**, why didn't **Treatment farmer/Control HHd** receive loan **in 2010 or before 9.11**_____

1=No security/collateral 2=Had outstanding loan 3= Don't Know 4=Did not need credit 5=Credit services unavailable 6= Other (specify)

9.12. If 9.2**=No**, why didn't **Treatment farmer/Control HHd** receive loan **after 2010 (2011-2013) 9.12**_____

1=No security/collateral 2=Had outstanding loan 3= Don't Know 4=Did not need credit 5=Credit services unavailable 6= Other (specify)

9.13. In **your opinion**, how would you rate the following attributes of credit to farmers in this area? ***(if don't know write DK)***

	Item	**after 2010 (2011-2013)**				**2010 or before**			
		Very satisfactory	Satis-factory	In-different	Un-satisfactory	Very satisfactory	Satis-factory	In-different	Un-satisfactory
1	Availability of credit services								
2	Interest rate charged on credit								
3	Application process/procedure for credit								
4	Information on terms & conditions of credit								
5	Stringency of terms and conditions of credit								

9.13. What was the distance (km) from your home to the nearest banking institution **in 2010** _____

9.14. What was the distance (km) from your home to the nearest banking institution **in 2013** _____

10.0 FINANCIAL SERVICES – SAVINGS: (*Means of saving: e.g., deposit with bank, village savings and loans association (VSLA), keep money at home, etc.)*

10.1: Indicate if you (**Treatment farmer/Control HHd**) saved in any form ***(cash at home, cash in bank, cash with SACCO, etc.)*** in 2010 or before (**before last Presidential Election)** and after 2010 (2011-2013) **(since the last Presidential Election)** in the table below:

	Forms of saving *(e.g., deposit with bank, VSLA, keep money at home, etc.)*	**2013**		**2012**		**2011**		**2010**	
		Did you save in this form (1=Yes, 2=No)	Amount	Did you save in this form (1=Yes, 2=No)	Amount	Did you save in this form (1=Yes, 2=No)	Amount	Did you save in this form (1=Yes, 2=No)	Amount
		Q10.1a		***Q10.1b***		***Q10.1c***		***Q10.1d***	
1	House (cash kept in a house)								
2	Group (cash kept with group)								
3	SACCO								
4	VSLA								
5	MFI								
6	Bank								
7	Other (specify)								
	TOTAL SAVINGS/YEAR								

10.2 If answered No to *ALL* questions **10.1a to 10.1d** above, indicate the **main reasons** for not being able to save	**2013**	**2012**	**2011**	**2010**
	1	1	1	1
	2	2	2	2
	3	3	3	3
	4	4	4	4
	5	5	5	5

11.0 GENDER AND INTRA-HOUSEHOLD DECISION MAKING (G4G)

11.1 How was the ownership of productive resources *(land and animals)* in your household in 2010 or before and Now (2011-2013) and who makes decisions regarding purchase, utilization and disposal of resources?

Resource		**11.2 Who owns** ***(Codes)***		**11.2.1** Reason for change (if changed)	**11.3 Who decides on purchase** ***(Codes)***		**11.3.1** Reason for change (if changed)	**11.4 Who decides on use** ***(Codes)***		**11.4.1** Reason for change (if changed)	**11.5 Who decides on disposal** ***(Codes)***		**11.5.1** Reason for change **(if changed)**
		NOW	**2010**		**NOW**	**2010**		**NOW**	**2010**		**NOW**	**2010**	
1	Land												
2	Cattle												
3	Draught animals (Oxen/Donkeys)												
4	Goats/Sheep												
5	Pigs												
6	Chicken												
7	Cash crops/grown 4cash												
8	Food crops												
9	Household Equipment												

Codes: *1=HH Head; 2=Spouse(s), 3=Joint (Both Head & Spouse), 4=Children, 5=Other (specify)*

11.6 For the following common agricultural practices, **indicate who is commonly involved between the Husband, Wife and Children**

Practice		**11.6 Who is usually involved (codes)**		**11.6.1 Reason for change (if changed)**	**Practice**		**11.6 Who is usually involved (codes)**		**11.6.1 Reason for change (if changed)**
		NOW	**2010**				**NOW**	**2010**	
1	Selection of seed				11	Sorting and Grading			
2	Land Clearing				12	Processing			
3	Ploughing				13	Marketing/Selling			
4	Planting				14	Bargaining for price			
5	Weeding				15	Paying market dues			
6	Pest and disease Control				16	Receiving money from buyer			
6	Manuring/fertilizing				16	Keeping/Storing the money			
8	Harvesting				18	Deciding how to spend the money			
9	Drying				19	Deciding how much to save			
10	Threshing				20	Deciding how much to invest			

Codes: *1=HH Head; 2=Spouse(s), 3=Joint (Both Head & Spouse), 4=Children, 5=Other (specify)*

Thank You So much for your time

APPENDIX #2: IMPLEMENTING PARTNERS (IPs) SURVEY TOOL

QUESTIONNAIRE FOR IMPLEMENTING PARTNERS (IPs)

A: General Information

A1: Name of organization_____

A2: Type of organization *(tick as appropriate)*: A2a Farmer Organization/Association

A2b Financial Institution

A2c Other *(specify)*_____

A3. What is the number of aBi Trust Beneficiaries in your Institution/Organization?

A3(a) Number of Beneficiary Groups_____ ***A3(b) Number of Beneficiary Farmers_____***

A4. Are their any members of your organization that have never received aBi Trust support?

(1) Yes, (No. of groups in your organization that have never received aBi Trust support_____)

(2) No

A5: **Intervention Crop:** _____

A6: Starting date of partnership with aBi Trust_____ **Ending Date**_____

A7: Main areas of Partnership *(tick all that apply)*:

1. Training in Value Chain Development/Good Agric. Practices _____
2. Training in Gender for Growth _____
3. Training in Financial Management Skills _____
4. Providing Management Information Systems _____
5. Providing Financial Services _____
6. Providing Marketing Services _____
7. Providing Agricultural Inputs _____
8. Providing Post Harvest handling Technologies/Equipment _____
9. Providing General Agricultural Equipment _____
10. Providing Transport Equipment/Assets _____
11. Other *(specify)* _____

Section B: Activities Undertaken by Implementing Partners and perceived impact of on program indicators

Please indicate the activities (**under the main areas listed in A7above)** you have been implementing in partnership with aBi Trust since the start of their support to your institution and also indicate your perceived impacts in the tables below

	Implemented Activity	**B1:** Perceived impact on **production** of intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception	**B2:** Perceived impact on **productivity** of intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception
		+ve	**No Impact**	**-ve**	**Don't know**		**+ve**	**No Impact**	**-ve**	**Don't know**	
	Implemented Activity	**B3:** Perceived impact on **acreage planted** to intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception	**B4:** Perceived impact on **cost of production** of intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception
		+ve	**No Impact**	**-ve**	**Don't know**		**+ve**	**No Impact**	**-ve**	**Don't know**	

	Implemented Activity	**B5:** Perceived impact on **average price** of intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception	**B6:** Perceived impact **quality of produce** of intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception
		+ve	**No Impact**	**-ve**	**Don't know**		**+ve**	**No Impact**	**-ve**	**Don't know**	

	Implemented Activity	**B7:** Perceived impact on **sales** of intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception	**B8:** Perceived impact on **adoption of Good Agric. Practices (GAPs)** on intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception
		+ve	**No Impact**	**-ve**	**Don't know**		**+ve**	**No Impact**	**-ve**	**Don't know**	

	Implemented Activity	**B9:** Perceived impact on **Post harvest handling of** intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception	**B10:** Perceived impact on **Collective marketing** of intervention crop at household level (*tick as appropriate)*				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception
		+ve	**No Impact**	**-ve**	**Don't know**		**+ve**	**No Impact**	**-ve**	**Don't know**	

	Implemented Activity	**B11:** Perceived impact on **farming as a family business** *(record keeping, business planning etc.)* at household level				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception	**B12:** Perceived impact on **Joint# Planning/Decision Making/ Working together** at household level				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception
		+ve	**No Impact**	**-ve**	**Don't know**		**+ve**	**No Impact**	**-ve**	**Don't know**	

#Joint Planning/Decision-making/Working Means Men and Women in a household being jointly involved

	Implemented Activity	**B13:** Perceived impact on **savings** at household level				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception	**B14:** Perceived impact on **Loan acquisition** at household level				Where the impact is perceived to be +ve or –ve, provide data or evidence to back-up perception
		+ve	**No Impact**	**-ve**	**Don't know**		**+ve**	**No Impact**	**-ve**	**Don't know**	

C: Job Creation

C1: In the table below, please indicate the type and number of jobs created following aBi support in your business/organization.

	Type of Jobs Created ***(see codes at bottom of table for examples of jobs created)***	**After aBi Support**			**Totals**
		2011	**2012**	**2013**	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
	Totals				

1=Manager; 2=Assist.Manager; 3=Marketing Officer; 4=Supervisor; 5=Trainer; 6=Secretary; 7=Receptionist; 8=Driver; 9=Mechanic; 10=Cleaner; 11=Porter; 12=Change Agents; 13=Other (specify)

D: Perceived Impact of Gender for Growth (G4G) Activities on aBi Trust program indicators

(G4G Activities include: training on gender mainstreaming, recruitment of change agents to monitor implementation of household approach, formation of Village Savings and Loans Association (VSLA), and Entrepreneurship training)

	Program Indicator	**Perceived impact** ***(tick all that apply)***				**Data/Evidence to back-up perceived impact**
		+ve	**No Impact**	**-ve**	**Don't know**	
1	Production					
2	Productivity					
3	Acreage					
4	Cost of Production					
5	Average price					
6	Quality					
7	Sales					
8	Adoption rates of GAP					
9	Post harvest handling					
10	Collective marketing					
11	Farming as a family business					

E: Institutional Performance

E1(a): In your organization please has there been a change in the following institutional performance indicators following aBi Support

	Measures of Institutional Performance	**(1=Yes; 2=No**	**If Yes, indicate if the nature of change**				**Reasons for change, if changed**
			+ve	**No change**	**-ve**	**Don't know**	
A	**Governance**						
A1a	Accountability of officials						
A1b	Human rights observance						
A1c	Transparency in organizational policy making process						
A1d	Favoritism in decisions made by officials						
A1e	Freedom of speech						
A1f	Freedom of association						
A1g	Freedom of assembly and demonstration						
A1h	Respect for minorities						
A2	**Organizational Effectiveness**						
A2a	Quality of bureaucracy						
A2b	Quality of budgetary & financial management						
A2c	Efficiency of revenue mobilization						
A2d	Resource efficiency						
A2e	Effectiveness of implementation of organizational decisions						
A3	**Control of Corruption**						
A3a	Limiting of diversion of organization funds						
A3b	Limiting of Irregular payments						
A3c	Level of trust in management						
A3d	Anti-corruption policy						
A3e	Prosecution of office abusers						
A4	**Regulatory Quality**						
A4a	Organizational ability to formulate policies & regulations that promote development						
A4b	Organizational ability to implement policies & regulations that promote development						
B	**Monitoring & Evaluation**						
B1	Formulation of Strategic Plan						
B3	Formulation of Operational Plan						
B4	Formulation of Organizational Policies						
B5	Formulation of Organizational Regulations						
B6	Defining of Logical frameworks with smart performance indicators						
B7	Design of tools for regular collection of data on indicators						

	Measures of Institutional Performance	(1=Yes; 2=No	If Yes, indicate if the nature of change				Reasons for change, if changed
			+ve	No change	-ve	Don't know	
B8	Regular reporting on indicators						
B9	Regular organization program/project review/evaluation						
B10	Impact Evaluation						
B11	Comprehensive spending reviews and reporting						
B12	Utilization of M&E information to improve management and control						
B13	Implementation of Incentives for internal use of M&E information						
C	**Reporting**						
C1	Monthly reports prepared						
C2	Quarterly reports prepared						
C3	Annual reports prepared						
C4	Financial reports prepared						
C5	End of project/program reports prepared						
D	**Fundraising**						
D1	Fundraising plan and activities implemented						
G2	Annual targets met						

F: For Financial Institutions Only

(a) If your organization is a Financial Institution, Indicate the trend in savings and loan portfolio of your institution over the years before and after aBi Trust interventions in the table below.

Year	Loan Portfolio						Savings					
	No of loans given			Total Value (Shs) of loans			No of savings accounts opened			Value (shs) of Deposits		
	Women	Men	Total	Women	Men	Total	Women	Men	Total	Women	Men	Total
2010												
2011												
2012												
2013												

(b) For the total value of loans given out in (a) above, indicate the share (%) of the loans given out for the different purposes (e.g., Agriculture, Trade, Construction, etc)

Loan Type or Purposes (see codes below)		2010	2011	2012	2013
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					

Codes for Loan Types: 1=Agriculture; 2=Trade; 3=Construction; 4=Manufacturing; 5=Services; 6=Other (specify)

(c) For agricultural loans given, indicate the purpose and value of the loans

Year	Purpose of Loan	Women		Default rate (%)	Men		Default rate (%)
		No	Value (shs)		No	Value (shs)	
2010	Agricultural Production						
	Agricultural Marketing						
	Agricultural Processing						
	Other agricultural related activity (specify)						
	Annual Default rate on agric. loans						
2011	Agricultural Production						
	Agricultural Marketing						
	Agricultural Processing						
	Other agricultural related activity (specify)						
	Annual Default rate on agric. loans						
2012	Agricultural Production						
	Agricultural Marketing						
	Agricultural Processing						
	Other agricultural related activity (specify)						
	Annual Default rate on agric. loans						
2013	Agricultural Production						
	Agricultural Marketing						
	Agricultural Processing						
	Other agricultural related activity (specify)						
	Annual Default rate on agric. loans						

(d) For agricultural loans given towards the intervention crop <u>in A5 above</u>, indicate the number and value of the loans by year

Year	Number of loans		Value of loans (Ush)		Annual Totals (Ush)
	Women	Men	Women	Men	
2010					
2011					
2012					
2013					

Thank You So much for your time

STATISTICAL APPENDIX #1 FOR SESAME

Table SA11: FINANCIAL SERVICES – CREDIT

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
9.1 & 9.2: % HHds/Farmers that received loans	30.0	41.67	21.67	0.00	35.0	40.0	25.0	0.00	12.5	28.13	9.38	0.00
9.3: Mean of Total amount (Ush) received in loans	173,333.3 (125417)	171,666.7 (163571.3)	72600 (53648.86)	0.00	188571.4 (133868.9)	168229.2 (163146.7)	69860 (61203.27)	0.00	120000 (81240.38)	177777.8 (174053)	81733.33 (15819.4)	0.00
9.4: Main Purpose for which the loan was sought (% HHds/Farmers Reporting….)												
Agricultural Investment	55.56	56.00	46.15	0.00	64.29	68.75	40.00	0.00	25.00	33.33	66.67	0.00
Non-Agricultural Investment	5.56	16.00	15.38	0.00	0.00	6.25	20.00	0.00	25.00	33.33	0.00	0.00
Consumption	0.00	0.00	7.69	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
School Fees	33.33	12.00	15.38	0.00	35.71	6.25	20.00	0.00	25.00	22.22	0.00	0.00
Medical	5.56	12.00	7.69	0.00	0.00	12.50	10.00	0.00	25.00	11.11	0.00	0.00
Other Household Needs	0.00	4.00	7.69	0.00	0.00	6.25	0.00	0.00	0.00	0.00	33.33	0.00
9.5: Loan Sources (% HHds/Farmers Reporting….)												
1=Family member/relative	5.56	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2=Friend	11.11	12.00	7.69	0.00	7.14	6.25	0.00	0.00	25.00	22.22	33.33	0.00
3=Employer;	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4=Commercial bank;	11.11	0.00	15.38	0.00	14.29	0.00	10.00	0.00	0.00	0.00	33.33	0.00
5=SACCO;	22.22	32.00	15.38	0.00	28.57	50.00	20.00	0.00	0.00	0.00	0.00	0.00
6=Group (Registered/Unregistered);	50.00	52.00	61.54	0.00	42.86	37.50	70.00	0.00	75.00	77.78	33.33	0.00
9.6:If Main Purpose was Agricultural Investment, Specify Enterprise (% HHds/Farmers Reporting….)												
Beans	0.00	7.69	40.00	0.00	0.00	10.00	33.33	0.00	0.00	0.00	50.00	0.00
Coffee;	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maize;	0.00	15.38	20.00	0.00	0.00	10.00	0.00	0.00	0.00	33.33	50.00	0.00
Soybeans;	20.00	0.00	0.00	0.00	22.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sunflower;	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sesame;	60.00	38.46	20.00	0.00	55.56	40.00	33.33	0.00	100.00	33.33	0.00	0.00
Other food crop	10.00	15.38	20.00	0.00	0.00	10.00	33.33	0.00	0.00	33.33	0.00	0.00
Sorghum	10.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cotton	0.00	15.38	0.00	0.00	11.11	20.00	0.00	0.00	0.00	0.00	0.00	0.00
Chilli	0.00	7.69	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
9.9: How the received credit affected welfare of beneficiaries (% HHds/Farmers Reporting….)												
No Impact	11.76	4.00	0.00	0.00	15.38	6.25	0.00	0.00	0.00	0.00	0.00	0.00
Minor Impact	0.00	0.00	7.69	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Moderate Impact	52.94	44.00	69.23	0.00	53.85	37.50	80.00	0.00	50.00	55.56	33.33	0.00
Major Impact	35.29	52.00	23.08	0.00	30.77	56.25	10.00	0.00	50.00	44.44	66.67	0.00
9.10: Different activities on which the loan money was spent (% HHds/Farmers Reporting….)												
4=Hiring Labor;	27.78	12.00	7.69	0.00	28.57	12.5	7.69	0.00	25.00	11.11	0.00	0.00
5=Purchase of farm tools;	5.56	8.00	0.00	0.00	7.14	12.5	0.00	0.00	0.00	0.00	0.00	0.00
9.11&9.12: Reasons for not receiving loans ***(% HHds/Farmers Reporting….)***												
1=No security/collateral	26.83	0.00	0.00	18.57	30.00	0.00	0.00	20.51	23.81	0.00	0.00	16.1
4=Did not need credit	24.39	0.00	0.00	34.29	30.00	0.00	0.00	41.03	19.05	0.00	0.00	25.8
5=Credit services unavailable	4.88	0.00	0.00	2.86	5.00	0.00	0.00	2.56	4.76	0.00	0.00	3.23
7= Fear borrowing	31.71	0.00	0.00	25.71	25.00	0.00	0.00	15.38	38.10	0.00	0.00	38.7
8=Time wasting	12.20	0.00	0.00	14.29	10.00	0.00	0.00	15.38	14.29	0.00	0.00	12.9

Table SA12: Rating of attributes of credit available to farmers in the area

	Entire Sample		Treatment		Control Group	
	2013	**2010**	**2013**	**2010**	**2013**	**2010**
Availability of credit services ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	8.57	1.45	10.00	2.50	6.67	0.00
2= Satisfactory	59.42	13.04	62.50	17.50	55.17	6.90
3=Indifferent	13.04	13.04	17.50	12.50	6.90	13.79
4= Unsatisfactory	20.00	71.83	9.76	65.85	34.48	80.00
Interest rate charged on credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	5.71	0.00	2.50	0.00	10.00	0.00
2= Satisfactory	32.35	8.70	41.03	7.50	20.69	10.34
3=Indifferent	30.43	20.29	27.50	12.50	34.48	31.03
4= Unsatisfactory	34.29	69.01	31.71	78.05	37.93	56.67
1= Very satisfactory	5.63	1.45	2.50	2.50	9.68	0.00
2= Satisfactory	52.17	7.25	57.50	12.50	44.83	0.00
3=Indifferent	18.84	21.74	20.00	15.00	17.24	31.03
4= Unsatisfactory	24.29	66.67	21.95	65.85	27.59	67.74
1= Very satisfactory	2.86	0.00	0.00	0.00	6.67	0.00
2= Satisfactory	53.62	11.59	62.50	15.00	41.38	6.90
3=Indifferent	24.64	13.04	17.50	7.50	34.48	20.69
4= Unsatisfactory	21.43	73.24	21.95	75.61	20.69	70.00
Stringency of terms and conditions of credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	2.86	0.00	0.00	6.67	0.00	0.00
2= Satisfactory	36.23	8.70	45.00	10.00	24.14	6.90
3=Indifferent	30.43	24.64	25.00	17.50	37.93	34.48
4= Unsatisfactory	31.43	66.20	29.27	70.73	34.48	60.00
Average distance (km) from home to nearest banking institution	5.77 (4.87)	19.21 (16.01)	5.20 (4.96)	21.76 (17.65)	6.54 (4.72)	15.74 (12.92)

Table SA13: SAVINGS (*Means of saving: e.g., deposit with bank, village savings and loans association (VSLA), keep money at home, etc.)*

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
Forms in which households saved in 2010 or before and between 2011 and 2013 (% HHds/Farmers Reporting….)												
House (cash kept in the house)	44.44	52.78	43.06	48.61	43.90	53.66	39.02	46.34	45.16	51.61	48.39	51.61
Group (cash kept with group)	19.44	21.43	15.71	10.00	21.95	21.95	12.20	9.76	16.13	20.69	20.69	10.34
SACCO	18.06	13.04	5.80	2.90	21.95	10.00	5.00	2.50	12.90	17.24	6.90	3.45
VSLA	46.58	43.06	15.28	4.23	50.00	47.62	19.05	7.14	41.94	36.67	10.00	0.00
Bank	12.86	11.76	8.82	5.88	12.82	10.26	7.69	5.13	12.90	13.79	10.34	6.90
*Amount (shs) saved **in House***	182206.9 (166988)	311,714.3 (281,362.4)	269894 (244538)	164172.4 (148139.1)	182,567.1 (180,271.4)	295,000 (272,602.1)	236,357.1 (230,395.4)	113,562.6 (92,116.61)	181,743.8 (154,911.2)	334,696.4 (300,438.6)	305,666.7 (261935.6)	224,271.6 (180,174.3)
*Amount(shs) saved **with Group***	298846.2 (224637.8)	231,571.4 (157,634.2)	149,545.5 (97,428.3)	74,619.05 (71,372.38)	254,316.2 (141,296.8)	278333.3 (179548)	144000 (106442.5)	27333.33 (5249.34)	379,000 (334,035.9)	161,428.6 (90309.71)	154,166.7 (99318.51)	137,666.7 (69327.72)
*Amount(shs) saved **with SACCO***	867692.3 (750823.5)	546666.7 (476523.9)	207500 (127377.4)	110000 (127279.2)	586666.7 (607741.7)	278333.3 (179548)	165000 (190918.8) (N=2)	20000 (N=1)	1500000 (707106.8)	161428.6 (90309.71)	250000 (70710.68)	200000 (N=1)
*Amount(shs) saved **with VSLA***	203906.3 (173383.2)	218344.8 (125829.9)	148909.1 (128674.4)	185666.7 (229317.1)	185133.9 (153425.8)	209017.2 (133960.8)	108500 (53992.06)	185666.7 (229317.1)	234230.8 (204510)	235304.1 (113633.8)	256666.7 (220529.7)	0.00
*Amount(shs) saved **with Bank***	601333.3 (495741.6)	445714.3 (346363)	344000 (252079.4)	462500 (406970.5)	402400 (328201.6)	525000 (450000)	240000 (168226)	325000 (318198.1)	850000 (602771.4)	366428.6 (246293.6)	448000 (313228.4)	600000 (565685.4)

STATISTICAL APPENDIX #2 FOR SUNFLOWER

Table SA21: FINANCIAL SERVICES – CREDIT

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
9.1 & 9.2: % HHds/Farmers that received loans	46.67	40.00	23.33	11.67	66.67	46.67	36.67	20.00	16.67	33.33	10.00	3.33
9.3: Mean of Total amount (Ush) received in loans	222105.3 (153692.8)	219750 (187631)	74000 (45268.43)	487500 (323776.5)	217921.1 (167093)	194267.9 (150672.9)	69272.73 (44768.5)	485416.7 (354628)	238842.1 (93117.85)	255425 (233993.3)	91333.33 (52204.73)	500000 (N=1)
9.4: Main Purpose for which the loan was sought (% HHds/Farmers Reporting….)												
Agricultural Investment	36.00	50.00	21.43	14.29	30.00	57.14	9.09	16.67	60.00	40.00	66.67	0.00
Non-Agricultural Investment	4.00	16.67	28.57	28.57	0.00	0.00	27.27	16.67	20.00	40.00	33.33	100.00
Consumption	0.00	0.00	14.29	0.00	0.00	0.00	18.18	0.00	0.00	0.00	0.00	0.00
School Fees	44.00	25.00	21.43	42.86	55.00	35.71	27.27	50.00	0.00	10.00	0.00	0.00
Medical	12.00	0.00	7.14	0.00	15.00	0.00	9.09	0.00	0.00	0.00	0.00	0.00
Other Household Needs	4.00	8.33	7.14	14.29	0.00	7.14	9.09	16.67	20.00	10.00	0.00	0.00
9.5: Loan Sources (% HHds/Farmers Reporting….)												
1=Family member/relative	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
2=Friend	4.00	4.17	0.00	0.00	5.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00
4=Commercial bank;	4.00	4.17	21.43	28.57	5.00	0.00	27.27	33.33	0.00	0.00	0.00	0.00
6=Group (Registered/Unregistered);	80.00	83.33	64.29	71.43	80.00	78.57	54.55	66.67	80.00	90.00	100.00	100.00
10=GADC	8.00	4.17	14.29	0.00	10.00	7.14	18.18		0.00	0.00	0.00	0.00
9.6:If Main Purpose was Agricultural Investment, Specify Enterprise (% HHds/Farmers Reporting….)												
Maize;	11.11	12.50	0.00	0.00	16.67	16.67	0.00	0.00	0.00	0.00	0.00	0.00
Sunflower;	55.56	87.50	33.33	0.00	66.67	83.33	100.00	0.00	33.33	100.00	0.00	0.00
Other food crop	11.11	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Buying chicken	22.22	0.00	66.67	0.00	0.00	0.0	0.00	0.00	66.67	0.00	100.00	0.00
9.9: How the received credit affected welfare of beneficiaries (% HHds/Farmers Reporting….)												
No Impact	0.00	0.00	7.14	0.00	0.00	0.00	9.09	0.00	0.00	0.00	0.00	0.00
Minor Impact	0.00	4.35	7.14	14.29	0.00	7.14	9.09	16.67	0.00	0.00	0.00	0.00
Moderate Impact	28.00	13.04	35.71	14.29	25.00	0.00	45.45	16.67	40.00	33.33	100.00	0.00
Major Impact	72.00	82.61	50.00	71.43	75.00	92.86	36.36	66.67	60.00	66.67	0.00	100.00
9.10: Different activities on which the loan money was spent (Number of HHds/Farmers Reporting….)												
1=Purchase of seed	01	0.00	0.00	0.00	01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4=Hiring Labor;	04	06	0.00	0.00	03	04	0.00	0.00	01	02	0.00	0.00
9.11&9.12: Reasons for not receiving loans ***(% HHds/Farmers Reporting….)***												
1=No security/collateral	16.00	0.00	0.00	11.54	3.33	0.00	0.00	8.33	10.00	0.00	0.00	14.29
4=Did not need credit	48.00	0.00	0.00	55.77	13.33	0.00	0.00	66.67	26.67	0.00	0.00	46.43
5=Credit services unavailable	4.00	0.00	0.00	5.77	0.00	0.00	0.00	4.17	3.33	0.00	0.00	7.14
7= Fear borrowing	32.00	0.00	0.00	26.92	0.00	0.00	0.00	20.83	23.33	0.00	0.00	32.14

SA22: Rating of attributes of credit available to farmers in the area

	Entire Sample		Treatment		Control Group/	
	2013	**2010**	**2013**	**2010**	**2013**	**2010**
Availability of credit services ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	6.67	1.67	13.33	3.33	0.00	0.00
2= Satisfactory	73.33	20.00	76.67	20.00	70.00	20.00
3=Indifferent	16.67	18.33	3.33	13.33	30.00	23.33
4= Unsatisfactory	3.33	60.00	6.67	63.33	0.00	56.67
Interest rate charged on credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	8.33	0.00	16.67	0.00	0.00	0.00
2= Satisfactory	41.67	10.00	33.33	13.33	50.00	6.67
3=Indifferent	35.00	35.00	26.67	26.67	43.33	43.33
4= Unsatisfactory	11.67	51.67	20.00	53.33	3.33	50.00
Application process/procedure for credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	3.33	0.00	6.67	0.00	0.00	0.00
2= Satisfactory	55.00	13.33	53.33	10.00	56.67	16.67
3=Indifferent	26.67	26.67	20.00	20.00	33.33	33.33
4= Unsatisfactory	10.00	55.00	13.33	60.00	6.67	50.00
Information on terms & conditions of credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	3.33	0.00	6.67	0.00	0.00	0.00
2= Satisfactory	56.67	11.67	56.67	10.00	56.67	13.33
3=Indifferent	25.00	23.33	16.67	23.33	33.33	23.33
4= Unsatisfactory	11.67	58.33	16.67	56.67	6.67	60.00
Stringency of terms and conditions of credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	5.00	1.67	10.00	3.33	0.00	0.00
2= Satisfactory	50.00	13.33	53.33	16.67	46.67	10.00
3=Indifferent	28.33	20.00	16.67	16.67	40.00	23.33
4= Unsatisfactory	16.67	60.00	23.33	60.00	10.00	60.00
Average distance (km) from home to nearest banking institution	8.00 (5.21)	19.57 (13.02)	7.90 (4.86)	19.37 (12.98)	8.10 (5.63)	(19.78) 13.29

Table SA23: SAVINGS (*Means of saving: e.g., deposit with bank, VSLA, keep money at home, etc.)*

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
Forms in which households saved in 2010 or before and between 2011 and 2013 (% HHds/Farmers Reporting….)												
House (cash kept in a house)	54.24	62.07	61.40	67.24	44.83	48.28	50.00	62.07	63.33	75.86	72.41	72.41
Group (cash kept with group)	29.31	22.81	19.64	16.07	27.59	24.14	25.00	25.00	31.03	21.43	14.29	7.14
SACCO	3.57	1.82	1.82	3.64	3.57	0.00	3.57	0.00	3.57	3.70	0.00	
VSLA	57.63	52.54	30.51	15.25	70.00	66.67	40.00	20.00	44.83	37.93	20.69	10.34
Bank	5.36	3.70	3.70	3.64	7.14	3.70	3.70	3.70	3.57	3.70	3.70	3.70
Average amount (shs) saved ***in House (cash kept in a house)***	305535.7 (268254)	263800 (195859.2)	313777.8 (248907.1)	241966 (226620.7)	265041.2 (281416.5)	274785.7 (230068.3)	297303.7 (264825.4)	251277.8 (250514.7)	333242.5 (262944.9)	256809.1 (176170.4)	325545 (242856.3)	233984.4 (209974.4)
Average amount(shs) saved ***with Group (cash kept with group)***	130625 (88686.86)	186230.8 (119804.1)	178181.8 (141902.7)	108666.7 (48525.77)	161250 (66641.36)	157857.1 (80718.5)	191428.6 (163343.1)	95000 (44440.97)	103402.8 (100365.4)	219333.3 (155520.6)	155000 (112398.1)	156500 (33234.02)
Average amount(shs) saved ***with SACCO***	70000 (70710.68) (N=2)	540000 (N=1)	40000 (N=1)	382500 (449012.8) (N=2)	20000	0.00	40000	65000	120000	540000	0.00	700000
Average amount(shs) saved ***with VSLA***	292281.3 (208513)	324933.3 (189106.7)	281611.1 (199061.7)	195777.8 (130888.1)	306584.8 (213167.7)	301646.7 (179217.2)	275750 (214532.1)	237333.3 (143197.3)	269175.5 (207106.4)	367272.7 (207850.5)	293333.3 (182281.8)	112666.7 (41488.95)
Average amount(shs) saved ***with Bank***	2333333 (2444040) (N=3)	160000 (197989.9) (N=2)	320000 (28284.27) (N=2)	325000 (247487.4) (N=2)	1000000 (1131371) (N=2)	20000	340000	500000	500000	300000	300000	150000
Average Total Savings (Ush) per Year	874380.7 (764434.9)	846100.6 (657763.3)	637494.8 (584375.7)	446846.9 (361902.7)	756737.6 (612992.9)	853569 (762161)	674242.8 (672406.4)	410219 (326230.5)	865090.7 (604760.5)	838889.7 (552315.2)	600746.8 (491110.4)	483474.9 (397453.4)

STATISTICAL APPENDIX #3 FOR BEANS

Table SA31: FINANCIAL SERVICES – CREDIT

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
9.1 & 9.2: % HHds/Farmers that received loans	65.56	45.56	32.22	43.33	80.00	61.67	41.67	56.67	36.67	13.33	13.33	16.67
9.3: Mean of Total amount (Ush) received in loans	356087 (251186.7)	347142.9 (251511.1)	314000 (258650.3)	348965.5 (242718.6)	378559.8 (255639.3)	349343.6 (259354.2)	325680 (267683.1)	379432 (242365.7)	258023.7 (213998.9)	326785.7 (188814.3)	241000 (207181.1)	141793.1 (116243.8)
9.4: Main Purpose for which the loan was sought (% HHds/Farmers Reporting….)												
Agricultural Investment	22.03	39.02	31.03	30.77	27.08	40.54	32.00	29.41	0.00	25.00	25.00	40.00
Non-Agricultural Investment	11.86	2.44	13.79	7.69	10.42	2.70	16.00	5.88	18.18	0.00	0.00	20.00
Consumption	5.08	2.44	0.00	10.26	4.17	2.70	0.00	11.76	9.09	0.00	0.00	0.00
School Fees	50.85	36.59	37.93	28.21	50.00	37.84	40.00	29.41	54.55	25.00	25.00	20.00
Medical	1.69	2.44	0.00	0.00	2.08	2.70	0.00	0.00	0.00	0.00	0.00	0.00
Other Household Needs	6.78	14.63	10.34	20.51	6.25	13.51	12.00	23.53	9.09	25.00	0.00	0.00
Brick making	1.69	2.44	3.45	2.56	0.00	0.00	0.00	0.00	9.09	25.00	25.00	20.00
Purchasing land	0.00	0.00	3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00
9.5: Loan Sources (% HHds/Farmers Reporting….)												
1=Family member/relative												
2=Friend	3.39	0.00	0.00	2.50	0.00	0.00	0.00	2.86	18.18	0.00	0.00	0.00
4=Commercial bank;	5.08	0.00	3.45	10.00	6.25	0.00	0.00	8.57	0.00	0.00	25.00	20.00
5=SACCO;	35.59	39.02	44.83	40.00	43.75	40.54	52.00	45.71	0.00	25.00	0.00	0.00
6=Group (Registered/Unregistered);	52.54	56.10	48.28	45.00	45.83	54.05	44.00	40.00	81.82	25.00	75.00	80.00
9=aBi Trust supported IP in FSD;	0.00	2.44	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.00	0.00	0.00
10=GA	3.39	2.44	3.45	2.50	4.17	2.70	4.00	2.86	0.00	0.00	0.00	0.00
9.6:If Main Purpose was Agricultural Investment, Specify Enterprise (% HHds/Farmers Reporting….)												
Beans	33.33	23.08	0.00	27.27	33.33	25.00	0.00	22.22	0.00	0.00	0.00	50.00
Coffee;	25.00	23.08	37.50	18.18	25.00	25.00	28.57	22.22	0.00	0.00	100.00 (N=1)	0.00
Maize;	16.67	7.69	37.50	9.09	16.67	8.33	42.86	11.11	0.00	0.00	0.00	0.00
Other Traditional Cash crop	0.00	0.00	0.00	9.09	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00
Other food crop	0.00	30.77	12.50	27.27	0.00	33.33	14.29	33.33	0.00	100.00 (N=1)	0.00	0.00
Buying chicken	0.00	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Buying livestock	0.00	7.69	0.00	9.09	0.00	8.33	0.00	0.00	0.00	0.00	0.00	50.00
Renting land			12.50				14.29					
9.9: How the received credit affected welfare of beneficiaries (% HHds/Farmers Reporting….)												
1=No Impact	1.69	2.44	0.00	2.50	2.08	2.70	0.00	2.86	0.00	0.00	0.00	0.00
2=Minor Impact	1.69	0.00	0.00	2.50	0.00	0.00	0.00	2.86	9.09	0.00	0.00	0.00
3=Moderate Impact	11.86	17.07	10.34	17.50	10.42	16.22	12.00	17.14	18.18	25.00	0.00	20.00
4=Major Impact	83.05	75.61	72.41	72.50	85.42	78.38	72.00	71.43	72.73	50.00	75.00	80.00
5=Negative Impact	1.69	4.88	17.24	5.00	2.08	2.70	16.00	5.71	0.00	25.00	25.00	0.00
9.10: Different activities on which the loan money was spent (number of HHds/Farmers Reporting….)												

1=Purchase of seed	01	00	00	01	01	00	00	00	00	00	00	01
3=Renting Land;	01	00	00	00	01	00	00	00	00	00	00	00
4=Hiring Labor;	02	02	00	02	02	02	00	02	00	00	00	00
8=Purchase land	00	01	00	00	00	01	00	00	00	00	00	00

9.11&9.12: Reasons for not receiving loans *(% HHds/Farmers Reporting….)*	**Entire Sample**		**Treatment**		**Control**	
	2013	**2010**	**2013**	**2010**	**2013**	**2010**
1=No security/collateral	25.00	9.62	0.00	3.70	35.71	16.00
2=Had outstanding loan	10.00	3.85	33.33	3.70	0.00	4.00
3= Don't Know	0.00	9.62	0.00	18.52	0.00	0.00
4=Did not need credit	40.00	48.08	66.67	48.15	28.57	48.00
7= Can't pay back	5.00	3.85	0.00	3.70	7.14	4.00
9=Unfavorable terms and conditions	5.00	13.46	0.00	22.22	7.14	4.00
10=ignorant about the process	0.00	11.54	0.00	0.00	21.43	24.00

Table SA32: Rating of attributes of credit available to farmers in the area

	Entire Sample		**Treatment**		**Control**	
	2013	**2010**	**2013**	**2010**	**2013**	**2010**
Availability of credit services *(% HHds/Farmers Reporting….)*						
1= Very satisfactory	51.14	5.68	60.00	8.33	32.14	0.00
2= Satisfactory	36.36	46.59	30.00	43.33	50.00	53.57
3=Indifferent	9.09	21.59	10.00	25.00	7.14	14.29
4= Unsatisfactory	1.14	25.00	0.00	25.00	3.57	25.00
Interest rate charged on credit *(% HHds/Farmers Reporting….)*						
1= Very satisfactory	13.64	3.41	18.33	5.00	3.57	0.00
2= Satisfactory	38.64	28.41	36.67	30.00	42.86	25.00
3=Indifferent	23.86	30.68	23.33	33.33	25.00	25.00
4= Unsatisfactory	18.18	30.68	21.67	30.00	10.71	32.14
Application process/procedure for credit *(% HHds/Farmers Reporting….)*						
1= Very satisfactory	13.64	3.41	16.67	5.00	7.14	0.00
2= Satisfactory	50.00	27.27	53.33	26.67	42.86	28.57
3=Indifferent	21.59	30.68	20.00	31.67	25.00	28.57

4= Unsatisfactory	10.23	34.09	10.00	36.67	10.71	28.57
Information on terms & conditions of credit *(% HHds/Farmers Reporting….)*						
1= Very satisfactory	22.47	8.99	28.33	10.00	10.34	6.90
2= Satisfactory	38.20	25.84	38.33	25.00	37.93	27.59
3=Indifferent	24.72	32.58	25.00	35.00	24.14	27.59
4= Unsatisfactory	8.99	25.84	8.33	28.33	10.34	20.69
Stringency of terms and conditions of credit *(% HHds/Farmers Reporting….)*						
1= Very satisfactory	11.49	3.45	13.33	5.00	7.41	0.00
2= Satisfactory	36.78	22.99	46.67	28.33	14.81	11.11
3=Indifferent	28.74	33.33	25.00	31.67	37.04	37.04
4= Unsatisfactory	17.24	33.72	15.00	33.90	22.22	33.33
Average distance (km) from home to nearest banking institution	3.20 (2.70)	6.44 (4.53)	3.41 (2.86)	6.97 (4.86)	2.80 (2.36)	5.40 (3.67)

Table SA33: FINANCIAL SERVICES – SAVINGS: (*Means of saving: e.g., deposit with bank, VSLA, keep money at home, etc.)*

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
Forms in which households saved in 2010 or before and between 2011 and 2013 (% HHds/Farmers Reporting….)												
House (cash kept in a house)	81.67	44.44	44.44	38.89	45.00	33.33	33.33	36.67	73.33	66.67	66.67	53.33
Group (cash kept with group)	38.89	35.56	27.78	16.67	41.67	36.67	25.00	16.67	33.33	33.33	33.33	16.67
SACCO	46.67	37.78	30.00	20.00	66.67	53.33	43.33	30.00	6.67	6.67	3.33	0.00
VSLA	36.67	34.44	21.11	18.89	48.33	46.67	30.00	23.33	13.33	10.00	3.33	10.00
Bank	11.11	8.89	7.78	7.78	13.33	8.33	8.33	8.33	6.67	10.00	6.67	6.67
Average amount (shs) saved ***in House (cash kept in a house)***	50694.44 (31227.54)	98125 (57096.55)	66379.31 (49039.48)	74130.43 (42633)	50735.6 (21762.5)	95500 (61021.19)	72947.46 (57110.91)	76459.63 (53307.62)	50643.94 (40528.51)	100750 (54346.29)	59482.76 (39138.43)	71073.37 (23572.74)
Average amount(shs) saved ***with Group (cash kept with group)***	89807.69 (56912.22)	81521.74 (57159.58)	67812.5 (38568.36)	96666.67 (68033.61)	79738.46 (49326.64)	81096.84 (55688.09)	61604.17 (29932.75)	91333.34 (40006.17)	114980.8 (69008.57)	82456.52 (63374.2)	77125 (49116.06)	107333.3 (111290.4)
Average amount(shs) saved ***with SACCO***	227027.8 (171945.2)	282608.7 (189020.1)	240000 (174708.5)	180000 (163716)	222129.2 (163359.3)	278940.2 (193843.3)	246538.5 (174767.1)	180000 (163716)	325000 (388908.7)	341304.3 (83008.19)	70000 (N=1)	0.00

									(N=2)	(N=2)		
*Average amount(shs) saved **with VSLA***	132866.7 (107264.8)	100275.9 (72989.13)	87076.92 (60544.26)	63428.57 (52901.14)	126153.3 (109593.4)	95821.64 (74581.19)	89136.75 (61610.66)	60879.12 (52872.26)	200000 (50000) (N=3)	143333.3 (40414.52) (N=3)	50000 (N=1)	80000 (70710.68) (N=2)
*Average amount(shs) saved **with Bank***	321428.6 (228348.1)	340000 (254109.1)	380000 (180475.6)	325000 (145773.8)	239285.7 (103086.5)	196000 (131453.4)	360000 (205523.7)	290000 (150623.7)	650000 (353553.4) (N=2)	580000 (230651.3) (N=3)	440000 (84852.81) (N=2)	412500 (123743.7) (N=2)
Average Total Savings (Ush) per Year	552753.2 (439720.6)	601597.8 (516255.5)	393826 (318709.8)	340465.5 (300795.9)	560410.2 (415876)	611972.5 (479720.9)	445218.6 (335504.8)	386027 (319237.2)	537175.2 (492082.2)	579252.5 (597053.5)	278192.7 (246007.5)	242833.8 (234877.9)

STATISTICAL APPENDIX #4 FOR MAIZE

Table SA41: FINANCIAL SERVICES – CREDIT

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
% HHds/Farmers that received loans	45.8	44.2	28.3	10	65.4	61.5	42.3	12.8	9.5	11.9	2.4	4.8
9.3: Mean of Total amount (Ush) received in loans	227,866.8 (152,956.7)	276,842.9 (172,131.7)	245,720.8 (161,769.3)	221,514.1 (157,614.6)	227,147.2 (157,237.1)	274,468.9 (177,612.5)	238,015.4 (157,814.2)	231,816.9 (168,026.8)	237,042.3 (94,572.26)	299,633.8 (117,458.3)	500,000 (N=1)	170,000 (113,137.1)
9.4: Main Purpose for which the loan was sought (% HHds/Farmers Reporting….)												
Agricultural Investment	50.91	45.28	50.00	25.00	54.90	50.00	48.48	30.00	0.00	0.00	100.00	0.00
Non-Agricultural Investment	36.36	41.51	44.12	66.67	37.25	39.58	45.45	70.00	25.00	60.00	0.00	50.00
Consumption	1.82	3.77	0.00	8.33	0.00	2.08	0.00	0.00	25.00	20.00	0.00	50.00
School Fees	5.45	7.55	2.94	0.00	5.88	6.25	3.03	0.00	0.00	20.00	0.00	0.00
Medical	3.64	0.00	2.94	0.00	0.00	0.00	3.03	0.00	50.00	0.00	0.00	0.00
Other Household Needs	1.82	1.89	0.00	0.00	1.96	2.08	0.00	0.00	0.00	0.00	0.00	0.00
9.5: Loan Sources (% HHds/Farmers Reporting….)												
1=Family member/relative	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00
2=Friend	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
4=Commercial bank;	3.64	0.00	3.03	0.00	1.96	0.00	0.00	0.00	25.00	0.00	100.00	0.00
5=SACCO	5.45	13.46	9.09	0.00	5.88	14.89	9.38	0.00	0.00	0.00	0.00	0.00
6=Group	60.00	67.31	60.61	66.67	60.78	65.96	62.50	70.00	50.00	80.00		50.00
8=Money lender	1.82	0.00	3.03	0.00	1.96	0.00	3.13	0.00	0.00	0.00	0.00	0.00
9=aBi-Trust supported IP	1.82	1.92	3.03	0.00	1.96	2.13	3.13	0.00	0.00	0.00	0.00	0.00
9.6:If Main Purpose was Agricultural Investment, Specify Enterprise (% HHds/Farmers Reporting….)												
1=Coffee	4.35	8.70	6.25	0.00	4.35	8.70	6.67	0.00	0.00	0.00	0.00	0.00
2=Beans	52.17	78.26	87.50	100.00	52.17	78.26	86.67	100.00	0.00	0.00	100.00	0.00
3=Maize;	34.78	13.04	0.00	0.00	34.78	13.04	0.00	0.00	0.00	0.00	0.00	0.00
8=Other food crop	4.35	0.00	0.00	0.00	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.9: How the received credit affected welfare of beneficiaries (% HHds/Farmers Reporting….)												
1=No Impact	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
2=Minor Impact	1.82	1.89	0.00	0.00	1.96	2.08	0.00	0.00	0.00	0.00	0.00	0.00
3=Moderate Impact	14.55	7.55	11.76	25.00	13.73	6.25	12.12	30.00	25.00	20.00	0.00	0.00
4=Major Impact	83.64	90.57	85.29	66.67	84.31	91.67	87.88	70.00	75.00	80.00	0.00	50.00
5=Negative impact	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00
9.10: Different activities on which the loan money was spent (number of HHds/Farmers Reporting….)												
1=Purchase of seed	36.36	20.00	30.77	0.00	36.36	20.00	30.77	0.00	0.00	0.00	0.00	0.00
2=Purchase of fertilize	9.09	5.00	15.38	0.00	9.09	5.00	15.38	0.00	0.00	0.00	0.00	0.00
3=renting land	18.18	10.00	0.00	0.00	18.18	10.00	0.00	100.00	0.00	0.00	0.00	0.00
4=Hiring Labor;	36.36	65.00	53.85	100.00	36.36	65.00	53.85	0.00	0.00	0.00	0.00	0.00
9.11&9.12: Reasons for not receiving loans ***(% HHds/Farmers Reporting….) before 2010***												
1=No security/collateral	16.67	13.64	21.74	0.00	18.18	12.82	22.73	0.00	0.00	20.00	0.00	0.00
3=Don't know	2.08	2.27	0.00	0.00	2.27	2.56	0.00	0.00	0.00	0.00	0.00	0.00
4=Did not need credit	43.75	47.73	43.48	0.00	43.18	48.72	40.91	0.00	50.00	40.00	100.00	0.00
5=Credit services	18.75	22.73	30.43	0.00	15.91	20.51	31.82	0.00	50.00	40.00	0.00	0.00

unavailable												
7= Fear borrowing	2.08	2.27	0.00	0.00	2.27	2.56	0.00	0.00	0.00	0.00	0.00	0.00

Table SA42: Rating of attributes of credit available to farmers in the area

	Entire Sample		**Treatment**		**Control**	
	2013	**2010**	**2013**	**2010**	**2013**	**2010**
Availability of credit services ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	33.04	4.46	40.79	5.26	16.67	2.78
2= Satisfactory	47.79	15.18	46.05	17.11	51.35	11.11
3=Indifferent	11.61	26.79	7.89	28.95	19.44	22.22
4= Unsatisfactory	7.14	52.68	3.95	46.67	13.89	64.86
Interest rate charged on credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	11.50	1.77	14.10	0.00	5.71	5.71
2= Satisfactory	43.36	7.21	47.44	10.53	34.29	0.00
3=Indifferent	22.12	22.12	20.51	21.79	25.71	22.86
4= Unsatisfactory	23.01	65.45	17.95	62.67	34.29	71.43
Application process/procedure for credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	19.82	2.70	22.37	1.32	14.29	5.71
2= Satisfactory	44.64	7.21	51.95	10.53	28.57	0.00
3=Indifferent	21.43	27.68	18.18	27.27	28.57	28.57
4= Unsatisfactory	13.39	58.72	6.49	55.41	28.57	65.71
Information on terms & conditions of credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	18.92	2.70	22.37	1.32	11.43	5.71
2= Satisfactory	47.32	6.31	54.55	9.21	31.43	0.00
3=Indifferent	19.64	28.57	16.88	29.87	25.71	25.71
4= Unsatisfactory	13.39	58.72	5.19	54.05	31.43	68.57
Stringency of terms and conditions of credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	13.39	1.79	15.58	0	8.57	5.71
2= Satisfactory	41.96	6.31	48.05	9.21	28.57	0
3=Indifferent	25.00	26.79	22.08	27.27	31.43	25.71
4= Unsatisfactory	19.64	62.39	14.29	59.46	31.43	68.57
Average distance (km) from home to nearest banking institution	8.26 (4.20)	10.65 (5.05)	8.32 (4.33)	10.69 (5.10)	8.17 (3.99)	10.57 (5.02)

Table SA43: FINANCIAL SERVICES – SAVINGS: (*Means of saving: e.g., deposit with bank, VSLA, keep money at home, etc.)*

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
Forms in which households saved in 2010 or before and between 2011 and 2013 (% HHds/Farmers Reporting….)												
House (cash kept in a house)	66.36	64.55	70.91	73.64	67.12	63.01	73.97	76.71	64.86	67.57	64.86	67.57
Group (cash kept with group)	32.88	26.03	16.44	10.96	39.22	31.37	19.61	11.76	18.18	13.64	9.09	9.09
SACCO	21.33	24.00	10.67	4.00	29.09	32.73	14.55	5.45	0.00	0.00	2.38	2.38
VSLA	50.59	42.35	17.65	9.41	61.29	53.23	22.58	12.90	21.74	13.04	4.35	2.38
Bank	17.11	15.79	14.47	13.16	18.87	15.09	13.21	13.21	13.04	17.39	17.39	13.04
Average amount (shs) saved in House (cash kept in a house)	147,560 (84,671.45)	121,188.3 (85,081.88)	100,000 (52,089.67)	122,672.4 (82,765.56)	153,688.2 (83,454.69)	111,789.1 (85,669.45)	104,038.5 (54,287.17)	121,883.8 (86,067.63)	135,048.3 (87,547.31)	138,858.8 (82,764.66)	91,250 (46,863.59)	124,375.9 (76,811.42)
Average amount(shs) saved with Group (cash kept with group)	111,363.6 (74,719.5)	163,722.2 (113,308.7)	151,250 (77,228.26)	97,142.86 (44,308.75)	122,136.4 (76,505.21)	169,420.1 (117,230)	153,500 (80,348.2)	109,523.8 (43,044.04)	57,500 (33,040.38)	133,333.3 (104,083.3)	140,000 (84,852.81)	60,000 (28,284.27)
Average amount(shs) saved with SACCO	133,636.4 (63,694.35)	159,705.9 (96,385.66)	123,750 (16,352.33)	110,000 (10,780.36)	133,636.4 (63,694.35)	159,705.9 (96,385.66)	123,750 (19,142.5)	110,000 (12,619.8)	0.00	0.00	123,750 (0.00)	110,000 (0.00)
Average amount(shs) saved with VSLA	197,667.6 (122,270.6)	211,611.1 (158,545.9)	130,723.5 (24,591.61)	115,000 (21,835.42)	196,070.6 (129,807.3)	214,787.9 (157,611.6)	128,879 (24,414.4)	115,000 (25,623.38)	201,972.8 (101,663.3)	176,666.7 (201,080.4)	135,695.7 (24,917.47)	115,000 (0.00)
Average amount(shs) saved with Bank	431,479.3 (331,848.8)	252,857.1 (147,967.2)	692,500 (717,639.8)	200,555.6 (40,054.22)	400,923.1 (322,207.2)	284,821.4 (154,376.3)	375,000 (330,718.9)	202,857.1 (45,948.99)	53,333.3 (41,633.2)	167,619 (105,233.8)	143,333 (90,185)	192,500 (0.00)

STATISTICAL APPENDIX #5 FOR COFFEE

Table SA51: FINANCIAL SERVICES – CREDIT

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
% HHds/Farmers that received loans	53.45	40.23	22.41	26.44	68.07	48.74	26.89	28.57	21.82	21.82	12.73	21.82
9.3: Mean of Total amount (Ush) received in loans	252658.2 (193006.6)	244098.4 (191873.9)	190909.1 (140326)	284838.7 (161546.3)	268451.3 (200440.6)	248253.3 (205727.9)	200170.5 (152346.7)	298624.3 (168132.7)	146054.9 (71637.94)	224016.4 (105299.5)	148571.4 (47409.06)	245779.6 (140370)
9.4: Main Purpose for which the loan was sought (% HHds/Farmers Reporting….)												
Agricultural Investment	27.96	30.00	30.77	34.78	29.63	31.03	37.50	29.41	16.67	25.00	0.00	50.00
Non-Agricultural Investment	12.90	17.14	12.82	17.39	13.58	17.24	15.63	17.65	8.33	16.67	0.00	16.67
Consumption	6.45	5.71	2.56	4.35	3.70	3.45	0.00	0.00	25.00	16.67	14.29	16.67
School Fees	45.16	44.29	51.28	36.96	45.68	44.83	43.75	44.12	41.67	16.67	85.71	16.67
Medical	2.15	0.00	0.00	2.17	1.23	0.00	0.00	2.94	8.33	0.00	0.00	0.00
Other Household Needs (Business)	5.38	1.43	2.56	0.00	6.17	1.72	3.13	0.00	0.00	0.00	0.00	0.00
Purchase land	0.00	1.43	0.00	4.35	0.00	1.72	0.00	5.88	0.00	0.00	0.00	0.00
9.5: Loan Sources (% HHds/Farmers Reporting….)												
1=Family member/relative	1.09	1.43	2.56	4.35	1.25	1.72	3.13	2.94	0.00	0.00	0.00	8.33
2=Friend	5.43	1.43	7.69	4.35	1.25	0.00	3.13	5.88	33.33	8.33	28.57	0.00
4=Commercial bank;	3.26	4.29	5.13	10.87	3.75	5.17	6.25	11.76	0.00	0.00	0.00	8.33
5=SACCO;	16.30	21.43	20.51	34.78	17.50	20.69	25.00	32.35	8.33	25.00	0.00	41.67
6=Group (Registered/Unregistered);	66.30	60.00	51.28	34.78	70.00	62.07	46.88	32.35	41.67	50.00	71.43	41.67
8= Money lender	1.09	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9=aBi Trust supported IP in FSD;	1.09	1.43	0.00	2.17	1.25	1.72	0.00	2.94	0.00	0.00	0.00	0.00
11=VSLA	5.43	10.00	12.82	8.70	3.75	8.62	15.63	11.76	16.67	16.67	0.00	0.00
9.6:If Main Purpose was Agricultural Investment, Specify Enterprise (% HHds/Farmers Reporting….)												
Beans	5.56	6.67	0.00	0.00	5.88	58.33	0.00	0.00	0.00	66.67	0.00	0.00
Coffee;	50.00	60.00	44.44	57.14	52.94	8.33	44.44	44.44	0.00	0.00	0.00	80.00
Maize;	11.11	6.67	44.44	21.43	11.76	8.33	44.44	33.33	0.00	0.00	0.00	
Other food crop	22.22	20.00	11.11	14.29	23.53	25.00	11.11	22.22	0.00	0.00	0.00	0.00
Buying livestock	5.56	6.67	0.00	7.14	5.88	0.00	0.00	0.00	100.00	33.33	0.00	20.00
Renting land	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.9: How the received credit affected welfare of beneficiaries (% HHds/Farmers Reporting….)												
1=No Impact	0.00	1.45	2.56	0.00	0.00	1.75	3.13	0.00	0.00	0.00	0.00	0.00
2=Minor Impact	1.08	2.90	5.13	0.00	1.23	1.75	3.13	0.00	0.00	8.33	14.29	0.00
3=Moderate Impact	4.30	7.25	5.13	10.87	4.94	8.77	6.25	14.71	0.00	0.00	0.00	0.00
4=Major Impact	94.62	88.41	87.18	89.13	93.83	87.72	87.50	85.29	100.00	91.67	85.71	100.00
9.11&9.12: Reasons for not receiving loans ***(% HHds/Farmers Reporting….)***												
	2013		**2010**		**2013 Treatment**		**2010 Treatment**		**2013 control**		**2010 control**	
1=No security/collateral	16.46		14.06		23.08		12.94		10.00		16.28	
2=Had outstanding loan	1.27		0.00		2.56		0.00		0.00		0.00	
3= Don't Know	7.59		8.59		10.26		9.14		5.00		6.98	

4=Did not need credit	36.71	43.75	28.21	48.24	45.00	34.88
5= Credit services unavailable	2.53	3.13	0.00	2.35	5.00	4.65
6= Did know of any loan source	0.00	2.34	0.00	3.53	0.00	0.00
7= Can't pay back	10.13	7.81	7.69	5.88	12.50	11.63
8= Not a group member	1.27	2.34		2.35	2.50	2.33
9=Unfavorable terms and conditions	2.53	3.91	5.13	4.71	0.00	2.33
10=ignorant about the process	8.86	6.25	7.69	4.71	10.00	9.30
11= Fear to borrow	12.66	7.81	15.38	5.88	10.00	11.63

Table SA52: Rating of attributes of credit available to farmers in the area

	Entire Sample		**Treatment**		**Control**	
	2013	**2010**	**2013**	**2010**	**2013**	**2010**
Availability of credit services ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	32.37	4.05	33.61	3.36	29.63	5.56
2= Satisfactory	40.46	34.10	43.70	36.13	33.33	29.63
3=Indifferent	16.18	16.18	16.81	18.49	14.81	11.11
4= Unsatisfactory	8.09	39.88	4.20	39.50	16.67	40.74
Interest rate charged on credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	13.87	3.47	15.13	4.20	11.11	1.85
2= Satisfactory	39.31	20.23	42.86	23.53	31.48	12.96
3=Indifferent	19.65	20.23	18.49	20.17	22.22	79.63
4= Unsatisfactory	18.50	46.82	18.49	47.06	18.52	46.30
Application process/procedure for credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	15.03	2.89	17.65	2.52	9.26	3.70
2= Satisfactory	46.82	21.39	52.10	24.37	35.19	14.81
3=Indifferent	16.76	22.54	13.45	22.69	24.07	22.22
4= Unsatisfactory	13.29	43.93	13.45	44.54	12.96	42.59
Information on terms & conditions of credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	19.65	4.05	23.53	5.04	11.11	1.85
2= Satisfactory	39.88	20.81	42.86	24.37	33.33	12.96
3=Indifferent	20.23	21.97	18.49	22.69	24.07	20.37
4= Unsatisfactory	12.14	42.20	11.76	41.18	12.96	44.44
Stringency of terms and conditions of credit ***(% HHds/Farmers Reporting….)***						

1= Very satisfactory	11.05	1.74	12.61	1.68	7.55	1.89
2= Satisfactory	42.44	18.02	46.22	21.85	33.96	9.43
3=Indifferent	20.35	23.26	20.17	24.37	20.75	20.75
4= Unsatisfactory	19.77	47.67	17.65	47.06	24.53	49.06
Average distance (km) from home to nearest banking institution	4.19 (3.54)	5.04 (3.66)	4.36 (3.68)	5.11 (3.64)	3.82 (3.20)	4.89 (3.74)

Table SA53: FINANCIAL SERVICES – SAVINGS: (*Means of saving: e.g., deposit with bank, VSLA, keep money at home, etc.)*

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
Forms in which households saved in 2010 or before and between 2011 and 2013 (% HHds/Farmers Reporting….)												
House (cash kept in a house)	48.85	47.70	45.40	49.43	47.06	44.54	42.86	50.42	52.73	54.55	50.91	47.27
Group (cash kept with group)	26.44	23.56	12.64	9.20	32.77	30.25	16.81	10.92	12.73	9.10	3.64	2.52
SACCO	21.84	18.39	15.52	12.64	24.37	21.85	19.23	15.97	24.37	10.91	7.27	5.45
VSLA	28.16	27.01	16.67	10.34	34.45	32.77	19.23	11.76	14.55	14.55	10.91	7.27
Bank	12.64	10.34	9.20	8.62	14.29	11.76	10.08	10.08	9.09	7.27	7.27	5.45
*Average amount (shs) saved **in House***	80685.71 (66571.76)	74647.89 (59069.64)	107878.8 (87007.42)	110073.5 (77970.23)	75122.45 (50537.55)	69212.07 (49380.8)	109577.5 (91034.55)	98852.93 (62061.3)	91428.57 (89983.85)	84251.17 (73104.4)	104724 (80501.34)	135008.2 (102138.5)
*Average amount(shs) saved **with Group***	231611.1 (139795.9)	194875.7 (110764.3)	129850 (86230.19)	126166.7 (78573.08)	247038.5 (143123.2)	193059.8 (108593.5)	129850 (90655.09)	113750 (71469.85)	145658.7 (81682.76)	207950.3 (138777.2)	129850 (0) (N=2)	184111.1 (100362.7) (N=3)
*Average amount(shs) saved **with SACCO***	188064.5 (152765.8)	117777.8 (70221.1)	343181.8 (248184)	175333.3 (113425.7)	189388.2 (155644.3)	123675.2 (75432.92)	325039.5 (240577.2)	175333.3 (122513.8)	183799.3 (152054.8)	92222.23 (34015.26)	447500 (303905.1)	175333.3 (0) (N=3)
*Average amount(shs) saved **with VSLA***	178500 (134236.2)	175243.9 (105537.9)	139333.3 (107701.2)	110769.2 (63198.24)	178987.5 (138718.9)	180280.5 (109525.2)	141458.3 (115349)	110256.4 (63808.85)	176062.5 (117338.5)	150061 (84155.03)	130833.3 (77228.02)	112692.3 (70407.38)
Average amount(shs)	346933.3 (236157.2)	542666.7 (358730.9)	327222.2 (179137.9)	234090.9 (161778.8)	355796.1 (227746.4)	551809.5 (368057.4)	340694.4 (188341.8)	227933.9 (155250.8)	316800 (289570.7)	510666.7 (374773.4)	286805.5 (165775.6)	256666.7 (220529.7)

*saved **with Bank***												
Average Total Savings (Ush) per Year	544986.1 (406055.6)	527137.8 (377280.4)	478473.4 (419663.8)	423129.7 (399358)	576988.1 (427937.9)	540727.4 (366673.3)	483967.8 (425225.2)	401420.3 (389259.2)	469155.4 (341156)	495822.6 (403086.9)	465742.6 (411388.8)	471558.4 (422163.1)

STATISTICAL APPENDIX #6 FOR SOYBEAN

Table SA61: FINANCIAL SERVICES – CREDIT

	2013	2012	2011	2010	2013	2012	2011	2010	2013	2012	2011	2010
					Treatment	Treatment	Treatment	Treatment	Control	Control	Control	Control
HHds/Farmers that received loans	60.42	60.42	22.92	25.00	75.76	78.79	30.30	24.24	26.67	20.00	6.67	26.67
9.3: Mean of Total amount (Ush) received in loans	290500 (160834.3)	224000 (140534.7)	316250 (158362.7)	300000 (188727.8)	267780 (158647.8)	215615.4 (130669.7)	344875 (133605.8)	383750 (175168.3)	432500 (94295.63)	296666.7 (232880.5)	30000 (N=1)	132500 (53774.22)
9.4: Main Purpose for which the loan was sought (% HHds/Farmers Reporting….)												
1=Agricultural Investment	34.48	31.03	27.27	8.33	32.00	30.77	20.00	12.50	50.00	33.33	100.00	25.00
2=Non-Agricultural Investment	20.69	20.69	18.18	25.00	24.00	19.23	20.00	25.00	0.00	33.33	0.00	0.00
3=Consumption	3.45	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4=School Fees	27.59	34.48	27.27	16.67	24.00	34.62	20.00	0.00	50.00	33.33	0.00	50.00
5=Medical	0.00	3.45	0.00	8.33	0.00	3.85	0.00	0.00	0.00	0.00	0.00	0.00
6=Other Household Needs	13.79	10.34	27.27	41.67	16.00	11.54	20.00	62.50	0.00	0.00	0.00	25.00
9.5: Loan Sources (% HHds/Farmers Reporting….)												
2=Friend	13.79	10.34	27.27	0.00	16.00	11.54	30.00	0.00	0.00	0.00	0.00	0.00
3=Employer	3.45	3.45	0.00	0.00	0.00	0.00	0.00	0.00	25.00	33.33	0.00	0.00
4=Commercial bank;	3.45	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5=SACCO;	10.34	6.90	18.18	25.00	12.00	7.69	10.00	0.00	0.00	0.00	100.00	75.00
6=Group (Registered/Unregistered);	68.97	72.41	45.45	66.67	68.00	73.08	50.00	100.00	75.00	66.67	0.00	0.00
11=VSLA	0.00	6.90	0.00	0.00	0.00	7.69	0.00	0.00	0.00	0.00	0.00	0.00
8=Money lender	0.00	0.00	9.09	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
9.6:If Main Purpose was Agricultural Investment, Specify Enterprise (% HHds/Farmers Reporting….)												
Soybeans	30.00	0.00	33.33	0.00	25.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
Coffee;	0.00	22.22	0.00	100.00	0.00	25.00	0.00	100.00	0.00	0.00	0.00	0.00
Maize;	10.00	33.33	33.33	0.00	12.50	37.50	50.00	0.00	0.00	0.00	100.00	0.00
Beans	0.00	11.11	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00
Other food crop	30.00	33.33	33.33	0.00	37.50	25.00	50.00	0.00	0.00	100.00	0.00	0.00
Buying livestock	30.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
9.9: How the received credit affected welfare of beneficiaries (% HHds/Farmers Reporting….)												
1=No Impact	0.00	0.00	0.00	8.33	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00
3=Moderate Impact	3.45	6.90	0.00	8.33	4.00	7.69	0.00	0.00	0.00	0.00	0.00	25.00
4=Major Impact	96.55	93.10	100.00	83.33	96.00	92.31	100.00	87.50	100.00	100.00	100.00	75.00
9.10: Different activities on which the loan money was spent (number of HHds/Farmers Reporting….)												
1=Purchase of seed	00	00	01	00	00	00	00	00	00	00	01	00
2=Purchase of fertilizer	01	00	00	00	00	00	00	00	01	00	00	00
4=Hiring Labor;	01	00	00	00	01	00	00	00	00	00	00	00
5= Processing	01	00	00	00	01	00	00	00	00	00	00	00
9.11&9.12: Reasons for not receiving loans ***(% HHds/Farmers Reporting….)***												
	2013		**2010**		**2013 Treatment**		**2010 Treatment**		**2013 Control**		**2010 Control**	
1=No security/collateral	11.76		10.00		12.50		7.14		11.11		16.67	
3= Don't Know	23.53		17.50		12.50		10.71		33.33		33.33	

4=Did not need credit	35.29	37.50	50.00	42.86	22.22	25.00
5=Credit services unavailable	0.00	12.50	0.00	17.86	0.00	0.00
7= Can't pay back	11.76	5.00	12.50	7.14	11.11	0.00
9=Not interested	5.88	2.50	12.50	3.57	0.00	0.00
10= Fear of loans	0.00	7.50	0.00	7.14	0.00	8.33
11=Unfavorable terms and conditions	11.76	7.50	0.00	3.57	22.22	16.67

Table SA62: Rating of attributes of credit available to farmers in the area

	Entire Sample		**Treatment**		**Control**	
	2013	**2010**	**2013**	**2010**	**2013**	**2010**
Availability of credit services ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	45.45	2.27	46.67	42.86	42.86	0.00
2= Satisfactory	40.91	13.64	50.00	16.67	21.43	7.14
3=Indifferent	2.27	13.64	0.00	13.33	7.14	14.29
4= Unsatisfactory	4.55	63.64	3.33	66.67	7.14	57.14
Interest rate charged on credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	18.18	0.00	26.67	0.00	0.00	0.00
2= Satisfactory	40.91	4.55	43.33	6.67	35.71	0.00
3=Indifferent	15.91	15.91	16.67	16.67	14.29	14.29
4= Unsatisfactory	13.64	59.09	10.00	60.00	21.43	57.14
Application process/procedure for credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	20.45	0.00	26.67	0.00	7.14	0.00
2= Satisfactory	54.55	2.27	56.67	3.33	50.00	0.00
3=Indifferent	13.64	18.18	16.67	23.33	7.14	7.14
4= Unsatisfactory	2.27	59.09	0.00	56.67	7.14	64.29
Information on terms & conditions of credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	25.00	0.00	33.33	0.00	7.14	0.00
2= Satisfactory	50.00	2.27	50.00	3.33	50.00	0.00
3=Indifferent	6.82	13.64	6.67	16.67	7.14	7.14
4= Unsatisfactory	9.09	63.64	10.00	63.33	7.14	63.33
Stringency of terms and conditions of credit ***(% HHds/Farmers Reporting….)***						
1= Very satisfactory	15.91	0.00	23.33	0.00	0.00	0.00

2= Satisfactory	54.55	4.55	60.00	6.67	42.86	0.00
3=Indifferent	9.09	9.09	6.67	13.33	14.29	0.00
4= Unsatisfactory	11.36	68.18	10.00	66.67	14.29	71.43
Average distance (km) from home to nearest banking institution	4.56 (3.05)	5.15 (3.15)	4.30 (2.75)	4.90 (2.92)	5.08 (3.64)	5.65 (3.64)

Table SA63: FINANCIAL SERVICES – SAVINGS: (*Means of saving: e.g., deposit with bank, VSLA, keep money at home, etc.)*

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
Forms in which households saved in 2010 or before and between 2011 and 2013 (% HHds/Farmers Reporting….)												
House (cash kept in a house)	25.00	27.08	33.33	39.58	21.21	18.81	27.27	36.36	33.33	46.67	46.67	46.67
Group (cash kept with group)	20.83	14.58	6.25	6.25	21.21	15.15	9.09	9.09	20.00	13.33	0.00	0.00
SACCO	14.58	12.50	2.08	2.08	18.18	15.15	3.03	3.03	6.67	6.67	0.00	0.00
VSLA	37.50	37.50	16.67	8.33	48.48	42.42	21.21	9.09	13.33	13.33	6.67	6.67
Bank	4.17	0.00	0.00	0.00	6.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average amount (shs) saved ***in House (cash kept in a house)***	182500 (95987.69)	278000 (144672)	297692.3 (222115.7)	206875 (147900.8)	182500 (104622.3)	270000 (195959.2)	311965.8 (288100.8)	175572.9 (142473.9)	182500 (94439.13)	284857.1 (98697.23)	279340.7 (109409.8)	260535.7 (151955.3)
Average amount(shs) saved ***with Group (cash kept with group)***	162000 (88669.17)	198428.6 (121781)	233333.3 (57735.03)	166666.7 (57735.03)	168571.4 (90999.74)	252000 (94180.68)	233333.3 (57735.03)	166666.7 (57735.03)	146666.7 (100166.5)	64500 (57275.65)	0.00	0.00
Average amount(shs) saved ***with SACCO***	282857.1 (197122.2)	205280 (165362.9)	300000 (N=1)	150000 (N=1)	316666.7 (192423.1)	192856 (181723.5)	300000	150000	80000 (N=1)	267400 (N=1)	0.00	0.00
Average amount(shs) saved ***with VSLA***	198750 (156124.9)	302812.5 (221509.7)	230000 (138770.1)	157500 (99456.86)	206796.9 (162637.1)	279642.9 (191637.3)	248571.4 (138735.8)	183333.3 (104083.3)	134375 (91040)	465000 (445477.3) (N=2)	100000 (N=1)	80000 one observation
Average amount(shs) saved ***with Bank***	105000 (134350.3) (N=2)	0.00	0.00	0.00	105000 (134350.3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Total Savings (Ush) per Year	435844.6 (286584.4)	609163.9 (361749.6)	505117.1 (285291.1)	467331.7 (369652.9)	459584.8 (293454.6)	656260.4 (402542.5)	510652.2 (308883.2)	384576.9 (307404.8)	368940.4 (267802.1)	497844.7 (215885.7)	491279.3 (233802.1)	674218.8 (449527.9)

STATISTICAL APPENDIX #7 FOR FINANCIAL SERVICE DEVELOPMENT (FSD)

Table SA71: FINANCIAL SERVICES – CREDIT

	2013	2012	2011	2010	2013	2012	2011	2010	2013	2012	2011	2010
					Treatment	Treatment	Treatment	Treatment	Control	Control	Control	Control
HHds/Farmers that received loans	66.67	65.22	43.48	26.09	82.22	93.33	57.78	37.78	37.50	12.50	16.67	4.17
9.3: Mean of Total amount (Ush) received in loans	728095.2 (536963.6)	762631.6 (624050.9)	827777.8 (646786.9)	862053.6 (722103.5)	814285.7 (726384.1)	798533.8 (629162.9)	939743.6 (622481.5)	818713 (527965.8)	355555.6 (416386.6)	260000 216333.1)	100000 (0) (N=4)	50000 (N=1)
9.4: Main Purpose for which the loan was sought (% HHds/Farmers Reporting….)												
1=Agricultural Investment	39.13	35.56	46.67	38.89	40.54	35.71	42.31	41.18	33.33	33.33	75.00	0.00
2=Non-Agricultural Investment	39.13	53.33	46.67	50.00	40.54	54.76	53.85	47.06	33.33	33.33	0.00	100.00
3=Consumption	10.87	6.67	6.67	0.00	8.11	4.76	3.85	0.00	22.22	33.33	25.00	0.00
4=School Fees	4.35	0.00	0.00	0.00	2.70	0.00	0.00	0.00	11.11	0.00	0.00	0.00
8=Purchase land	2.17	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6= Other household needs	0.00	0.00	0.00	5.56	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00
9.5: Loan Sources (% HHds/Farmers Reporting….)												
6=Group (Registered/Unregistered);	23.91	26.67	26.67	16.67	16.22	23.81	23.08	11.76	55.56	66.67	50.00	100.00
11=VSLA	0.00	2.22	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00
8=Money lender	0.00			5.56	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00
10=Government Agency	8.70	4.44	10.00	11.11	2.70	2.38	3.85	11.76	33.33	33.33	50.00	0.00
12= Trader	4.35	11.11	13.33	22.22	5.41	11.90	15.38	23.53	11.11	0.00	0.00	0.00
14 = IP of aBi Trust	54.35	48.89	46.67	44.44	64.86	52.38	53.85	47.06	0.00	0.00	0.00	0.00
9.6:If Main Purpose was Agricultural Investment, Specify Enterprise (% HHds/Farmers Reporting….)												
Coffee;	38.89	46.67	50.00	66.67	46.67	50.00	63.64	46.67	0.00	0.00	0.00	0.00
Maize;	22.22	20.00	14.29	16.67	20.00	21.43	9.09	20.00	33.33	0.00	33.33	0.00
Beans	22.22	20.00	21.43	16.67	26.67	21.43	27.27	26.67	0.00	0.00	0.00	0.00
Other food crop	11.11	13.33	14.29	0.00	6.67	7.14	0.00	6.67	33.33	100.00	66.67	0.00
Other traditional cash crop	5.56			0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00
9.9: How the received credit affected welfare of beneficiaries (% HHds/Farmers Reporting….)												
1=No Impact	0.00	0.00	0.00	6.67	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00
2=Minor Impact	2.22	4.65	0.00	0.00	2.78	2.50	0.00	0.00	0.00	33.33	0.00	0.00
3=Moderate Impact	11.11	16.28	17.86	13.33	13.89	17.50	20.83	14.29	0.00	0.00	0.00	0.00
4=Major Impact	86.67	79.07	82.14	80.00	83.33	80.00	79.17	78.57	100.00	66.67	100.00	100.00

Table SA72: Access to Banking Services

	Entire Sample		Treatment		Control	
	2013	2010	2013	2010	2013	2010
Average distance (km) from home to nearest banking institution	4.26 (3.83)	5.72 (3.49)	4.10 (3.59)	5.78 (3.27)	4.53 (4.28)	5.61 (3.92)

Table SA73: FINANCIAL SERVICES – SAVINGS: (*Means of saving: e.g., deposit with bank, VSLA, keep money at home, etc.)*

	Entire sample				Treatment				Control			
	2013	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**	**2013**	**2012**	**2011**	**2010**
Forms in which households saved in 2010 or before and between 2011 and 2013 (% HHds/Farmers Reporting….)												
House (cash kept in a house)	55.07	52.17	56.52	68.12	53.33	48.89	55.56	66.67	54.17	54.17	54.17	66.67
Group (cash kept with group)	23.19	21.74	13.04	14.49	22.22	20.00	11.11	13.33	25.00	25.00	16.67	16.67
SACCO	21.74	17.39	13.04	7.25	24.44	20.00	13.33	6.67	16.67	12.50	12.50	8.33
VSLA	34.78	31.88	20.29	7.25	31.11	31.11	20.00	8.89	41.67	33.33	20.83	4.17
MFI	11.59	14.49	7.25	2.90	17.78	22.22	11.11	4.44	0.00	0.00	0.00	0.00
Bank	28.99	24.64	18.84	17.39	33.33	28.89	44.44	20.00	20.83	12.50	12.50	12.50
Average amount (shs) saved ***in House (cash kept in a house)***	228400 (172527.8)	221304.3 (172267.3)	306307.7 (176813.6)	229736.8 (188927)	226966.7 (164739.5)	183715.4 (112451.2)	285040 (133889.4)	229938.6 (194085)	241692.3 (194858)	255785.9 (220446.2)	344285.7 (236360.7)	229380.8 (185319.6)
Average amount(shs) saved ***with Group (cash kept with group)***	237785.7 (168069.9)	365384.6 (256643.6)	333750 (236587.1)	155714.3 (129945)	245678.6 (200600.1)	339487.2 (280700.5)	228750 (145822)	114285.7 (52876.45)	224631 (109441.9)	404230.8 (235240.7)	465000 (282075.6)	217857.1 (193431.2)
Average amount(shs) saved ***with SACCO***	239230.8 (180097.7)	271666.7 (160576.6)	2510000 (1621535)	4400000 (3671512)	199860.1 (159711.6)	271666.7 (188292.8)	1931667 (1126755)	4000000 (3218695)	347500 (212191)	271666.7 (0) (N=3)	3666667 (2081666)	5000000 (5656854) (N=2)
Average amount(shs) saved ***with VSLA***	168409.1 (102590.2)	190222.2 (72379.66)	303000 (204490)	129600 (51582.94)	169415.6 (100775.9)	180349.2 (64278.4)	337333.3 (250293.3)	137000 (56415.13)	167000 (110559.2)	207500 (86643.77)	241200 (56415.42)	100000 (N=1)
Average amount(shs) saved ***with MFI***	135714.3 (92868.13)	270000 (189678.1)	307500 (240143.2)	1350000 (494974.7) (N=2)	135714.3 (92868.13)	270000 (189678.1)	307500 (240143.2)	1350000 (494974.7)	0.00	0.00	0.00	0.00
Average amount(shs) saved ***with Bank***	1116923 (819103.4)	831916.7 (505329.9)	1475000 (1013040)	400000 (196561.3)	1026974 (784348.7)	789903.9 (569472.6)	1450000 (963644.7)	400000 (207665.6)	1386769 (955168.8)	968458.3 (179466.3)	1558333 (1401859)	400000 (200000)
Average Total Savings (Ush) per Year	910942.6 (622466.3)	1144153 (873297.2)	1130005 (822535.4)	734860.1 (541332.5)	933713.8 (550336.9)	1125617 (769387.6)	1222211 (895549)	795492 (615627.6)	868505.3 (751096.9)	1181225 (1070661)	927150.8 (604376.1)	607822 (312815.4)

STATISTICAL APPENDIX #8 FOR IMPLEMENTING PARTNERS (IPs)

Table SA81: Perceptions of IPs on Impact of Promoted Technologies and Practices on Key Indicators

	Implemented Activity	**B9:** Perceived impact on **post harvest handling** of intervention crop at household level **(% of IPs Reporting….)**				**B10:** Perceived impact on **collective marketing** of intervention crop at household level **(% of IPs Reporting….)**			
		+ve	**No Impact**	**-ve**	**Don't know**	**+ve**	**No Impact**	**-ve**	**Don't know**
1	Training on GAPs	66.67(N=9)	11.11 (N=9)	0.00	22.22 (N=9)	28.57(N=7)	42.86 (N=7)	0.00	28.57(N=7)
2	Training on post harvest handling	100.00(N=9)	0.00	0.00	0.00	85.71(N=7)	0.00	0.00	14.29 (N=7)
3	Training on record keeping	0.00	100.00 (N=2)	0.00	0.00	0.00	100.00 (N=1)	0.00	0.00
4	Establishment of Demos (N=6)	16.67	50.00	0.00	33.33	0.00	50.00	0.00	50.00
5	Providing marketing services/ market research	80.00(N=5)	20.00 (N=5)	0.00	0.00	83.33(N=6)	0.00	0.00	16.67(N=6)
6	Quality assurance(standard weighing scales, tarpaulins etc)	60.00 (N=5)	40.00 (N=5)	0.00	0.00	25.00 (N=4)	25.00 (N=4)	0.00	50.00 (N=4)
7	Establishment of Nursery (N=1)	0.00	100.00	0.00	0.00	0.00	100.00	0.00	0.00
11	Formation of farmers organization/ producers cooperatives	100.00 (N=1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Processing and value addition (N=3)	100.00 (N=3)	0.00	0.00	0.00	66.67 (N=3)	33.33 (N=3)	0.00	0.00
16	Collective marketing/ product pooling	66.67 (N=3)	33.33 (N=3)	0.00	0.00				
18	Gender mainstreaming/G4G	75.00 (N=4)	25.00 (N=4)	0.00	0.00	100.00 (N=3)	0.00	0.00	0.00
19	Training on financial management (N=3)	0.00	100.00	0.00	0.00	33.33	66.67	0.00	0.00
20	Providing Financial services	00.00	0.00	0.00	0.00	100.00 (N=1)	0.00	0.00	0.00
21	Provision of transport equipment (N=2)	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
22	Provision of agricultural inputs (N=2)	50.00	50.00	0.00	0.00	50.00	50.00	0.00	0.00
23	Provision of agric equipments (N=1)	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
24	Provision of health (N=1)	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
	Implemented Activity	**B11:** Perceived impact on **farming as a family business** of intervention crop at household level **(% of IPs Reporting….)**				**B12:** Perceived impact on **joint planning/decision making** of intervention crop at household level **(% of IPs Reporting….)**			
		+ve	**No Impact**	**-ve**	**Don't know**	**+ve**	**No Impact**	**-ve**	**Don't know**
1	Training on GAPs	57.14 (N=7)	0.00	0.00	42.86 (N=7)	16.67 (N=6)	16.67 (N=6)	0.00	66.67 (N=6)
2	Training on post harvest handling	57.14(N=7)	14.29 (N=7)	0.00	28.57 (N=7)	16.67(N=6)	33.33 (N=6)	0.00	50.00 (N=6)
3	Training on record keeping (N=2)	0.00	50.00	0.00	50.00	0.00	50.00	0.00	50.00
4	Establishment of Demos	20.00(N=5)	0.00	0.00	80.00 (N=5)	0.00	0.00	0.00	100.00 (N=4)
5	Providing marketing services/ market research	80.00(N=5)	0.00	0.00	20.00 (N=5)	50.00 (N=4)	0.00	0.00	50.00 (N=4)
6	Quality assurance(standard weighing scales, tarpaulins etc)	75.00 (N=3)	0.00	0.00	25.00 (N=1)	0.00	0.00	0.00	100.00 (N=2)
11	Formation of farmers organization/ producers cooperatives (N=1)	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00
12	Training on entrepreneurship	50.00 (N=2)	0.00	0.00	50.00 (N=2)	0.00	0.00	0.00	100.00 (N=1)
14	Training in animal traction (N=1)	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00
15	Processing and value addition (N=3)	66.67	0.00	0.00	33.33	66.67	0.00	0.00	33.33
16	Collective marketing/ product pooling (N=3)	33.33	0.00	0.00	66.67	33.33	0.00	0.00	66.67
18	Gender mainstreaming/G4G	100.00 (N=6)	0.00	0.00	0.00	100.00 (N=5)	0.00	0.00	0.00

19	Training on financial management	100.00(N=4)	0.00	0.00	0.00	100.00 (N=2)	0.00	0.00	0.00
20	Providing Financial services	100.00(N=1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Provision of transport equipment (N=2)	100.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00
22	Provision of agricultural inputs (N=2)	100.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00
23	Provision of agric equipments (N=1)	100.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
24	Provision of health (N=1)	0.00	100.0	0.00	0.00	100.00	0.00	0.00	0.00

	Implemented Activity	**B13:** Perceived impact on **savings** of intervention crop at household level **(% of IPs Reporting….)**				**B14:** Perceived impact on **loan acquisition** of intervention crop at household level **(% of IPs Reporting….)**			
		+ve	**No Impact**	**-ve**	**Don't know**	**+ve**	**No Impact**	**-ve**	**Don't know**
1	Training on GAPs (N=8)	50.00	25.00	0.00	25.00	37.50	37.50	0.00	25.00
2	Training on post harvest handling (N=7)	71.43	28.57	0.00	0.00	28.57	57.14	0.00	14.29
3	Training on record keeping (N=2)	50.00	50.00	0.00	0.00	50.00	50.00	0.00	0.00
4	Establishment of Demos (N=6)	33.33	50.00	0.00	16.67	16.67	50.00	0.00	33.33
5	Providing marketing services/ market research (N=5)	80.00	20.00	0.00	0.00	40.00	60.00	0.00	0.00
6	Quality assurance(standard weighing scales, tarpaulins etc) (N=4)	66.67	33.33	0.00	0.00	0.00	50.0	0.00	50.0
7	Establishment of Nursery	0.00	0.00	0.00	100.00 (N=1)	0.00	0.00	0.00	100.00
11	Formation of farmers organization/ producers cooperatives (N=1)	100.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
12	Training in enterprenuership (N=1)	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
14	Training in animal traction (N=1)	100.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
15	Processing and value addition (N=3)	100.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
16	Collective marketing/ product pooling (N=3)	100.00	0.00	0.00	0.00	66.67	33.33	0.00	0.00
18	Gender mainstreaming/G4G	100.00 (N=4)	0.00	0.00	0.00	50.00 (N=2)	50.00 (N=2)	0.00	0.00
19	Training on financial management	100.00 (N=6)	0.00	0.00	0.00	100.0 (N=5)	0.00	0.00	0.00
20	Providing Financial services (N=1)	100.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
21	Provision of transport equipment (N=2)	100.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00
22	Provision of agricultural inputs (N=2)	100.0	0.00	0.00	0.00	50.0	50.00 (N=1)	0.00	0.00
23	Provision of agric equipments (N=1)	100.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
24	Provision of health (N=1)	100.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00

STATISTICAL APPENDIX #9: PERFORMANCE INDICATORS IN 2012&2013

Table SA9: Status of Performance Indicators for aBi Trust supported Value Chains in 2012 Annual Report and 2013 IA Study Report

Value Chain	Indicator	2012 Annual Report	2013 IA Report	***Difference***
Sesame (% Treatment Farmers Applying…)	Improved seed	**17.9%**	72.5	**+54.6**
	Manure		25	**+7.1**
	Correct spacing		30	**+12.1**
	Correct seed-rate		25	**+7.1**
	Line Planting		25	**+7.1**
	Average Acreage	0.8	1.1	**+0.3**
	Average Yield (Kg/Acre)	300	148	**-152**
	Average Income per farmer (Ush)	720,000	467,186	**-252,814**
	Average Price Sold (Ush)	2,400	2,967	**+567**
Sunflower (% Treatment Farmers Applying…)	Improved seed	**42%**	93.3	**+51.3**
	Fertilizer		63.3	**+21.3**
	Manure		10	**-32**
	Correct spacing		100	**+58**
	Correct seed-rate		80	**+38**
	Pest & Disease Control		10	**-32**
	Average Acreage	1.6	1.8	**+0.2**
	Average Yield (Kg/Acre)	650	532	**-118**
	Average Income per farmer (Ush)	988,000	454,569	**-533,431**
	Average Price Sold (Ush)	1,000	837	**-163**
Beans (% Treatment Farmers Applying…)	Improved seed	**46.8%**	88.3	**+41.5**
	Fertilizer		11.7	**-35.1**
	Manure		35	**-11.8**
	Correct spacing		66.7	**+19.9**
	Correct seed-rate		73.3	**+26.5**
	Pest & Disease Control		23.3	**-23.5**
	Average Acreage	1.1	1.01	**-0.09**
	Average Yield (Kg/Acre)	550	328	**-222**
	Average Income per farmer (Ush)	726000	219161	**-506,839**
	Average Price Sold (Ush)	1,500	1,464	**-36**
Maize (% Treatment Farmers Applying…)	Improved seed	**75%**	84.6	**+9.6**
	Fertilizer		30.8	**-44.2**
	Manure		15.4	**-59.6**
	Correct spacing		94.9	**+19.9**
	Correct seed-rate		80.8	**+5.8**
	Pest & Disease Control		55.1	**-19.9**
	Average Acreage	0.9	2.11	**+1.21**
	Average Yield (Kg/Acre)	1,300	1,016	**-284**
	Average Income per farmer (Ush)	1,040,000	611,529	**-428,471**
	Average Price Sold (Ush)	800	569	**-231**

Coffee (% Treatment Farmers Applying…)	Improved seed	**45%**	70.6	**+25.6**
	Fertilizer		33.6	**-11.4**
	Manure		59.7	**+14.7**
	Correct spacing		79.8	**+34.8**
	Pruning		87.4	**+42.4**
	Pest & Disease Control		40.3	**-4.7**
	Mulching		46.2	**+1.2**
	Average Acreage	1.5	1.96 for Robusta; 1.84 Arabica	**+0.34 to 0.46**
	Average Yield (Kg/Acre)	504	376 for Robusta; 226 for Arabica	**-128 to -278**
	Average Income per farmer (Ush)	2,229,817	**1**,017,353 for Robusta; 1,203,249 for Arabica	**-1,026,568 to -1,212,464**
	Average Price Sold (Ush) - Parchment	5,000	3,517 for Arabica; 2,661 for Robusta	
	Average Price Sold (Ush) - FAQ	4,600		
Soybeans (% Treatment Farmers Applying…)	Improved seed	**79%**	39.4	**-39.6**
	Fertilizer		24.2	**-54.8**
	Manure		15.2	**-63.8**
	Correct spacing		69.7	**-9.3**
	Correct seed-rate		60.6	**-18.4**
	Pest & Disease Control		48.5	**-30.5**
	Average Acreage	1	0.9	**-0.1**
	Average Yield (Kg/Acre)	600	192	**-408**
	Average Income per farmer (Ush)	480,000	182,884	**-297,116**
	Average Price Sold (Ush)	800	1,408	**+608**