AGLC SEMI-ANNUAL REPORT

PERIOD: OCTOBER 1, 2017 TO APRIL 30, 2018

FEED THE FUTURE AFRICA GREAT LAKES REGION COFFEE SUPPORT PROGRAM

AWARD NUMBER: AID-OAA-LA-15-00006

SUBMITTED APRIL 25, 2018

1. Executive Summary: Key Accomplishments and Challenges

Although nearly all AGLC activities were wrapped up by September 30, 2017, the end of Year 2, funding was provided by USAID for an "Endline Survey" of the AGLC coffee producer households to enable the project to collect data on all project indicators for a third and final round. This survey was completed successfully during the current reporting period and the results are summarized in this report.

With remaining Year 2 funding the project was able to extend two other activities through the reporting period, they being: 1) continued data collection on the AGLC experimental fields, an applied research activity focusing on the most effective practices for controlling antestia/PTD; and 2) continued analysis and presentation of AGLC household survey data. A summary of accomplishments in both of these areas is provided below.

2. Program Description and Introduction

The long-term viability of the coffee sector in the Africa Great Lakes region, the main source of cash income for millions of smallholder farmers and families in the region, is threatened first by increasingly prevalent antestia bug infestation (and associated potato taste defect—PTD), and second, by coffee yields that are among the world's very lowest. AGLC is a three-year, USAID Feed the Future initiative led by Michigan State University that meets these combined challenges through an integrated program of applied research, farmer capacity building and policy engagement. The solution requires a public-private sector coordinated response across the entire value chain, including producers, washing stations, dry mills, exporters and the government agencies that support the sector's growth. The goals of the program are to significantly reduce the effects of antestia/PTD and to raise farm-level productivity, two changes that will in turn improve smallholder farmer incomes and help to sustain the Africa Great Lakes region's reputation for producing among the highest quality coffees in the world.

AGLC is designed to meet these challenges through a set of core program components, identified as the following:

- *Applied policy, household, and agronomic (field-level) research* to serve as the basis for smallholder capacity building and policy engagement aimed at reducing potato taste defect and low coffee productivity and profitability in the Africa Great Lakes Region.

- *Capacity building/farmer training & outreach* with project partners in the Africa Great Lakes Region to train coffee producers and processors on potato taste/antestia control and other practices that will increase productivity and farmer incomes.

- *Policy engagement* to help create an enabling institutional environment to debate, formulate and adopt policies that will motivate producers and other actors in the coffee value chain to invest their labor, land and capital in ways that will increase smallholder farmer incomes.

The AGLC initiative fills important gaps in our knowledge base on controlling PTD, improving coffee farm management practices and creating a policy environment that is fully supportive of farmer and other stakeholder investment in the sector.

3. Activity Implementation Progress

This section reports on the various activities of the project in all three of its major components: applied research, capacity building and policy engagement. As the main activities funded during this reporting period were in the applied research component, most of this section of the

report is dedicated to those activities. Annex 1 provides a quick reference on the activity updates provided in this section, along with an estimate of the "percentage completed" for each activity. The section concludes with an update on the M&E plan and how AGLC has progressed against the seven core project indicators.

3.1. Implementation Status

Through the October 2017 -- March, 2018 reporting period implementation of the AGLC project showed good progress and met all of its milestones and outputs. Summarized below are the main steps taken to date in the activities scheduled for implementation during the project's fifth semi-annual reporting period.

3.1.1. Applied Policy, Household, and Agronomic (Field-Level) Research

With additional funding provided by USAID an "Endline Survey" of the AGLC coffee producer households was conducted and analyze during this reporting period. Second, using remaining Year 2 funding, data collection from the experimental fields was continued and steps were also taken in the analysis of the larger AGLC data base. A summary of progress in these areas is reported below.

Endline Household Survey

The Endline Survey was fielded in November and December of 2017 on a 50 percent subsample of the original Baseline Survey sample. As such, the Endline Survey contains data from 512 coffee producer households randomly selected from listings of 16 coffee washing stations (CWS) geographically dispersed across four major coffee-growing districts representing Rwanda's four agricultural provinces. The selected districts are Rutsiro (Western Province), Huye (Southern Province), Kirehe (Eastern Province), and Gakanke (Northern Province).

The Core indicators for AGLC that were estimated based on the 2017 Endline Survey data, as well as the previous surveys in 2015 and 2016 are:

- #1 Incidence of PTD/antestia in fields
- #2 Hectares under improved technologies
- #3 Number of farmers who have applied improved productivity and/or PTD mitigation technologies
- #4 Gross margin per hectare
- #7 Percent of total kg producer cherry processed through fully-washed channels

Two other core project indicators (#5, #6) that are not measured as part of the household survey series are those tracking project generated policy instruments and data sets. Results on

these indicators (listed below) are not the focus of our analysis in the present report on Endline Survey results, but are included in the overall indicator table included in the report.

#5 Number of policy instruments (briefs, presentations, reports) on target issues

#6 Number of new data sets informing food security policies available for public use

Also presented in this report were a small set of findings from the household survey panel that expand on the core indicators and help us to better understand the impacts of policy changes brought about by the AGLC project. In particular these additional results examined how changes in floor prices affect farmer gross margins, production levels and current and future investments aimed at improving coffee production.

Summary of Endline Report findings. Findings presented in the *Report on Endline Survey of AGLC Project Indicators* show the evolution of household indicators across the three AGLC data points: the 2015 Baseline Survey, the 2016 Midline Survey, and the most recent 2017 Endline Survey. What is unique and instructive about the data presented, is that the three data points are a panel study (the same households tracked over time) and that they happen to capture three different cherry floor prices, one very low (2016), one medium low (2015) and one medium-high (2017). This enabled the AGLC team to examine the effects of cherry floor prices on our various indicators.

Overall we find that AGLC has helped to improve Rwanda's coffee sector across all core indicators. While we know that climate variables tend to be overarching in terms of understanding annual variations in production and productivity, we find that there are important changes that farmers are making as a result of AGLC training in improved productivity and antestia control. Antestia infestation is down and application of best practices is up. In turn this change is reflected in improved production, productivity and farmer incomes (gross margins) indicators. While some of these improvements are thought to be the result of AGLC capacity building activities, we conclude that the major changes we observe are the result of NAEB's adoption of a higher cherry price policy for Rwanda, a policy that is predicated upon AGLC research results, particularly those reported on cost of production and farmer incentives for investment in coffee.

While these conclusions are important and meaningful for coffee sector planning and policy, we recognize that we have only captured three points over a relatively short period. Thus, we strongly recommend that NAEB and other coffee sector stakeholders organize to continue to assess and track these and other key indicators, notably farmer investment in coffee, on a regular basis in the future. We fully expect to find that if NAEB is able to sustain a program of higher farm gate prices, the turnaround will continue and farmers will do more and more to

improve the quality and volumes of their coffee; this in turn will benefit all stakeholders in the sector.

Research Report on the distribution of bulk purchased fertilizer and pesticide in Rwanda

Andrew Gerard analyzed survey data on the "distributed" fertilizer and pesticides in Rwanda – those are inputs that are bulk purchased by the Coffee Exporters and Processors Association of Rwanda (CEPAR) and distributed to farmers. The inputs are purchased using an export fee levied on all coffee, so all farmers pay into the export fee indirectly. According to CEPAR, all farmers who maintain their plantations should receive inputs. The inputs are delivered or can be retrieved from local government or coffee washing stations. These entities have information on the farmers' number of trees, and from that can determine the amounts of inputs to provide.

However, the AGLC analysis finds that (when removing from analysis farmers who practice organic farming) 28.13% of farmers receive no distributed pesticide and 26.67% receive no distributed fertilizer. Of farmers who do receive distributed inputs, most receive insufficient amounts. In early 2018, Gerard, Clay, and Lopez wrote a policy brief outlining potential influences on which farmers receive or do not receive inputs, and on volumes received. Findings suggest that female-headed households are less likely to receive inputs; smaller farms are less likely to receive inputs; farmers who are not in cooperatives are less likely to receive inputs; farmers who live at lower elevations (where the quality and productivity of coffee is lower) are less likely to receive inputs, and farmers who do not use best practices are less likely to receive inputs. Of these, best practices may relate to what CEPAR referred to as "maintaining their plantations." This policy brief describes the problem, and proposes potential policy approaches. The report was sent to CEPAR and NAEB in February, 2018. CEPAR asked for an in person meeting to discuss the findings, and NAEB asked that the findings not be released until their concerns about the accuracy of the findings have been addressed. AGLC researchers have proposed a meeting in June 2018 in Rwanda to discuss the findings, to identify any needed modifications, and hopefully come to an agreement concerning the release of the report.

Research report on the effects of coffee washing station ownership structures on farmer investment, productivity, and income in Rwanda and Burundi.

This analysis of coffee washing station ownership structure specifically looks at whether ownership matters to coffee farmer investment, productivity, and income in Burundi. This is policy relevant in Rwanda and Burundi because in both countries there is a split in CWS ownership between private sector and cooperatives (in Burundi there are also government-owned CWS). Initial findings suggest that cooperative membership generally is helpful to farmers in terms of accessing inputs and generating income. However, this report is interested

to know -- beyond cooperative membership -- whether it makes a difference that the cooperative *owns* the CWS they sell to. Findings may have implications for how governments choose to allocate CWS permits to cooperatives versus private sector firms. This research is ongoing.

Research report on: "Pricing Coffee Cherry to Incentivize Farmers and Improve Quality"

This report began as a 2-page policy-brief and was revised and expanded during the reporting period into a more detailed research report, offering more thorough analysis of the costs of current practices, and case studies of companies that are innovating with price policy to achieve higher quality. The paper will soon to be added to the IL-FSP/AGLC website. Revisions from previous versions include a new example of a price policy from Ethiopia and the addition of 2017 data on coffee exports.

Analysis of effects of cooperative membership on farm household welfare

Dr. David Ortega and colleagues at MSU continued their analysis of the household data focusing on identifying the effects of cooperative membership on farm household welfare. Specific questions that this work addresses include: Does collective action increase adoption of best practices and coffee productivity? And: Does cooperative membership improve farm household income? Results from this work highlight the role that cooperatives can play in increasing farmer welfare and in reestablishing the coffee sector as a pillar of growth in the country. A summary of this work was submitted for presentation at Michigan State University's (MSU) Undergraduate Research and Arts Forum. An MSU undergraduate student engaged in the project will be presenting descriptive analysis as part of his degree program.

Other AGLC research results made publicly available on the web

Stories and short reports from the AGLC project continue to be shared on the internet. On Jan. 19 and 29, two separate posts featuring small producers in the AGLC projects appeared on the Feed the Future Agrilinks blog: "Coffee Means Cash" and "Red Cherries and Coffee Farmers Who Do it Right".

Applied Experimental Fields Research

The applied research on experimental fields is designed to empirically inform coffee sector stakeholders in Rwanda and Burundi concerning the most effective practices for controlling antestia/PTD and for reducing low and fluctuating coffee production. Our approach is to build on current knowledge to isolate the principal causes of the combined problems of antestia/PTD and low coffee productivity and to identify the most effective measures for reversing their detrimental effects.

In Rwanda:

Experimental plot set up: All 64 experimental plots set up was completed during 2016. There were a small number of substitutions in cases where farmers had to stump/rejuvenate their fields.

Treatment application: Field application of NPK fertilizer and lime was implemented based on previous soil analysis. Application took place in November and December 2017. The pesticide treatments were implemented in December 2017 and January 2018.

Soil analysis: The analysis of soil samples collected during the 1st year was completed and results used to determine amount of lime and NPK to apply in each field. Both lime and NPK fertilizer were distributed in June 2017 to each coffee washing Station (CWS) for four fields, and were applied in November and December 2017.

Monitoring of antestia bug (scouting): The scouting for antestia bugs took place in November and December 2017, just before pesticides treatments. Follow-up scouting was done in January and February 2018. Due to a lack of sufficient staff, some scouting extended to March 2018. Because so many experimental fields had no antestia bugs at all, the longstanding government recommendation for blanket spraying of pesticides probably needs to be reviewed. In short, the current blanket spraying recommendation of one application does not seem to have the anticipated effect. On the one hand it seems insufficient where there is a large population of bugs, and on the other it is a wasted effort in fields where there are no bugs. The sampling of fields for antestia bugs, and spot application of pesticides may have to be more fully developed as options.

Harvesting experimental plots: The field team completed harvesting of the experimental plots in the Nkora CWS. The team harvested approximately 20 kg/plot making 100 kg of cherries per field and about 400 kg/CWS. An exception is found in COOPAC Kirorero CWS where the team applied only Pyrethrum and there were no other treatments (due to the CWS's organic certification). So the team harvested about 20 kg/field in this reagion. Other CWS are currently harvesting.

Plan for April and May 2018: The month of April is the main harvesting period in Rwanda, but there are variations on the timing of the harvest due to regional differences in elevation and climate.

- Harvesting
- Processing
- Scouting of antestia bug

- Laboratory analysis for quality and PTD determination in partnership with Starbucks

In Burundi:

Analysis from the experimental fields in Burundi is ongoing. Summary findings to date are as follows:

- Antestia: Analysis of variance shows that there are significant differences in the effectiveness of pest control treatments for reducing Antestia. We find that across all provinces Confidor is the most effective treatment for the elimination of the Antestia bug, followed closely by Pyrethrum alone or a combination of Confidor and Pyrethrum.

- Potato Taste Defect: Using a combination of Good Agronomic Practices (GAP) and pesticides result in lower potato taste incidence in Burundi. In addition, two coffee washing stations had significantly high PTD incidence, Dusangirumugambi and CODENYA with 41% and 39% of their samples showing PTD.

- Cupping Scores: On average, plots that were not treated with chemical pesticides produced samples that had, on average, higher cupping scores (80.1 for plots that were treated only with best agronomic practices). Although these differences were not significant.

- Future analysis will include models that control for agro-ecological variables that could influence some of these results, such as elevation, rainfall, and soil characteristics.

3.1.2. Policy Engagement

There were no specific policy engagement events scheduled for this reporting period as the last of the planned policy roundtable discussions was concluded in the previous period. However Project Director, Dan Clay, took time during his December 2017 trip to Rwanda to meet with officials at NAEB to go over data and policy issues based on the Midline and Endline surveys. The focus of the meeting was on cherry pricing as an incentive to farmers, with particular attention to the option of two-tiered pricing based on cherry quality. This was a particularly important issue for AGLC and for Rwanda. NAEB officials indicated that a system for two-tiered pricing is one that is now being considered for the 2018 coffee harvest.

The discussion of two-tiered pricing also covered the criteria that could be used for differentiating cherry of high and low quality. Floatation of cherry is the main criterion discussed but also visual inspection and sorting at pre-sorting tables at the coffee washing stations.

3.1.3. Capacity Building / Farmer Training & Outreach

During the reporting period the Rwanda field team focused informal capacity building on experimental field owners and workers who applied pesticide and fertilizer. It was not possible to bring together larger numbers of trainees as pesticides application involves bio-safety risks associated with pesticide drifting.

Safe pesticide use in coffee needs special attention. We note that there are various approaches used in the coffee sector. Some CWSs hire teams of well-equipped technical specialists who apply pesticides in all fields; others distribute the pesticides to farmers and ask them to apply themselves. In the latter case we note that the distributions are insufficient in amounts and therefore do not reach all coffee trees. Under-dosing was found to be common in all regions. We plan to use the SMS outreach system to better document how pesticides and fertilizer were distributed to farmers in the AGLC baseline.

Radio messages

Informational radio messages for farmers is a part of capacity building. The UR team sent out a country-wide radio message during the month of November, developed jointly with MSU and GKI. The message was focused on controlling antestia bug and safe use of pesticides. A second message has been developed focusing on proper harvesting for improving quality, and the importance of picking only properly ripe cherries, sorting them, and delivering them in a timely fashion to the CWS. This will be sent out in April as the harvest season ramps up.

SMS Messaging Platform

The AGLC team at the University of Rwanda has faced ongoing challenges with the implementation of an SMS messaging platform. The main challenge has been in finding a server with the capacity to host the SMS platform. The current host server, located at the Busogo Campus of UR is old and has not been updated, which renders it incompatible with the VPN site-to-site of the MTN server (the telephone company). The team at UR attempted an upgrade, but still faced challenges of unreliable internet connectivity from this campus location.

At this time, the team is has concluded that it will be feasible to maintain the system to the Single Projects Implementation Unit (SPIU) server at UR. Testing will be done by Hilary Muramira at Carnegie Mellon University in Kigali to make sure the system is functioning properly and then will be migrated to the SPIU server once fully operable. Muramira has been collaborating with the SPIU IT team so there is optimism that the transfer will work as planned.

3.2. Monitoring & Evaluation Plan Update

This section summarizes the results of the Endline Survey in the context of the overall AGLC indicator table shown in Annex 2 and how the core project indicators stack up against the targets set at the outset of the project. Overall, the indicators show a very positive result, far exceeding targets.

Two of the indicators are policy-related and are also related to the FSP-IL leader award strategic results. They are "number of policy instruments (briefs, presentations, reports) on target issues," and "number of new data sets informing food security policies available for public use." For these indicators, (#5 and #6 in Annex 2) the project has met or exceeded targets for this indicator in every semi-annual period. For #5, the project generated eight instead of only four reports in both years 1 & 2. For indicator #6, number of new data sets, the project also met or exceeded targets in each semester.

Two key goals of the AGLC program are captured by custom indicators, "incidence of PTD/antestia in fields" and "percent of total kg producer cherry processed through fully-washed channels," which are #1 and #7 in Annex 2. The incidence of antestia bugs per tree was down more than expected in this period. For this indicator lower is better, so it is good that the incidence was .52 instead of the anticipated .73. The reason for the better than expected performance is, we believe, the impact of the higher price policy implemented in 2017. Farmers were more motivated to implement best practices, including those that reduce the incidence of antestia. This result is a welcomed reversal from year 1 when the indicator increased (bad) from the baseline value of .76 to .85, missing the target of .73.

The "percent fully-washed" indicator, #7 in Annex 2, was slightly higher than target at 99.8% instead of 98.0%, which is not representative of the national situation in Rwanda. The 1,024 farms comprising the sample for the AGLC project were intentionally all supposed to be supplying coffee to a washing station and were randomly selected from lists provided by the 16 selected washing stations in the project. Thus, it is not surprising that this indicator was already 95% at the start of the project.

The remaining three indicators are from the Feed the Future handbook and, like those described above, assess critical outcomes of the AGLC project. They are "hectares under improved technologies," "number of farmers who have applied improved productivity and/or PTD mitigation technologies," and "gross margin per hectare." These are indicators #2, #3 and #4 in Annex 2, where one quickly notes that in year 2 they have all exceeded their target levels by significant amounts. In fact, the year 2 actuals for these indicators are higher than the targets set for year 3. For example, gross margin per hectare was at $756 in year 2, much higher

than both the $550 and $556 targeted for years 2 and 3 respectively. This should not be assumed to mean that year 3 of the project was not needed, instead it should confirm that these types of indicators are difficult to forecast. However, the improvement in year 2 compared to year 1 is dramatic, since in year 1 each of these indicators was below or only slightly above the targets.

4. Upcoming Events / Activities

AGLC End-of-Project Workshop

The AGLC team will hold its End-of-Project Workshop on June 26, 2018 at the Umubano Hotel in Kigali, Rwanda. This workshop will distill findings from the three-year project, highlighting the progression of our research, analysis, and stakeholder engagement since the start of the project. Based on our presentations of key findings, the AGLC team will seek real-time feedback from stakeholders along the coffee value chain who are present at the workshop, including policymakers, private sector actors, and farmers.

The End-of-Project Workshop will begin by reviewing the initial phase of our project, which focused on challenge identification. We will highlight the key challenges motivating the AGLC project and elicit feedback from farmer groups on the importance of investment in coffee from the farm-level perspective. The team will then present research findings in three sections: 1) Farmer investment and sustainability in the coffee sector; 2) Input use, controlling antestia, and managing potato taste; and 3) Cross-cutting findings on gender. A panel of experts will respond to the research findings, followed by an open question and answer session with all workshop participants on these topics.

While this workshop will formally close out our three-year AGLC project, we look forward to hearing suggestions from participants on how we can best move forward to support future policy and research needs in Rwandan and Burundian coffee. Our hope is that all participants leave feeling inspired to take some of these actions themselves, so that together we can support increased quality, productivity, and sustainability in the Great Lakes Region coffee sector.

Continued Data Analysis

Over the coming months the AGLC team will complete a series of policy analyses and scholarly publications that are currently under way using data from the suite of household surveys and experimental fields research. In particular we anticipate completing reports in the following areas.

- Experimental fields analysis of alternative antestia treatments

- Farmer Incentives and Value Chain Governance: Critical Elements to Sustainable Growth in Rwanda's Coffee Sector (paper submitted for review and publication)

- Collective action and coffee productivity in Rwanda's specialty coffee sector (paper submitted for review and publication)

- Time permitting, the team will also draft a research report on Gender in Coffee: Findings and Policy Implications

Annex 1: AGLC Year 3 Activities and Percent Completed

Africa Great Lakes Region Coffee Support Project Timeline (Project Year 3)						
Activity/Outcome	**Lead/Support Insitutions**	**Quarter Due**				**% Completed for Septmber 2017 Semi-Annual Report**
		1	2	3	4	
Applied Research Component Activities/Outcomes						
Year 3 Endline Household Survey						
Survey design (512 HHs in each country)	IPAR/MSU/All	■				100%
Instrument development	IPAR/MSU/All	■				100%
CSPro Mobile tablet programming	IPAR/MSU/All	■				100%
Enumerator training	IPAR	■				100%
Pretest and revision of Y3 survey	IPAR	■				100%
Y3 Survey Implementation						
Y3 Survey data collection	IPAR	■				100%
Compile Y3 survey data in CSPro	MSU/IPAR	■	■			100%
Convert baseline data to SPSS/Stata	MSU/IPAR		■			100%
Clean survey data (range and consistency)	MSU/IPAR		■			100%
Data coding (open-ended Qs to numeric data)	MSU/IPAR		■			100%
Data transformation	MSU/IPAR		■			100%
Data analysis	MSU/IPAR/All		■			100%
Draft Y3 HH survey research report	MSU/IPAR/All		■			100%
Field-based Experimental Research Implementation						
Field-based data collection (N=64)	UR	■	■	■		70%
Compile/enter field-based survey data in Excel	UR	■	■	■		70%
Clean field-based data (range and consistency)	MSU			■		50%
Data transformation	UR/MSU			■		20%
Analysis of Y3 field-based data	UR/MSU			■	■	10%
Draft field-based research report	UR/MSU			■	■	0%
Capacity Building Component Activities/Outcomes						
Develop training materials	UR	■				100%
Organize farmers in modified FFS groups	UR	■				100%
Hold training sessions on experimental fields	UR	■	■	■		100%
Train broader sample of leader farmers in GAP (ABS)	UR	■				100%
Develop and transmit radio broadcast messages	UR/MSU	■	■			100%
Develop and pilot test system for farm-level SMS reporting of results	UR	■	■			80%
Develop and transmit SMS messages	UR	■	■			0%
Policy/Stakeholder Engagement Component Activities/Outcomes						
Engage coffee stakeholders on policy issues and data needs assessment	IPAR/GKI/MSU	■				100%
Prepare 1 policy brief and associated PPTs						
Policy brief on field-based PTD/antestia control and improved	UR/MSU/GKI			■		30%
End-of-Year (now End-of-Project) Workshop to present research, capacity	IPAR/GKI			■		20%
Progress Reports and Data Activities/Outcomes						
Semi-annual Progress Report (mid-year)	MSU/All		■			100%
Semi-annual Progress Report (end of year)	MSU/All			■		0%
Monitoring & Evaluation (M&E) Reporting	MSU/All	■	■	■	■	75%

Annex 2: AGLC - Performance Indicators with Targets

AGLC Core Indicator	Indicator definition	Unit of Measure (gender disaggregated when possible)	Method of Data Collection	Reporting Frequency	Baseline (reported Mar 2016)	Target Year 1		Actual Year 1 (reported Apr. 2017)		Target Year 2		Actual Year 2 (reported Jan. 2018)		N.A. Targets Year 3 (Oct. 2018 – n.a.)		Variable(s)
#1	Incidence of PTD/Antestia in fields	Avg. # of bugs/tree	Farmer surveys (N=2,048) & Field observ on exper. plots (N=128)	Annually	0.76	0.73		0.84		0.70		.52		.65		Farmers: ANTPERTREE
					n.a.	n.a.		n.a.		n.a.		n.a.		n.a.		Avg. # bugs/tree in *treated* study fields.
#2**	Hectares under improved technologies	# of hectares under improved practices	Farmer surveys (N=2,048)	Annually	132 ha	135 ha		127 ha		139 ha		149 ha		145 ha		Productivity: COFFEESQM2_sum BestProdPract
#3**	Number of farmers who have applied improved productivity and/or PTD mitigation technologies. *USAID wording: improved technologies or management practices.*	# of farmers in treatment areas exhibiting changed behavior	Farmer surveys (N=2,048)	Annually	530	557		574		583		666		610		Productivity: BestProdPract
#4***	Gross margin per hectare ***	Value in US$	Farmer surveys (N=2,048)	Annually	$530	$543		$261		$550		$756		$556		USAID: CofGrossMargNOLAB
					$374	$376		$61		$383		$571		$392		AGLC: CofGrossMarg
#5****	Number of policy instruments (briefs, presentations, reports) on target issues	Number	Research results	Semi-annually	0	0	4	0	8	2	2	3	5	2	2	
#6****	Number of new data sets informing food security policies available for public use	Number	Research results	Semi-annually	0	2	2	6	0	2	2	2	3	2	2	
#7	Percent of total kg producer cherry processed through fully-washed channels.	Kg cherry processed as FW/total kg cherry processed	-Farmer surveys	Annually	95%	97%		96%		98.0%		99.8%		99.0%		Farmers: SALE15CHERKG CherToParchKG

**Indicators to be submitted to the FTFMS system.

***AGLC will calculate this indicator two ways. The indicator reported in FtFMS will be calculated as described in the FtF Handbook. The second version will be used by the project for monitoring, which will include a value for unpaid HH labor in the input costs. The FTF gross margin (which values unpaid household labor at 0) is not being used by the project but we expect it will increase as indicated.

****Indicators related to the FSP-IL leader award strategic results.