FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

PRODUCTION, FINANCE, AND IMPROVED TECHNOLOGY PLUS (PROFIT+)

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ANNUAL PERFORMANCE REPORT NO. 3
OCTOBER 1 2014 – SEPTEMBER 30 2015

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List of Acronyms

AD	Agro-dealer
APR	Annual Performance Review
AWP	Annual Work Plan
BCC	Behavior Change Communications
CAD	Community Agro Dealer
COMACO	Common Markets For Conservation
COR	Contract Office's Representative
CRS	Catholic Relief Services
DHF	Demo- Host Farmer
DWA	District Women's Association
EPFC	Eastern Province Farmers' Cooperative
FFS	Farmer Field School
FTF	Feed The Future
FTFMS	Feed The Future Management System
IAPRI	Indaba Agricultural Policy and Research Institute
IFDC	International Fertilizer Development Center
IIP	Innovation, Investment And Partnership
IITA	International Institute for Tropical Agriculture
IQC	Indefinite Quantity Contract
IR	Intermediate Result
LOP	Life Of Program
M&E	Monitoring And Evaluation
MAL	Ministry Of Agriculture & Livestock
NGO	Nongovernmental Organization
OPV	Open Pollinated Seed Varieties
OS	Organizational Survey
PPP	Public-Private Partnerships
PROFIT+	Production, Finance, And Improved Technology Plus
PSSP	Private Sector Service Providers

SFSA	Support for Food Activities
TA	Technical Assistance
TOT	Training Of Trainers
USAID	United States Agency For International Development
ZARI	Zambian Agriculture Research Institute
ZEMA	Zambian Environmental Management Agency
ZNFU	Zambian National Farmers Union

INTRODUCTION

The third Annual Performance Report (APR) for the Production, Finance and Improved Technology Plus (PROFIT+) Project in Zambia describes project achievements and challenges experienced during the third year of implementation. It is submitted in compliance with the terms and conditions of Task Order No. 623-I-TO-10-00001 and details activities undertaken during the period from October 1, 2014, through September 30, 2015.

This APR is intended to complement the PROFIT+ Year 4 Annual Work Plan (AWP), submitted under separate cover, which describes activities that will take place between October 1, 2015, and September 30, 2016.

The objective of PROFIT+ is to improve productivity, expand trade, and increase investments by developing market systems in rural areas to facilitate stronger linkages to private sector service providers through public private partnerships (PPP). These linkages will allow for the permanent transfer of knowledge, services, and resources to farming communities, while specifically targeting three related technical areas to produce the following intermediate results (IR):

- IR 1: Improved Smallholder Productivity
- IR 2: Expanded Markets and Trade
- IR 3: Increased Private Sector Investment in Agriculture Related Activities

Cross-cutting interventions ensure that gender equality efforts and environmental stewardship contribute to respective IRs. The PROFIT+ behavior change and communication (BCC) strategy is utilized to gain an in-depth understanding of factors that contribute to technology adoption and practices, as well as the effects of technology on participants' livelihoods.

PROFIT+ targets six value chains: maize, groundnut, soybean, sunflower, onion, and tomato, and operates in Eastern Province (Petauke, Katete, Chipata, and Lundazi) and peri-urban Lusaka (Chibombo, Chongwe, Rufunsa, Chilanga, and Kafue).

As per revised target figures for Year 3 implementation, PROFIT+ life of project (LOP) targets include the following:

- Increase productivity and income of smallholders by 30 percent
- Reach 180,000 smallholder farmers
- Achieve agricultural sales of $147,000 million, which is a $60 million increase from the baseline
- Generate between $10 and 30 million in private sector investment

While the APR details PROFIT+ Year 3 achievements, it also reflects on all efforts to date in order to present a fuller picture of progress towards LOP targets and sustainability goals. Specifically, our goal for annual reviews is to improve our ability to adaptively manage, and this APR in particular takes a critical look at the potential for strategy scale-up by analyzing key PPPs facilitated by the project as well as community responses to them.

This review is supported and based on the following data sources and activities:

1) Monitoring and evaluation data collected and analyzed by the project team throughout the year; tracking impact-enabling indicators such as investments/leverage/loans, trade, jobs, gender equality efforts, and environmental stewardship; and observing how this affects community capacity building and behavior change

2) Preliminary results from our 2015 Annual Outcome Survey (OS)

3) Targeted consultant research and observation during the year

4) Comparing available national- and district-level data sets

5) Ongoing beneficiary and stakeholder feedback

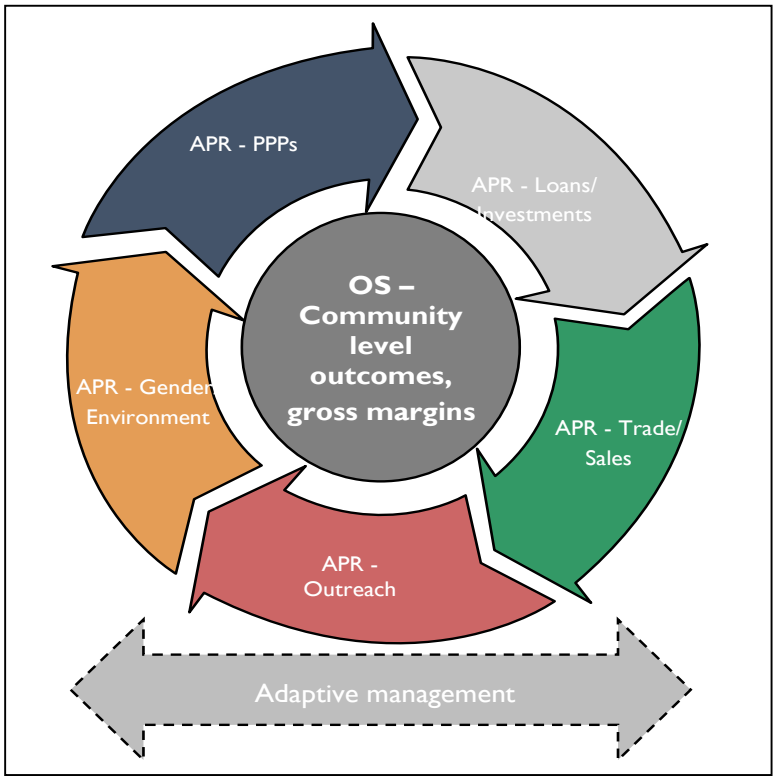


Figure 1. PROFIT + Reporting Pathways

2015 Annual Outcome Survey

In 2015, Profit+ again hired an external local research firm (RuralNet) to develop a questionnaire and sampling strategy in line with Feed the Future methodology. Based on previous discussions with USAID and IAPRI (the USAID-hired research firm), it was originally decided that a multi-stage random sample of 600 individuals within the target population (further stratified by block, camp, and village) would be sufficient. However, in 2015, this sample was increased to 730 individuals to reflect the growing beneficiary base. The final draft of the 2015 OS Report will be available for review on November 15, 2015.

PROFIT+ Project Team and Partners

The successes of Year 3 could not have been achieved without the efforts of the entire PROFIT+ consortium. Under the Support for Food Security Activities (SFSA) Indefinite Quantity Contract (IQC), ACDI/VOCA leads overall implementation of the project, including program management; value chain analysis and development; market and trade expansion; and financial service activities. In Year 3, the International Fertilizer Development Center (IFDC) continued to provide support to selected IR 1.0 (smallholder productivity) activities but under a more limited scope due to funding obligation constraints. For similar reasons, Catholic Relief Services (CRS) and Danya International contracts received a stop work order mid-way through Year 3.

Target Group and Operational Areas

In Eastern Province, the project is focusing on all six value chains, including groundnuts, sunflower, soybeans, maize, tomato, and onions. In peri-urban Lusaka, the focus is on tomato and onions only.

Eastern Province was selected due to high poverty levels in comparison with other provinces in Zambia. The province is also proximate to markets, transportation, infrastructure, and complementary programs. This allows the project to realize immediate impacts, identify solutions to the biggest challenges faced by the value chains, and make the business case for private sector engagement with communities. The peri-urban Lusaka districts were selected for their vegetable potential and proximity to Lusaka.

PROFIT+ Technical Approaches

Facilitative Market-Driven Value Chain Approach

PROFIT+ continued to take a facilitative approach, partnering with local and private sector entities to enable value chain actors to sustainably pursue market opportunities. Rather than replace or duplicate capacity, PROFIT+ enhances the capacity of both established and emerging local partners, simultaneously providing targeted technical assistance (TA) and investments to improve the quality of services in order to achieve program objectives.

Sustainability Through Partnership

Partnerships are the key element in the project's sustainability strategy. It is through partnerships that the project will be able to facilitate long-lasting linkages that will increase private sector investments and participation in the development of selected value chains. In Year 3, the project started working on solidifying its exit strategy to ensure that PROFIT+ activities result in a stronger, more resilient market system that integrates farmers in the target areas. Crucial to this effort is the carefully designed engagement of three main categories of partners: the private sector, the public sector, and local organizations.

- Private sector partners: The PROFIT + team is working on testing, selecting, and scaling up a range of critical partnerships with private sector stakeholders to leverage resources and increase the productivity and efficiency of producers in order to achieve the following long-lasting effects:
    - Increase the availability and utilization of extension, agricultural inputs, and services in farmer communities to increase the skills, yields, and incomes of farmers, and increase responsiveness to climate change
    - Increase employment opportunities in rural areas
    - Improve the operations, quality, and profitability of agribusinesses
    - Diversify production patterns and products, and open new market channels

- Scale up proven models based on commercial principles

- Government partners: The project works actively with Ministry of Agriculture and Livestock (MAL) extension departments to transfer knowledge to extension agents and coordinate the further roll-out of extension training to community agro-dealers (CAD) to ensure proper transfer of agronomic practices through project demonstrations. This activity builds the capacity of MAL and creates strong linkages between CADs, communities, and the government. PROFIT+ also works closely with the Zambian National Farmers Union (ZNFU) to ensure that CADs and surrounding farmers are increasingly utilizing the benefits of LIMA and other ZNFU credit schemes. Additionally, the project's partnership with the Zambian Agriculture Research Institute (ZARI) facilitates the use of new technologies such as Aflasafe and improved seed varieties. All project activities that are carried out in collaboration with government partners are designed to support key PPPs and ensure closer ties between stakeholders in rural areas.

- Nongovernmental organizations (NGO): The project is actively participating in all Feed the Future (FtF), USAID, and other donor meetings, and is actively coordinating with all projects in PROFIT+ implementation areas to leverage resources and avoid duplication of efforts.

PROFIT+ Results Framework

PROFIT+ employs a results-based monitoring and evaluation (M&E) approach that is built on the results framework in the table below.

Figure 2. PROFIT + Results Framework

IMPACT

Goal: Reduce proportion of people living in extreme poverty and suffering from hunger

Project Goal: Increase food security and decrease hunger through agriculture-led growth and inclusive market access by smallholder farmers

OUTCOME

Intermediate Result (IR) 1: Improved Smallholder Productivity

- **IR 1.1:** Farmers, processors, and other value chain actors apply improved technologies and management practices
- **IR 1.2:** Improved post-harvest handling process and access to services in PROFIT+ value chains
- **IR 1.3:** Farmers, processors, and other value chain actors have increased access to financial services

IR 2: Expanded Markets and Trade

- **IR 2.1:** Increased access to agricultural markets
- **IR 2.2:** Enhanced capacity of producer association and rural agro enterprises

IR 3: Increased Private Sector Investment in Agriculture-Related Activities

- **IR 3.1:** Producer associations and rural agro enterprises receive services from PSSPs
- **IR 3.2:** Enhanced PPPs

Cross-Cutting IRs: ***(1) Gender equality*** – integrated in all efforts with specific focus on promotion of female entrepreneurship, leadership, and asset ownership; ***(2) Environmental stewardship*** – integrated in all efforts with a specific focus on raising awareness about the impacts of climate change (demos and FFS), capacity building of farmers to respond to shifting weather patterns (GAP), and product knowledge and usage controls (PPPs).

INPUT/ OUTPUT

Activities

- Provide TA to farmers on GAP, PHH through demo platform and farmer field schools (FFS)
- Promote a network of CADs to serve as the link between companies and farmer communities – localization and knowledge transfer
- Work actively with lead input suppliers to strengthen linkages and learning through PPPs
- Link smallholder famers through CADs to existing and planned outgrower schemes
- Disseminate key messages to communities through BCC
- Promote agribusiness groups around CADs to improve coordination and secure liquidity through credit and saving methods
- Link MFIs to agribusiness groups
- Support OPV seed production efforts and other technology research

Activities

- Strengthen capacity of community groups to engage buyers through traditional aggregation centers
- Establish an alternative model to community groups – producer company (PC) (progressive CADs as shareholders)
- Link smallholder famers through CADs to existing and planned outgrower schemes
- Introduce formal or in-kind financing options to support forward contracts and outgrower schemes
- Test and introduce new PHH technologies such as Aflasafe, PICs bags, metal silos, and other traditional, successful means of handling produce (medela cork)
- Assist emerging processors to expand business operations, especially in oil production, feed industry, and vegetable processing
- Support roll out of ZAMACE and inclusion of project partners in its operations
- Expand regional trade with lead partners and processors

Activities

- Establish key impact partnerships with lead input companies to build supply chain models through CADs for servicing rural markets
- Establish key impact partnerships with leading commodity buyers to set up outgrower schemes and build new models for reaching farmers
- Support credit schemes for introduction of modern machinery and implements where opportunities are presented
- Support local processing sector to expand and improve operations
- Continuously evaluate models and partners to take best ones to scale up
- Utilize IIP to support innovative supply chain models for engaging CADs; strengthen farmer organizations/producer companies; facilitate new investments in improved processing facilities; support establishment and roll out of ZAMACE

Critical Assumptions: ***(1) Enabling environment*** conducive to trade and smallholder linkages; ***(2) Weather and natural conditions***; ***(3) Government*** participation and cooperation; ***(4) Sustained food security*** of targeted beneficiaries

Year 3 Achievements

PROFIT+ Year 3 implementation was designed to facilitate the full roll-out of partnerships. To meet this goal, the project focused on strengthening and building the capacity of target communities in Years 1 and 2. However, the project encountered two significant challenges in Year 3: an unanticipated reduction in obligated funds that considerably delayed some planned activities, including utilization of international subcontractors and the Innovation, Investment and Partnership (IIP) fund (which was designed to support general roll-out and scale-up of key partnerships and drive adoption of technologies/practices); and the negative effects of climate change, including a noticeable shift in weather patterns that precipitated extended dry periods at critical times during productivity season.

While these challenges contributed to overall mixed results in Year 3, PROFIT+ was able to make some key strides in achieving projected results, and was able to further research and design a promising set of interventions for Year 4 when the full obligation amount is expected. Below is a summary of the most important results from Year 3:

Substantive Increase in Investments

- Eight high-impact PPPs were established with leading input companies and commodity traders/processors to establish new supply chain models in rural areas and facilitate investments in communities
- New/increased market opportunities in rural areas drove more direct private sector investment, pegged at ZMW 27,384,774 (more than $3.9 million) this year
- These developments created a strong platform for job creation: through the establishment of community agro dealers (CADs, farmer groups and private companies have employed 620 people on a permanent basis, and have hired more than 32,700 individuals on a short-term basis.

Significant Improvement in Market Linkages

- Facilitated more than ZMW 12,924,603 (more than $1.8 million) worth of trade in commodities between communities and various buyers, including Cargill, Delicious Milling, Continental Grains, and Share Africa Zambia
- Out of 45 major community groups that received project technical assistance and training in Year 2, 39 (87 percent) were linked to buyers this year and increased their trade output by 43 percent

Reaching Scale and Increased Adoption Rates

- The number of total project direct beneficiaries who are actively participating in the program exceeded the Year 3 target by 11 percent with 164,523 farmers, 87,798 of whom were female; the project is on track to reach the LOP target of 180,000.
- Farmer beneficiaries are served and supported by a network of 200 CADs, who PROFIT+ promoted this year as agents of change and the anchors of the rural market system in attracting private sector service providers (PSSP).
- The project supported 1,687 enterprises, including the agribusiness groups that support CADs through credit and saving activities, as well as other community groups, including women's groups, cooperatives, and district women associations (DWA): 99 percent of these groups applied improved technologies and management practices.

- 147,906 farmers, including 83,271 female farmers, adopted at least one or more new technology or practice, which accounts for 468,513 hectares. The most commonly adopted technologies included improved seed, soil-related fertility, and conservation practices.

Production Performance and Building Resilience

- PROFIT+ understands that climate change and shifting weather patterns affect communities and productivity. To that end, the project is focused on preparing framers for climatic challenges to increase resiliency in our zone of influence. Activities related to this include socioeconomic efforts to improve the functionality and responsiveness of the agricultural sector by developing new models for linkages between farmers and PSSPs, as well as continuous promotion of biophysical resource utilization through crop demonstration plots and farmer field schools. Plots and field schools will teach farmers about crop diversification, intercropping, crop rotation, ways to handle increasingly longer dry periods, and efficient utilization of natural resources.
- Productivity performance for maize and groundnuts, although down from last year due to the aforementioned reasons, stayed ahead of Eastern Province averages; soy and sunflower production were very close to Eastern Province averages.
- Tomato and onion productivity are not tracked by national/Eastern Province averages but were also impacted by the drying of water points. In spite of this, tomato performed well, producing 7.13 MT per hectare (a significant reduction from last year but still better than 2013) while onion productivity dropped dramatically to 0.45 MT per hectare. At the same time, hectares under production for both crops increased dramatically from the baseline, and for the most part, investments in inputs have gradually increased. Due to water shortages, however, productivity output this year has mostly offset farmers' gains.
- Table 1 compares Eastern Province forecast data for the 2014/15 cropping season and the Profit+ annual OS. Using Profit+ data for average price and average input cost per hectare, the project computed the gross margin for Eastern Province forecast data, which is then compared with the PROFIT+ OS GM. This methodology mirrors FTFMS calculations for gross margin. Overall, PROFIT+ OS data show that yield and gross margin for PROFIT+ are mostly higher compared to the EP forecast: this means that PROFIT+ farmers are doing better both in terms of yield and gross margin despite environmental challenges.

Table 1: Eastern Province forecast comparison with PROFIT+, USD

Crop	Area planted (ha)	Expected production (MT)	Yield (MT)	Price USD/MT	Input Costs	GR	NR	GM
Maize EP forecast	321,861	544,670	1.7	200.00	47,326,451	108,934,086	61,607,635	191.41
PROFIT+ maize	186,427.	452,289	2.4	200.00	27,039,622	90,459,677	63,420,055	340.19
Groundnut EP forecast	65,653	23,739	0.4	260.60	2,030,001	6,186,428	4,156,427	63.31
PROFIT+ groundnuts	41,874	39,105	0.9	260.60	1,294,809	10,190,570	8,895,761	212.44
Sunflower EP forecast	48,890	23,807	0.5	379.45	861,440	9,033,483	8,172,043	167.15
PROFIT+ sunflower	54,028	19,686	0.4	379.45	951,732	7,469,981	6,518,249	120.64

Soybeans EP forecast	23,129	15,838	0.7	423	919,602	6,701,095	5,781,493	249.97
PROFIT+ soybeans	12,210	7,162	0.6	423	485,547	3,030,576	2,545,029	208.43

Changes/Growth Areas

Currently, several of the fundamental conditions for successful agricultural markets are not functioning ideally. There include: a) Macroeconomic stability, b) public/private technology transfer systems, which should mitigate risks for smallholder farmers, and c) increased access to functioning markets is still driving insufficient profit retention at the farm level, which is necessary to stimulate the agricultural transformation needed to drive broader development goals.

While macroeconomic stability cannot be addressed by the project, PROFIT+ has encouraged ownership of the change process by communities through promotion of leadership and entrepreneurship to address the other two issues. Active work with traditional community groups, and creation of CADs and producer company networks aims to localize delivery of services and retention of profits, while facilitating the non-farm agricultural job growth and investments – all necessary elements of a functioning rural systems able to adopt and adapt to new market/environmental realities. PROFIT+ will thus continue to strengthen these elements to address farmer coordination/organization, market access, and adoption and adaptation to the changing environment. This will be reflected in changes to TA for smallholders, more aggressive partnership building, and more investments in rural entrepreneurship.

Climate change impact on shifting weather patterns and productivity outputs

With the new realities of climate change setting in, a wider systematic shift will be required in the near future by the government, donor community, and private sector partners to prepare and protect the agricultural sector. While environmentally sustainable agricultural development is a cross-cutting element of PROFIT+, this issue has become one of the key risk-producing elements for smallholders. Farmer responsiveness is still focused on coping strategies, which is reflected in the sale of assets such as cattle or implements, and a change in diet diversity (lower protein/vitamin intake), which could directly contribute to malnourishment. The direct impact of climate change on productivity outputs is also off-setting gross margin gains and incremental sales, and creating a perpetual cycle of risk exposure for smallholders. Continuous investments in field crops further perpetuates this issue as field crops productivity and profitability is driven by expansion of planted areas which frequently leads to land clearing and bush fires. PROFIT+ will continue to promote diversification into more profitable crops, including vegetables, which are easier to manage on smaller plots of land while increasing awareness about climate smart practices for other traditional crops.

Importance of developing rural enterprise to retain profits and create economies of scale

The opening of market channels has brought positive changes to communities as resources, inputs, and knowledge are more readily available to farmers. However, these efforts have not fully addressed the issue of profit retention from value chain activities to grow local communities. Un-organized smallholders still lack sufficient capacity to negotiate and take full advantage of opportunities. Also, the traditional community groups where they are members were not built on functional models that can respond to the challenges and opportunities of modern markets. The creation of economies of scale (built on modern models and thinking) is thus required in order capture profits locally. The next two years will see PROFT+ focused on supporting up to 10 producer companies to address issues of economy of scale - to place bigger input orders to reduce prices and access discounts; aggregate larger quantities of outputs in order to obtain premiums; invest in transport and storage to leverage market

offerings; invest in mechanization; and organize access for PSSPs to large numbers of smallholder farmers, which will effectively offset the costs of doing business.

Results from Program Implementation 2015

IR1 Increased Productivity

A. Overall Objective/Approach:
Our objective for IR1 is to increase agricultural productivity by 30 percent by building the capacity of farmers, and various actors in agricultural systems to ensure that smallholder farmers are able to select, pilot, and adopt strategies to improve productivity and meet market demands. PROFIT+ specifically targets the production of crops in six value chains, including maize, onion, tomato, sunflower, groundnuts, and soybeans. Productivity is increased by timely access to improved agricultural inputs and effective and efficient extension systems; increasing knowledgeable about technologies that impact productivity; and rising awareness of environmental and climate change practices. The project has faced two distinct challenges in achieving these goals: 1) farmers do not have adequate capacity, particularly financial capacity, to fully utilize market opportunities; and 2) timely and local access to inputs, services, and knowledge is inadequate, and existing rural market systems have limited capacity to address this issue.

Key Activities in 2015

- Graduated a group of 200 best-performing farmers from their initial roles as demo-host farmers (DHF) to CADs. CADs are a critical element in the project's sustainability strategy as they promote rural entrepreneurship and job creation; drive localization and ownership of services; offer opportunities to rural women; and attract PSSPs to engage communities and serve as focal points.
- Utilized the CAD network for the roll out of Training of Trainers (TOT) and Farmer Field Schools (FFS) to smallholder farmers in order to promote new products, technologies, and practices and establish demand for them in rural communities. BCC efforts that usually support this activity were not rolled out this year due to project's financial obligation constraints.
- Worked closely with MAL and other implementation partners to coordinate efforts
- Applied and tested different input packages (blended fertilizer, soil, and chemicals) on demonstration plots based on soil tests results from Year 2; this was done to assess the impact of different combinations on productivity and farmer gross margins. Results will directly inform next season TOTs and FFSs, and input/service offers from CADs to farmers.
- Created farmer support structures around CADs (agribusiness groups) to mobilize savings and decrease risk exposure in rural communities for credit provision
- Established high-impact PPPs with input companies to develop models for accessing rural markets through CAD networks, while embedding key services such as credit, management, product knowledge, and extension

- Supported development of markets for groundnut open pollinated seed varieties (OPV) through investments in the Groundnut Seed Alliance[1]
- Assessed impact of project trainings targeting aflatoxin mitigation and Aflasafe testing trial[2] to obtain approval for use in Zambia

B. Analysis of 2015 Results

Planned: Transform DHFs into CADs; deliver TOTs and FFSs; and build PPPs to open up new market opportunities for communities

Results: The project promoted the creation of 200-farmer strong CAD network to serve as a base for farmer agents to bridge the gap between communities and PSSPs. The project also established 664 demonstration sites through CADs this year, including 140 maize, 140 groundnut, 140 soya, 140 sunflower, 57 tomato, and 57 onion sites, in partnership with MRI Syngenta, SeedCo, PlantAgriChem, Pannar, ZAMSEED, Zambian Fertilizers, Klein Karoo, and Pioneer DuPont.

A PROFIT+-supported TOT trained 108 government extension agents, and CADs worked with surrounding farmers through cascade trainings within 197 FFS. This activity directly impacted 25,501 new farmers, bringing the total number of beneficiaries to 164,523, of whom 87,798 were women.

The practices and technologies that have generated the most interest in communities are presented in the table below.

Technologies Generating the Most Interest in Communities	
Technology Type	**Practices, Inputs, and Implements**
Use of certified or improved seed	Maize (MRI 624, PAN 53, ZMS 606, SC 513, SC 637), groundnuts (MGV4), soybeans (Lukanga), sunflower (Milika), nursery production for vegetables, HTX14, and caprico
Crop protection products	Glyphosate (broad spectrum, post-emergence herbicide), Shumba (grain protectant)
Crop rotation	Cereals and legumes
Maintenance of crop cover	Residue in the field
Use of blended fertilizers	Blue Urea, Maxi Maize, Maxi Soya[3]

[1] The Groundnut Seed Alliance was an effort by key stakeholders in Eastern Province to increase the availability of OPV high-quality groundnut seed in the markets. ZARI provided basic seed to key processors for multiplication and production of certified seed for smallholders. Processors included Share Africa Zambia, COMACO, and Eastern Province Farmers' Cooperative (EPFC), with PROFIT+ as the anchor and coordinating force.

[2] Aflasafe intervention included the International Institute of Tropical Agriculture (IITA) as provider of the chemical (Aflasafe) and DWAs in Chipata and Katete as users during the 2013/2014 production season, with PROFIT+ as the anchor and coordinator for the activity.

[3] Communities are very interested in Maxi Soya because it has a clear impact on yield. Through its extension efforts, the project will continue to raise awareness about Maxi Soya and the possible impact on gross margins, as per Section 2.2. This will be a BCC focus as well.

Basin making	Conservation farming, but very labor intensive
Ripping	Magoye ripper for conservation

Community members' interest peaked when technologies generated immediate impact, were easy to adopt, and were affordable. While trends suggest that farmers are increasingly interested in more profitable crops, there is also a clear lack of proper input, technology, and practice applications to support this process - mostly due to access, cost, and rain patterns this season in particular.

Importantly, CAD efforts also resulted in increased PSSP interest in their services. This is significant as it is key to sustainability. Our plan is for PROFIT+ to turn over the demonstration plots to PSSPs for management through the CADs, thus ensuring that products and technologies will have an ongoing, readily available market.

The table below shows the breakdown of input companies that have engaged CADs. Their stocks are presented in the table below.

Company Name	Number Male CADs	Number Female CADs	Total	Type of inputs supplied to CADs
ISS Agro	16	10	26	Seed and chemicals
ZAMSEED	35	27	62	Seed, crop protection products, fertilizer
Panner	9	6	15	Seed, herbicides
Monsanto	16	10	26	Seed, crop protection products, fertilizers
SEEDCO	11	11	22	Seed, fertilizer

The most responsive partners this year have been MRI Syngenta, ISS Agro, SeedCo, and Zamseed. These companies commonly carry and offer a wide range of products to CADs, keeping their businesses operational 12 months a year. This is a shift from the utilization of typical agro-dealers (AD) for their sales. ADs frequently manage offers and products from multiple companies, in urban areas, providing limited services to farmers. This approach frequently prevents ADs from building stronger ties and connections to companies that could potentially support them with better credit lines or management. In turn, CADs offer companies deeper market penetration (they are placed in communities frequently) and more control over their supply chains.

More than half of CADs immediately recognized the market opportunity and have moved ahead of project schedule to take advantage of agro-dealing opportunities. To date, 124 CADs have established shops and invested $93,867 of their own money. Initial sales will be captured and reported in Quarter 2 of FY16, after the production season. This effectively means that the rural supply network that PROFIT+ established is functioning sustainably ahead of schedule; and this opens up opportunities for larger investments, and commercial, sustainable scale-up of technologies.

Strong elements observed in the CADs in terms of entrepreneurship, local empowerment, gender, and environmental responsiveness

In terms of entrepreneurship, farmer entrepreneurs who have been selected as CADs are enthusiastic about their new roles and are investing in shops and inputs as a result. Additionally, the project has also observed spontaneous adoption and mimicking behavior from DHFs who were not selected as CADs but who have watched CADs and have then applied the same practices. Some have even constructed shops and continue to run demos in their communities. In Mambwe, district representatives, who are currently not under PROFIT+, requested that the project expand its operations into their area and replicate the approach. This request is a result of Mambwe district representatives having interacted with CADs from the neighboring Chipata district.

In terms of gender empowerment, one-third (65) of the CADs are women who are showcasing continuous leadership efforts in the communities.

CADs are also becoming more empowered to address environmental issues with suppliers related to chemical applications. In one example, CADs who work as franchisees of ISS Agro in Lundazi realized that the company had supplied them with products that were close to expiring. The CADs negotiated with ISS Agro to request a new batch of chemicals with a longer shelf life.

CADs have also served as a good entry point for other input/implement providers. As an example, Zasaka sold 14 groundnut/maize shellers valued at 3,520 ZMW and 105 PICs bags value at ZMW1695 through the CAD network.

As a part of this process, the CADs are also promoting horticulture diversifications. This year, they produced 111,100 tomato seedlings and 7,200 onion seedlings as a part of regular business activities. This in turn benefitted 3,481 farmers, 974 of whom were women. These figures are expected to rise in the years ahead. Drip adoption, also promoted by the project, has seen lower adoption rates in communities with 60 farmers having installed the drip. The major constraint to adoption is the financial capacity to procure these modern irrigation kits. However, community group members purchased 11 diesel pumps, 55 submissive pumps, and 202 treadle pumps. Greater adoption of pumps in communities is due to familiarity and ease of use, as well as the strengthened partnership with Kick Start and the Vision Fund.

Planned: Create supporting farmer structures around CADs (agribusiness groups) to mobilize savings and decrease risk exposure in rural communities for credit provision

Results: Agribusiness groups in rural areas, which are made up of 10-20 smallholders, continue to be a part of the project's pragmatic strategy for facilitating village banking and accessing loans among resource

Tiyavyane, an Agribusiness group based in Daliyo village of Mulela Camp in Petauke District, counts 19 people as members, 18 of whom are women. After one year of saving, the group started issuing loans ranging from ZMW 50 to ZMW 1,500 for a variety of purposes, including buying and selling horticulture products. The close proximity of Mozambique presented a good marketing opportunity as they were able to make an average profit of up to ZMW1, 200 per trip. In turn, members saved more and paid back the loans. Tiyavyane's immediate future plans are to link to ZNFU in order to acquire a diesel-powered oil expeller, which would boost their group's income.

poor smallholder farmers. There were strong indications that loans and shared funds were being used to enhance the livelihoods among the farming community, as evidenced by a significant number of agribusiness group members buying government subsidized inputs. The groups are also strategically positioned near CADs to ensure market uptake for available inputs and technologies. During the year,

the number of agribusiness groups increased from 326 to 515, with membership also increasing from 5,781 to 12,461 members, 9,487 of whom are women. In total, 338 agribusiness groups saved ZMW 281,192 and issued 1,470 loans, valued at ZMW 271,733, to members. To date, 37 groups had paid dividends out of their savings. The highest dividend amount paid out by a single group was ZMW 28,478. As PPPs develop and open up more market opportunities, the project is observing increased community-level investments, which are also supported by conventional financing sources. These investments are either the result of CADs expanding their operations or agribusiness groups investing in trade; credit and savings activities; and borrowing, as reflected in the table below.

MFI	Value of Loans ZMW	# of groups that received a loan	Loan purpose	Impact
Vision Fund	190,800	12 groups, 202 farmers	Acquiring treadle pumps from Kick Start	202 smallholder farmers accessed finance from Vision Fund and acquired treadle pumps from Kick Start; this has improved irrigation efficiency in their gardens
Micro Loan Foundation	28,400	2 groups and 43 farmers	Start various income-generating activities	The individual households that generated profits from their businesses paid back the loans and used part of the money to pay for FISP inputs and acquire some inputs from CADs for the coming planting season
Kick Start	49,000	70 farmers	Treadle pumps	Adopted irrigation technologies
Share Africa Zambia	11,450	46 farmers	Weeding groundnuts fields	Adoption of good agriculture management practices

It is important to note that the payback rate for loans was in the range of 98 percent, which generates even more interest from lenders, namely the Vision Fund and the Micro Loan Foundation.

Planned: Research support and technology promotion

Results: The project is developing rural market networks and partnerships through research and promotion of new technologies. In Year 2, the project, in collaboration with ZARI and IITA, promoted the use of Aflasafe in order to have the product approved by the Zambian Environmental Management Agency (ZEMA). This activity, however, did not yield the results needed to obtain approvals, and trials need to be synchronized with other areas in Zambia outside of Eastern Province. Therefore, the activity will be conducted again in Year 4 in coordination with IITA.

This year, Dr. Alyson Young from the University of Florida ENGENEAS project worked with PROFIT+ to carry out an assessment of Aflasafe's impact as well as the effects of aflatoxin on human health in areas where PROFIT+ conducted the initial pilot. Specifically, Dr. Young assessed how Aflasafe was used to improve the health and nutrition for children under five, expectant mothers, and adults, as well as aflatoxin mitigation measures. Preliminary findings appear to show that Aflasafe has helped reduce aflatoxin contamination in crops, thereby reducing stunting in children under five years old and having a

positive effect on human nutrition and health. This further strengthened the project's decision to re-launch the Aflasafe pilot, which will now, in coordination with ZEMA, be launched in all regions of Zambia in order to collect a comprehensive impact sample.

At the same time, OPV seed production efforts were supported through the work of the Groundnut Seed Alliance, whose members include PROFIT+, ZARI, COMACO, Jungle Beat, Share Zambia, and EPFC. As a result of this activity, close to 38,000 MT of basic seed was produced by ZARI, and 106,777 MT of certified seed by processors to be introduced in project areas for the 2015/16 planting season. The total value of the seed produced was reported at ZMW 2,451,298 (US$345,252).

The project is also leveraging other learning and technology-sharing platform opportunities. In Year 3, PROFIT+ supported partner and CAD participation in several agricultural shows in Lusaka and Eastern Province. In Eastern Province, PROFIT+ earned second prize under the NGO category at an agricultural show, and more than six CADs, three of whom are women, won individual prizes including knapsack sprayers, certified maize seed, and ox-drawn rippers during camp and block shows. The project-promoted technologies that generated the most interest were mandela cork for drying groundnuts and blue urea for maize production. Show-goers were also interested in seedling trays, which is the technology used to raise vegetables before transplanting.

The project also partnered with MAL and participated in the Plant Health Rally, which was sponsored by Plant Wise, a U.K.-funded program. In total, 72 farmers, 31 of whom were women, attended the rally, which focused on the control of pests and fungal diseases in vegetable production, and aflatoxin mitigation in groundnuts. Two CADs used this forum to advertise their respective agro dealer businesses. A horticulture CAD also participated in the Horticulture Learning Lab conference in Lusaka.

C. Analysis of Production Impact

According to preliminary findings from OS, productivity efforts in Year 3 have led to changes in yield per hectare from the baseline, as per the table below. In terms of the primary crop for households (maize) where majority of input investments have been made, and groundnuts, which is relatively frequently intercropped or rotated with maize, performance has been solid: these two crops have outperformed baseline assessments and the 2015 National Crop Forecast, despite the impact of erratic rain patterns and extended dry spells. On the other hand, soy and sunflower are normally planted in December or January, which is the period that experienced dry spells and irregular rain patterns, and yields were negatively impacted. Tomatoes and onions are usually planted after the rainy season, from July to November, and aquafers did not have sufficient water mass to support productivity, impacting the capacity of farmers to invest and maximize their yield. Tomato crops fell from last year but stayed ahead of the baseline year. The onion crop was largely lost. A further, more detailed analysis of these results will be provided within the OS report.

VALUE CHAIN	Baseline yield per hectare (MT)	FY14	FY15	NATIONAL FORECAST FOR DISTRICT FY2015
MAIZE	1.6	3.1	2.4	1.7
GROUNDNUTS	0.6	1.1	.9	.4

TOMATO	8.2	9.7	8.6	--
SOYBEANS	0.8	1.2	0.6	.7
SUNFLOWER	0.6	0.8	0.4	.5
ONION	-	2.6	0.5	--

In addition to OS findings, observational data is collected at the project's demonstration sites to further validate and assess farmer behaviour and establish best practices on adoptions, adaptations, and utilization of technologies through TOTs and FFSs. A summary of these findings from demo plots and key upgrades targeted by PROFIT + for each value chain is provided below.

Maize:

Maize production is primarily constrained by poor agronomic practices and limited access to inputs, including appropriate fertilizers. To increase yields, the project is recommending the use of appropriate input packages based on soil types and leveraging CAD networks to attract companies that can service farmers. Results from project-recommended approaches are presented in Figure 3 below.

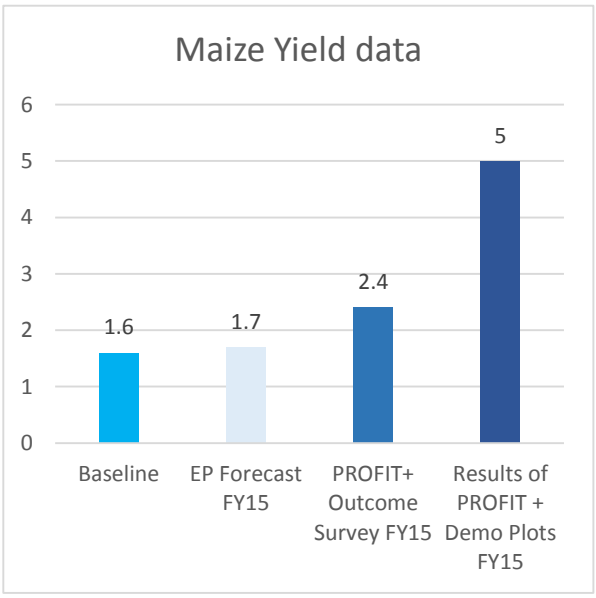
Simultaneously, PROFIT+ is promoting crop rotation and intercropping of maize with other crops, as well as promoting other, more profitable crops to reduce the size of land under maize production while increasing maize productivity. In 2014/15, PROFIT+ demonstrated four maize production variations on its demonstration plots to show the yield advantages of two fertilizers: blue urea (as opposed to white) and maxi maize in place of generic compound D. Yield results from demonstration plots are included in the table below.

Fertilizer protocol	Average Demo Plot Yield in Kgs (extrapolated to Lima/0.25Ha)	Kgs extrapolated to 1 Ha
Basal Fertilizer applied 6.3kg/0.03125ha 'D' comp (N-20, P-40, K-40, S-12) and Top dressing Fertilizer White Urea (N-46) applied 2.4 kg/0.03125 ha in 7 lines	1,141.38	4,565.52
Basal Fertilizer applied 6.3kg/0.03125ha 'D' comp (N-20, P-40, K-40, S-12) and Top dressing Fertilizer Blue Urea (N-46) applied 2.4 kg/0.03125 ha in 7 lines	1,272.26	5,089.02
Basal Fertilizer applied 5kg / 0.03125 ha of Maxi maize Mag (N-10, P-45, K-6, Mg-6, S-11, Bo-1, Zn-1) and Top dressing Fertilizer White Urea (N-46) applied 2.4 kg/0.03125 ha in 7 lines	1,463.54	5,854.16
Basal Fertilizer applied 5kg / 0.03125 ha of Maxi maize Mag (N-10, P-45, K-6, Mg-6, S-11, Bo-1, Zn-1) and Top-dressing Fertilizer Blue urea (N-46) applied 2.4 kg/0.03125 ha in 7 lines	1,776.90	7,107.60

Farmer Business Cases (per Lima/0.25Ha) and Implications for the 2015/16 Season:
For ease of comparison, "baseline practice" below is costs, yields, and revenue estimates if farmers follow the protocol in row 1 in the above table. "Project promoted practice" is costs, yields, and revenue estimates for row 4, utilizing blue urea and maxi maize. Results from the 2014/2015 season reflect a significant and positive yield effect based on the project-promoted strategy of input intensification, relative to cheaper and less intensive production protocols. Farmers who invested the most received the most benefit in terms of production. Based on these results, the project's 2015/2016 strategy will remain unchanged and will promote the same production behaviors listed below:

- Improved fertilizer blends (blue urea and maxi maize)
- Certified Hybrid Seed
- Seed spacing (90 cm by 25-30), 5 cm deep
- Crop rotation
- Intercropping (pigeon peas)

INPUTS	B.1: Baseline Practice	B.2: Project-promoted Practice	Difference
GOODS	**419.08**	**755.66**	**251.30**
Seed	80.00	80.00	-
Fertilizer	302.50	369.80	67.30
Pest/Herbicide	-	50.00	50.00
Packaging	36.58	56.86	20.28
post-harvest		85.29	
Transport		113.72	113.72
TOTAL COST	**419.08**	**755.66**	**251.30**
REVENUE	**C.1 Baseline Rev**	**C.2 Project-promoted revenue**	
Yield	770.00	1,198.74	428.74
Post-harvest loss	0.05	0.05	-
Sellable Yield	731.50	1,137.15	405.65
Price/kg	1.50	1.50	1.50
TOTAL REVENUE	**1,097.25**	**1,705.73**	**608.48**
GROSS MARGIN	**678.18**	**950.07**	**357.18**
%			**38%**



Soybeans:
Baseline soybean productivity was low (i.e. 0.8MT/Ha), which can be attributed to the use of recycled seed due to perceived high cost and low household usage. Soy is perceived as a riskier crop as it is not a consumable product. The potential yield for soy goes up to 4MT/Ha, but in 2015, PROFIT+ farmers were able to produce .6MT/Ha due to an extended dry season. Even in a better rainfall year, the production average is 1.2 MT/Ha, leaving clear room for growth. Thus for 2016, market identification will be a priority for PROFIT+ in order to drive changes in farmer behavior and stimulate investments in general productivity. We will also retain focus on input distribution efforts: soy seed is promoted with maize hybrid as a rotational crop in order to increase sales. This project will couple this with technology demonstration focusing on the use of inoculant; the use of liquid lime instead of dolomitic lime; the use of certified seed (replant 80 percent and purchase 20 percent every year); spacing (45cm X 5cm (matchbox)); and the planting of 20 seeds per meter, no deeper than 3 cm.

In 2014/15, PROFIT+ demonstrated production variations in its demonstration plots to show the yield advantages of Maxi Soya P application and other commercial inputs that are critical for effective soy production. Yield results from the demonstration plots are included in the table below.

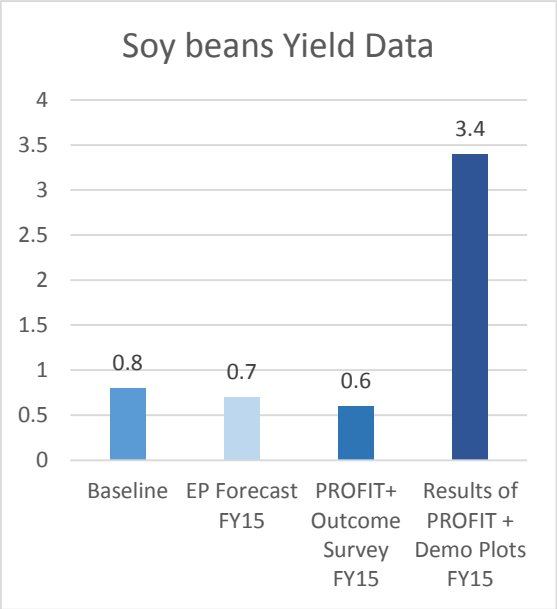
Fertilizer protocol	Average Demo Plot Yield in Kgs (extrapolated to Lima/0.25Ha)	Kgs extrapolated to 1 Ha
Conventional (recycled seed only)	504.00	2,016.00
Commercial (certified seed; Maxi Soya @ 150kg/ha; Bradyrhizobium japonica @ 25g/100kg seed; Dolomitic Lime 400kg/ha; Pantera post-emergence 80ml/ha; Exteme pre-emergence	845.68	3,382.72

Farmer Business Cases (per Lima/0.25Ha) and Implications for the 2015/16 Season:
While the above produced a significant yield response, the project found that after factoring in the costs of inputs the gross margin only partially exceeds that of current or "conventional" production. In light of these results, PROFIT+ will modify its promoted production behaviors for the 2015/16 season for two reasons. First, as best practice, any production behavior that requires an additional investment of scarce smallholder resources, including time and money, should only be promoted if it will significantly increase returns beyond the baseline or "current" practice, given the high opportunity cost for those cash resources. Second, given the increasingly inflationary macroeconomic context, imported input costs are anticipated to increase dramatically this season over last season. Given that farm gate commodity prices are anticipated to be slow to correct, this will almost certainly mean that the input-intensive approach for this season will be less profitable.

As a result, PROFIT+ is eliminating the Maxi Soya P fertilizer, which is the largest single input cost (400zmw/lima last season), from the production protocol and compensating with an increased treatment rate for the inoculant, which, while still imported from South Africa, is significantly cheaper (35zmw/lima last season). In addition, liquid lime will replace dolomitic lime, which is more widely available in project areas. The project promoted the following behaviors this season:

- Inoculant
- Remove maxi soya P
- Liquid lime instead of dolomitic lime (access)
- Certified seed (replant 60%; purchase 40% every year)
- Spacing (45cm X 5cm (matchbox)) 20 seed per meter—no deeper than 3cm

INPUTS	B.1: Baseline Practice	B.2: Project-promoted Practice	Difference
Seed	70.00	107.50	37.50
Fertilizer	-	410.20	410.20
Pest/Herbicide	-	68.00	68.00
Packaging	15.05	25.25	10.20
post-harvest	-	-	
Transport	30.10	50.51	20.41
TOTAL COST	**115.15**	**661.46**	**546.31**
REVENUE	**C.1 Baseline Rev**	**C.2 Project-promoted revenue**	
Yield	301.00	505.06	204.06
Post-harvest loss	0.05	0.05	-
Sellable Yield	285.95	479.81	193.86
Price/kg	3.00	3.00	3.00
TOTAL REVENUE	**857.85**	**1,439.42**	**581.57**
GROSS MARGIN	**742.70**	**777.96**	**35.26**
%			**5%**



Groundnuts:
The average groundnut yield per hectare is low (0.6MT/Ha), which is caused by recycling of OPV seed and poor crop management practices. Firstly, PROFIT+ is facilitating access to markets with quality grain demands, while investing in improvements in quality seed production and availability through the Groundnut Alliance. Processors, including COMACO, Jungle Beat, and Share Zambia are then targeted to leverage CAD-managed ougrower schemes. Access to improved groundnut seed and markets will result in adoption and improved yields; increased incomes for women, who are the majority groundnut growers; and more groundnuts to process by the processors.

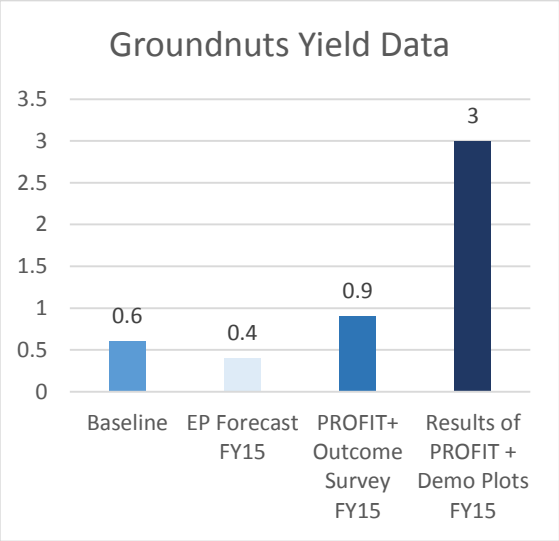
In 2014/15, the production protocol promoted in groundnut demonstration sites was similarly input-intensive and produced significant yield effects, as shown in the table below.

Fertilizer protocol	Average Demo Plot Yield in Kgs (extrapolated to Lima/0.25Ha)	Kgs extrapolated to 1 Ha
Conventional (Recycled seed only)	481.92	1,927.68
Commercial (certified seed; Maxi Soya @ 150kg/ha; Bradyrhizobium japonica @ 25g/100kg seed; Dolomitic Lime 400kg/ha	754.40	3,017.60

Farmer Business Cases (per Lima/0.25Ha) and Implications for the 2015/16 Season:
Similar to soy above, while this protocol produced a significant yield response, we found that the gross margin actually slightly underperforms 'conventional' production. For the same reasons enumerated for soy above, these gross margin numbers do not justify repeating the input-intensive production protocol this season. Instead, PROFIT+ will remove the maxi soya P fertilizer, which will reduce production costs by half (400zmw or US$32), and add liquid lime. Project promoted behaviors:

- Remove maxi soya P
- Liquid Lime replacing dolomitic lime
- Improved varieties: MGV4, White: MGV5, Chishango
- Spacing (45cm X 6-8cm) 3-5cm deep

INPUTS	B.1: Baseline Practice	B.2: Project-promoted Practice	Difference
Seed	170.00	340.00	170.00
Fertilizer	-	410.20	410.20
Pest/Herbicide	-	36.00	36.00
Packaging	9.00	25.00	16.00
post-harvest	-	-	
Transport	15.00	50.00	35.00
TOTAL COST	**194.00**	**861.20**	**667.20**
REVENUE	**C.1 Baseline Reven**	**C.2 Project-promoted revenue**	
Yield	280.50	439.10	158.60
Post-harvest loss	0.05	0.05	-
Sellable Yield	266.48	417.14	150.67
Price/kg	4.00	4.00	4.00
TOTAL REVENUE	**1,065.90**	**1,668.57**	**602.67**
GROSS MARGIN	**871.90**	**807.37**	**(64.53)**
%			**-8%**



Sunflower:

Recycling of seed contributes to low productivity of sunflower, while perceived lack of demand limits the expansion of sunflower production. This is further hampered by the fact that commercial sunflower production on small units of land does not produce attractive profit. The project has thus embarked on building capacities of processors, such as Coolche Coolche and Naniwe, to expand operations in communities and inspire sunflower production by local farmers. Increased private sector participation in the sunflower value chain will improve both the processing capacity as well as the quality of the oil produced.

In 2014/15, the production protocol promoted on demos for sunflower was similarly input-intensive, which showed significant yield effects as outlined below:

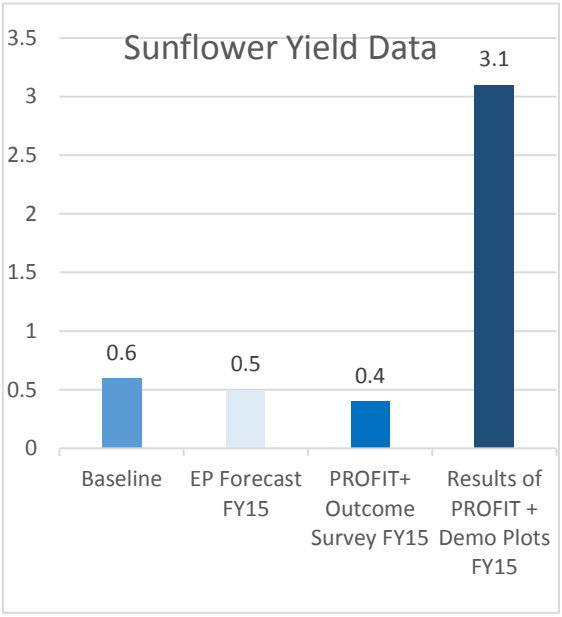
Fertilizer protocol	Average Demo Plot Yield in Kgs (extrapolated to Lima/0.25Ha)	Kgs extrapolated to 1 Ha
Conventional (Recycled seed only)	463.92	1,855.68
Basal Fertilizer applied 5kg / 0.03125 ha of Maxi maize Mag (N-10, P-45, K-6, Mg-6, S-11, Bo-1, Zn-1) and	785.20	3,140.80

Top-dressing Fertilizer Blue urea (N-46) applied 2.4 kg/0.03125 ha in 7 lines		

Farmer Business Cases (per Lima/0.25Ha) and Implications for the 2015/16 Season:
The above produced a significant yield response, but market prices for the commodity could not cover the large difference in input costs resulting in a significantly lower gross margin relative to less input-intensive production strategies. Based on results from the 2014/2015 season, PROFIT+ will not promote commercial fertilizer for sunflowers, focusing instead on certified seed and cost-neutral production practices as outlined below:

- Improved varieties
- 90cm X 20-30cm (2cm deep)
- Harvest timing—when flowers fallen, cut heads

INPUTS	B.1: Baseline Practice	B.2: Project-promoted Practice	Difference
Seed	-	10.00	10.00
Fertilizer	-	369.80	369.80
Pest/Herbicide	-	18.00	18.00
Packaging	18.75	40.00	21.25
post-harvest	-	34.72	
Transport	37.50	42.00	4.50
TOTAL COST	**56.25**	**514.52**	**423.55**
REVENUE	**C.1 Baseline Revenue**	**C.2 Project-promoted revenue**	
Yield	176.00	297.89	121.89
Post-harvest loss	0.05	0.05	-
Sellable Yield	167.20	282.99	115.79
Price/kg	2.00	2.00	2.00
TOTAL REVENUE	**334.40**	**565.98**	**231.58**
GROSS MARGIN	**278.15**	**51.46**	**(191.97)**
%			**-373%**



Onions and Tomatoes:
Onion and tomato crops have been constrained by the erratic input supply, inability to grow the crops all year round, post-harvest management – but mostly by volatile prices, and distorted marketing systems. In Year 3, the project focused on strengthening the CAD network in order to provide training to farmers and to establish linkages to input companies to improve input supply and extension. This should result in expanded horticultural production in project areas, allowing for crop diversification and a gradual shift from field to cash crop production. This is also supported by 60 low cost seedling production and nursery sheds, low cost and labor saving irrigation technologies, and spraying services. Going forward, CADs will be leveraged to create logistical improvements and become a marketing platform where the produce is aggregated and transported to markets offering better prices. Targeted investments in processing facilities will open up additional market opportunities while the project continues to promote controlled horticulture production to off-set climate change issues (small, irrigated plots with cash crops).

Implications for the 2015/16 season: Based on results from the 2014/2015 season, PROFIT+ will focus on improving marketing for horticulture and will move away from demonstration training due to labor and input intensity. FFS will be held around plots already managed by CADs while promoting the following practices and technologies:

- Tomato:
    - HTX14 and tengeru varieties
    - Nursery seedling prep
    - Staggered planting calendar
    - Rainy season targeted - chemical safe use

- Onion:
    - Red creole and capriccio varieties
    - Seedlings (Eastern Province) started in trays
    - Cure on elevated, well-ventilated covered area
    - Chemical safe use

Other practices:
In addition to the six value chain specific target technologies and practices, the project also focuses on (and will reinforce these in Year 4):

- Planting at first rains (take advantage of Nitrogen flash)
- Rotation (legume, maize, sunflower)
- Intercropping (pigeon pea, maize)
- Land prep (ripping)
- Application of glyphosate before planting
- Keeping crop residue in field (soil cover) at end of season

BCC messages via posters and fliers will focus on promoting solutions through CADs and FFS and other public channels with specific focus on climate change awareness raising. Also, the project will conduct a study in Year 4 looking at the coping mechanisms and adaptations that farmers made in project areas as a response to climate change issues.

Adoptive management is the critical component of PROFIT+ strategy. As the project gradually phases out its involvement in TOT, FFS and general extension work, it becomes essential that practical

learnings are embedded in CAD practices and utilized by the companies to develop market profiles to service communities. It also ensures that the project responds to shifting market and farmers demand while delivering appropriate and tailored solutions as needed.

IR2 Expanded Markets and Trade

A. Overall Objective/ Approach

Smallholder farmers in Zambia have faced challenges in commodity markets for a variety of reasons, but mainly because of the inability to create economies of standardized scale to attract buyers offering competitive prices. This in turn is reflected in the lack of knowledge about what the markets demand, which directly impacts incentives to innovate and invest. In most cases, buyers are not known until the marketing time which frequently results in distressed sales. Smallholder farmers also are not in a position of advantage in price negotiations because they tend to negotiate individually for small quantities of product. In addition, issues with high inflation rates put added pressure on farmers to sell their product based on the prevailing prices at local markets while paying prevailing input prices based on international currency exchange rates (most of the inputs are imported).

To off-set these issues, PROFIT+ builds long term relationships between the buyers and communities. Securing predictable contracts before the production season will guarantee a market and increase the ability of farmers and buyers to negotiate mutually beneficial outgrower schemes. Also, careful selection of seed varieties and knowledge of pricing patterns in local wholesale markets is critical. The project measures gross margin impact through OS and tracks trade performance of project partners through quarterly and APR reports.

Key activities under markets and trade efforts for 2015:

- Facilitate direct market linkages for traditional community groups (cooperatives, DWAs) and associated aggregation centers
- Support beneficiaries through targeted TA – Sell More for More (MSFM)[4] signature training, and post-harvest handling (PHH), which includes aflatoxin mitigation techniques
- Seek alternative, innovative models to develop economies of scale in rural communities in order to attract buyers:
    - promote CADs as community managers/agents of buyers
    - develop producer companies (PC) made up of best performing CADs as a way to establish a market driven model for grouping farmers
- Build outgrower schemes based on forward contracts to embed services for farmers in transactions, such as input, finance, and new technologies (ie., Aflasafe, Perdue improved cowpea storage bags (PIC)s , metal silos and other traditional, successful means of handling produce)
- Invest in emerging processors to expand business operations, especially in edible oil production, feed industry, and vegetable processing

[4] SMFM is a signature training tool produced by ACDI/VOCA. It targets capacity building for community groups by focusing on upgrading management, membership, finance, and marketing practices, with business plans as the final product of the training. The project annually reviews business plans and tracks improvements in trade performance and services provided to farmers.

- Support roll out of ZAMACE and inclusion of project partners in ZAMACE system, and as per new direction from the Mission, expand regional trade activities

Planned: Strengthen traditional community group and facilitate stronger market linkages.

Results: As a part of the project strategy, PROFIT+ recognized the need to support traditional marketing structures used by communities. Consequently, the following actions were taken:

- 33 aggregation centers were identified close to project areas, and the performance of these centers closely monitored to determine increases in productivity and market access by project beneficiaries
- 45 major community groups (coops, DFAs, CBOs and DWAs) received training in SMFM, post-harvest handling (PHH) and aflotoxin mitigation in Year 2.
- 39 of of trained community groups were linked to buyers this year utilizing aggregation centers.

As a result of these actions, the trade performance in these locations increased by 43 percent (677MT to 1,184MT of commodity) from Year 2 to Year 3 (see table below):

Value chain	Aggregation centers	Amount aggregated MT	Value of Sales ZMW	Buyers
Maize	14	685	978,222	Cargill, Delicious Milling, FRA, Kenson, Malawian Vendors
Soy Beans	6	34	75,200	Continental grains, NWK, Cargill, SHIFA
Groundnuts	5	45	122,800	Katete Rural Enterprise Development, SAZ, COMMACO, Kudu/Frontiers
Sunflower	8	420	529,000	Musupazi oil processors, CHIPATA- DWA, Coolche-Coolche, Katete Rural Enterprise Development, Naniwe,
Grand total	33	1184	1,705,222	

In addition to the above mentioned outcomes in Year 2, the project trained 17,365 farmers (10,128 of them female) on aflotoxin mitigation. In Year 3, a rapid impact study on the aflatoxin awareness levels, the application of the recommended practices in aflatoxin mitigation, and in post-harvest handling was conducted to assess the effectiveness these trainings. The study examined the ability of farmers to recognize aflatoxin symptoms and the ability to take proper mitigating actions. Furthermore, the project assessed the knowledge of the effects of aflatoxin contamination on human health, livestock, and the economy. The results from the study showed that:

- 94.5 percent of the surveyed population know how aflatoxin can be mitigated at the pre-harvest stage
- 90.5 percent of the surveyed population know how aflatoxin can be mitigated at the post-harvest stage
- 95.5 percent of the surveyed population know the signs and symptoms of aflatoxin

- 93.5 percent of the surveyed population are aware of practices that minimize aflatoxin contamination
- 99 percent of the surveyed population are aware of the effects of aflatoxin in human beings, on the quality of the kernel in groundnuts, and on the economic values of the crop and the seedlings

The results of the study demonstrated that the project was able to raise awareness about aflotoxin through inclusive good agricultural practices (GAP) during harvest, handling, and storage processes. In addition, commercial market linkages for produce such as groundnuts and maize have driven quality demands in the production processes. The project will continue to focus on expanding these linkages in Year 4 and 5 to further embedded the training and knowledge about aflotoxin in sustainable produce/product exchanges.

Planned: Develop alternative community marketing structure and roll out grower schemes.

Results: The project observed early on that traditional community groups have problems responding to market demands. Most of the commercial buyers were relying on individual traders or their own agents in the communities to collect the product (Cargill, NWK, Aliboo, etc). To this end, PROFIT+ 's model of promoting CADs and providing the information, inputs, credits, and the resources needed to support them has been successful in transferring this function to the community. Year 3 was the first season where CADs performed aggregation roles against forward contracts and their performance has already attracted substantial interest from buyers.

Value chain	Number of Entities	Amount aggregated MT	Value of Sales ZMW	Buyers
Maize	74	4,249	7,096,395	Cargill, Delicious Milling, FRA, Kenson, Malawian Vendors , Cool che Cool Che , ETG, Cargill, FRA, NWK, Aliboo, Kenson
Soy Beans	50	329.3	802,077	Continental grains, NWK, Cargill, Kenson
Groundnuts	46	247	817,390	NWK, Cargill, Liboo,ETG, SAZ, Keson, and Naniwe,
Sunflower	71	1966.4	2,436,390	NWK Cargill, Naniwe oil Millers, Coolche Coolche, ETG, Aliboo, F R A
Tomato Fruits	29	382.23	824,637	Lundazi Boarding school and open market like Soweto
Tomato Seedlings	6	111,100 seedlings	42,725	Local smallholder farmers
Onion	11	14.7	20,630	Lundazi Boarding school and open market

Onion Seedlings	3	7,200 seedlings	1,880	Local smallholder farmers
Grand total			12,042,124	

Upon the signing of forward contracts, some of the commodity buyers furnished the CADs with the necessary equipment required to facilitate the aggregation process. For example, Cargill delivered training to CADs in trade systems, and provided receipt books and electronic scales to facilitate trade exchange. Share Zambia extended ZMW 359,250 (approximately US$28,560) to 13 CADs for them to aggregate produce from the communities. These are just few examples of what linkages under proper models can do for farmers.

At the same time, tomato and onion marketing continued to utilize traditional wholesale markets with most of the produce being either directly sold by individual farmers or CADs on behalf of farmers. PEPZ, the UKAID funded program that works on capacity building of suppliers for major retail chains in Zambia, has also invited 5 CADs in peri-urban Lusaka to participate in their program.

Next year, the best performing CADs in several locations will be organized into producer companies (PC) to create the economies of scale required to secure larger contracts and to retain higher profits from exchanges with buyers. PC is an innovative, private sector model to develop the capacity of smallholders to participate in competitive markets. Each CAD will bring a market potential of 200-500 farmers in into the PC. The vision is for a PC to assume some of the trading functions in the communities that are currently performed by small-l and medium-scale traders and agents of the buyers, and to localize access to services and markets while developing local private-sector capacity. Performance of PCs will be compared to that of traditional community groups and cooperatives in Year 5 of the project.

Planned: Support processing sector to create value addition and diversify product offer in Zambian markets.

Results: One of the key opportunity areas for market diversification, value addition, and attraction of investments is promoting oil production, vegetable processing and the animal feed industry. To this end, the project invested US$31,134 through the IIP fund to increase COMACO processing facilities. This resulted in ZMW 5,994,545 (approximately US$476,893) in private sector investment and ZMW 5,626,268 (approximately US$447,594) in sales of peanut butter according to an as yet to be verified report by COMACO. Planned investments with NEZI Investments for stock feed production and the Henwood Foundation for tomato processing were delayed due to obligation shortfalls in Year 3. They will be submitted for approval in the first quarter of Year 4. Share Zambia (groundnuts and peanut butter processor) and Naniwe (sunflower oil processing) had strong marketing seasons in Year 3. In Year 4, the project will invest IIP funds to further build their capacity. Delicious Milling has already invested in a maize milling plant in Chipata and is quickly expanding its operations with PROFIT+. The estimated value of this investment will be determined in the first quarter of Year 4.

Planned: Promote modern trading systems and regional trade.

Results: PROFIT+ maintained an active discussion with SATH and ZAMACE the entire year regarding possibilities of supporting a ZAMACE roll out. Several delays in setting up the internal management systems at ZAMACE hindered PROFIT+'s intervention which was designed to target development of

licensing and training materials, to conduct training of traders, and to implement an IT marketing system. This intervention is now targeted to be rolled-out in Year 4 as ZAMACE was able to finalize all necessary requirements for the system roll out.

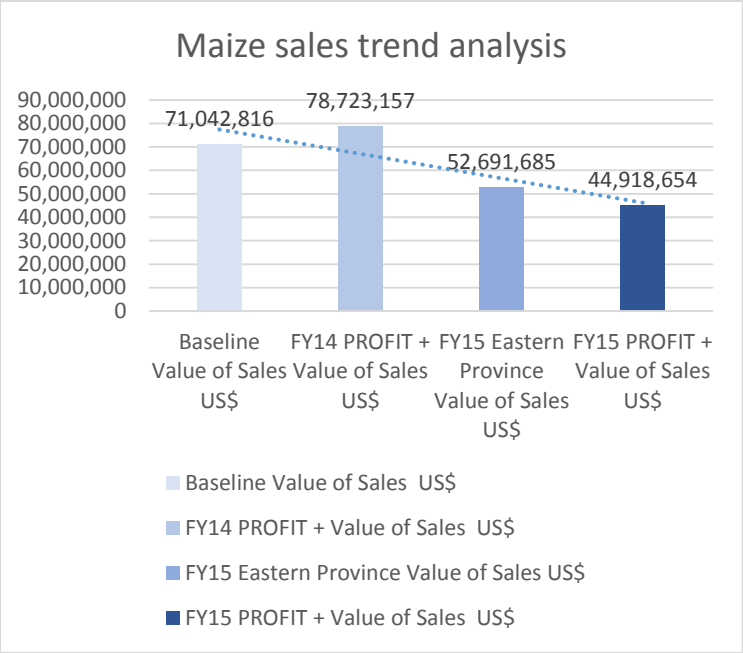
B. Analysis of Marketing Impact

Despite the clear improvement in available market opportunities for smallholder farmers and improved trade performance in project areas, the overall incremental sales came in below the project baseline, at US$71,566,396 (compared to US$87,030,484 at baseline). This is mostly due to the dry spell that effected yields across the country dramatically, which is observed when critical elements of incremental sales indicators are analyzed – baseline yield, for example, was much higher than yield for 2015 season.

As reported by fews.net (http://www.fews.net/southern-africa/zambia/food-security-outlook/april-2015):

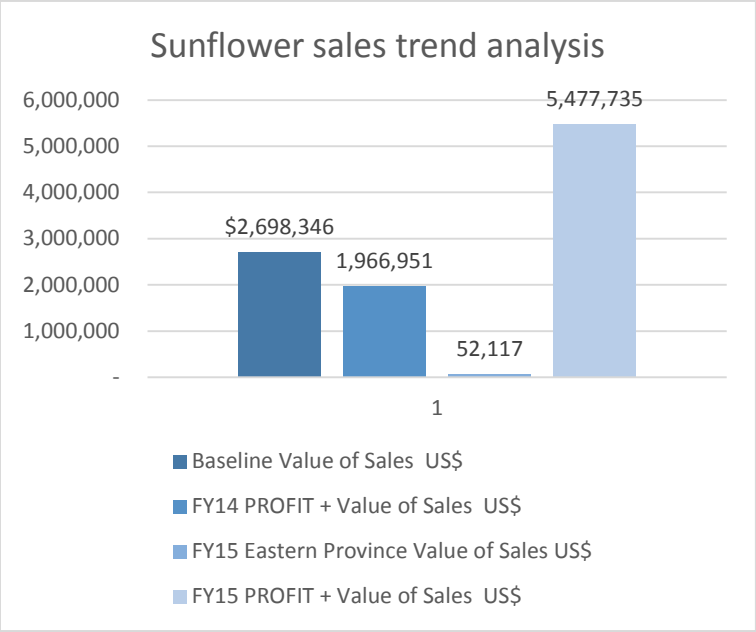
> *"…The late start-of-season and prolonged dry spells between late February and late March will likely reduce crop yields in typically surplus-producing Eastern and Southern Provinces. Despite the positive forecast by the SARCOF and the Zambia Meteorology Department, of normal to above normal rainfall for the 2014/15 rainy season (Oct-April), below average rainfall has been recorded in most parts of southern and eastern Zambia. In addition delayed start of season and prolonged dry spells from end of February to end of March at a critical time of crop growth (flowering and grain filling) has led to crop stress and wilting. Recent increase in rainfall may have helped to eliminate moisture deficits in some areas, but prolonged dry spells have already negatively impacted crops and subsequently below average yields are expected in many areas in the southern half of the country.*
>
> *Most of the crops in these areas is in fair to poor condition* ***with maize crop (severely stress) having failed to recover after resumption of rains at the end of March.*** *Other crops which are typically planted after maize such as* ***groundnuts, soybeans****, rice, and cotton have also been affected and lower output is expected. Very few crops (such as sweet potatoes and late planted beans) have benefited from the rains received in April. In these areas, little green harvests are available as most early-planted plots designated for green harvests produced well below-average crops."*

PROFIT+ under these conditions still performed ahead of the 'average curve'. If the current average figures for Eastern Province are extrapolated to produce incremental sales baseline for this year, it would show the project in its areas outperformed that baseline by 4.5 percent (US$59,102,993 for Eastern Province and US$61,745,090 PROFIT+ without onion and tomato). It's also important to note that the declining incremental sales are mostly driven by underperforming maize value chain.

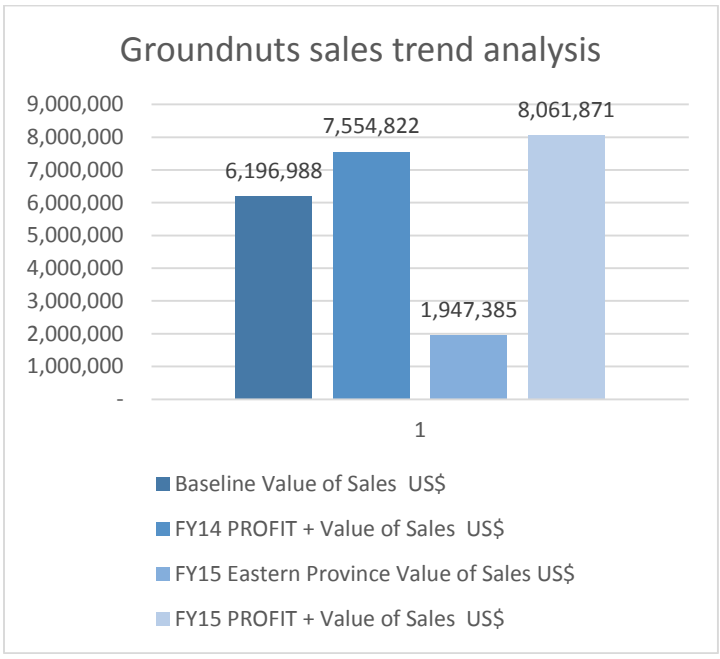


In FY14, the project witnessed a dramatic increase in the maize sales driven by aggressive Food Reserve Agency (FRA) maize procurement efforts. In FY15, the sales suffered a sharp decrease due to the late market entry of the high paying FRA. The private sector market players took advantage of the situation and bought substantial amount of the maize at relatively lower prices early and mid-way through the season. A 50kg of maize was priced at for ZMW50 on average, compared to ZMW75 FRA floor price for FY15. The price offered by the traders and private sector companies was even lower than the price at which FRA secured a 50kg bag of maize in FY14. Coupled with lower prices, the extended dry spell and irregular rain patterns impacted the maize yield by 12 percent compared to FY14 outcome survey. While the land under maize cultivation increased (14 percent) at the additional cost to farmers, the drop in yield shows how significant the impact of weather patterns on productivity was this year.

It is noticeable also that forward contracting for maize facilitated by PROFIT+ this year did not perform well due to the prices offered to farmers. The other crops, however, performed much better than maize because of the very competitive prices offered to the farmers.

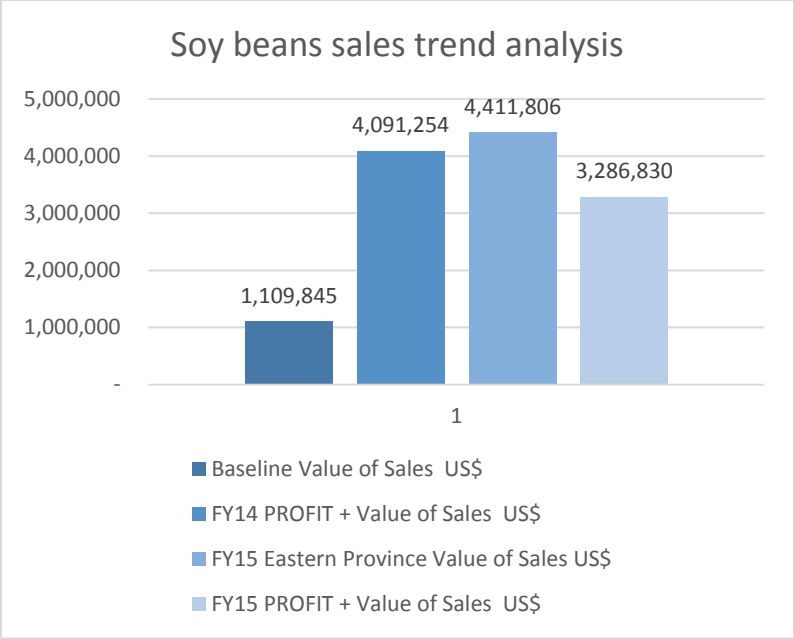


From baseline area under cultivation for sunflower increased by 34 percent yet yield has reduced by 15 percent while the production has increased by 20 percent. The increase in production is mainly attributed to the increase in area under cultivation. Despite sunflower being produced mainly for home consumption, the FY15 survey results show that the sales almost doubled since the baseline survey. This can be attributed to favorable market prices introduced by the project through market linkages/forward contract - the price differential for FY14 and FY15 marketing season stands at 65 percent.



The trend analysis for groundnuts shows a steady increase in the value of sales. The FY15 sales have shown a significant increase 30 percent from the baseline and 7 percent from the previous year's

results. The factors that contribute this increase are the comparable increase in yield per hectare, production and volume of sales.



The value of sales for soy beans is better by more than 100 percent compared to the baseline. However, it is showing a down trend if compared with FY14 results and FY15 sales values for EP. The slight drop in the value of sales can be attributed to late planting and poor rain patterns in some project areas. While area under cultivation, the volume of sales and the value of sales has tripled, the yield has reduced 14 percent compared to the baseline value – again, following the pattern of other crops.

The overall shift in incremental sales and associated indicator elements shows that the gradual shift from overly maize dominate production to more diversification is starting to take place – supporting the critical element of the PROFIT+ strategy. However, the maize production is so dominate in the Eastern Province, and incredibly dependent on government interventions and strategy, that any shift at the public policy level is visibly reflected on performance of PROFIT+.

IR3: Increased Private Sector Investment in Agricultural Related Activities

A. Overall Objective/ Approach:

The exit strategy for PROFIT+ is built on catalyzing private sector investment in upgrades that will sustain value chain competitiveness and create economic opportunities for smallholder farmers. Several factors limit private sector participation in the value chains. These include poor rural infrastructure and limited access to financial services. The most important one, however, is the high cost of doing business and inability of farmers to produce economies of scale that fit service/market delivery molds of many PSSPs. Most of these constraints were already discussed in IR1 and IR2 sections and they are addressed by tailored TA and IIP support. As part of the exit strategy, PROFIT+ will focus on the following:

- Direct TA support and targeted IIP investments will be placed with selected input companies to develop their rural presence (distributor model) to act as a management and organizing force behind networks of CADs
- Direct TA support and targeted IIP investments will be placed with selected buyers to develop outgrower schemes through networks of CADs
- IIP investments will be made in processors to diversify product line, increase processing capacity, and build outgrower schemes
- The IIP fund will provide support to ZAMACE and to the Presidential Trade Africa Initiative to increase demand for Zambian products in the region

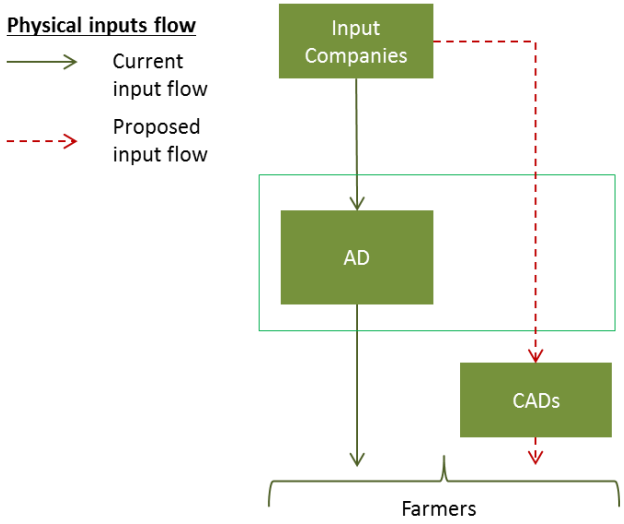
These investments will directly feed support to the CAD and PC model. The goals are to establish direct linkages to input companies and buyers to open up opportunities for marketing inputs locally, to introduce new and innovative products to farmers, to aggregate produce, and to operate as conduit for extension messages – effectively localizing service delivery, building private sector capacity in rural areas, retaining higher profit margins, and improving adoption/adaptation rates in the communities.

Planned: Support development of rural markets to attract PSSPs and profit from PPPs.

Results*:* Every activity of IR1 and IR2 is a driver for building trust and relationships between PSSPs and communities, necessary to stimulate financing and investments in aggregation, trade, mechanization, and eventually pre-financing of farm inputs and outputs. This is achieved by leveraging the CAD model which represents a shift from the typical input company/agro dealer (AD) practice. Currently, ADs dominate input sales to farmers, and smaller traders dominate output collection. Because of the nature of their operations (lack of agricultural knowledge, finance capacity, and operating on very thin margins), and the distance from the farmers, these critical service elements for smallholder farmers are not functioning efficiently or transparently at times.

There are several models that PROFIT+ deploys to address this critical market issue. The network of CADs, and later in year 4 producer companies, are critical ingredients in these models:

- Input company – sales agent/franchisee model: Under this model, a CAD turned sale agent/franchisee enables input companies to reach smallholders through exclusive, incentivized supply channels, and to cost-effectively take over a missing or non-performing function in the value chain -- in this case effective retailing, marketing, and after-sales support for farmers.

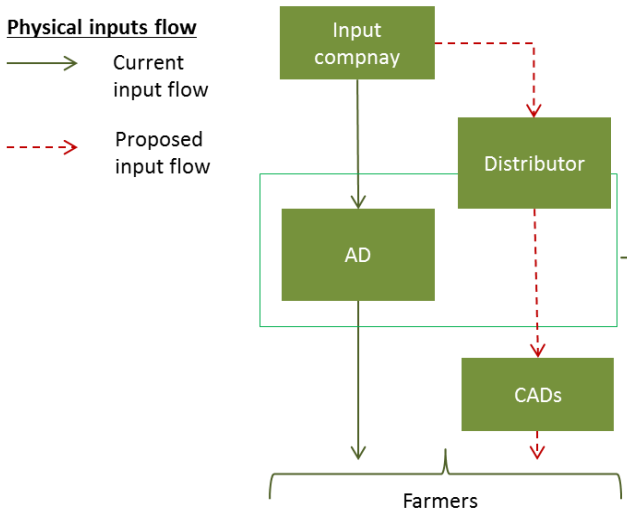


Opportunities – localization of service (extension, input availability, services), job creation, attraction of investments to communities; quality control over distribution systems; basket of products availed to farmers year around. If model is adopted, big input companies have capacity to take it quickly to scale

Obstacles: Initial investments in setting up agents networks could be high; takes time for credit and consignment schemes to develop; bigger companies focused on bigger turnovers, difficulties managing micro-level marketing; inability to add other critical services, such as mechanization and marketing

Partners: MRI Syngenta, Monsanto, Zamseed, SeedCo, HgrowTech

- Distributor – sale agent/franchisee model: This model is similar to the above, but more appropriate to rural settings where specialized distributors are promoted and assisted in establishing their own exclusive, incentivized supply channels, to cost-effectively take over a missing or non-performing function in the value chain – effective retailing, marketing, and after-sales support. They are linked to several input companies, able to place bigger order at discount and put together package of inputs desired by CADs (agents/franchisees). Distributors are flexible and can add other service elements to CADs – facilitate contracts and buy products, invest in mechanization, storage etc.

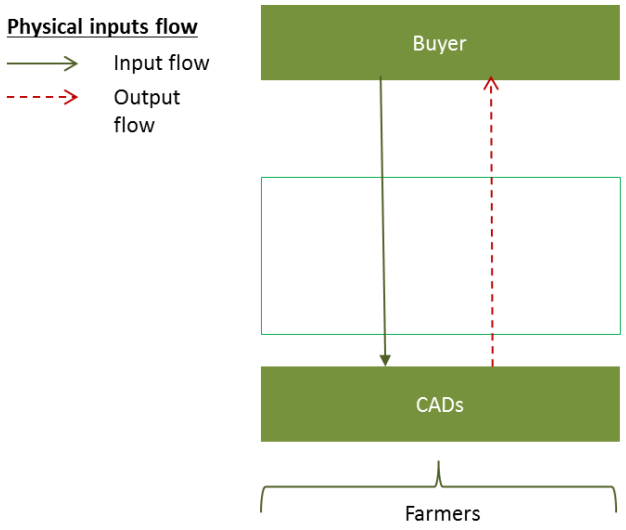


Opportunities – localization of service (extension, input availability, services), job creation, attraction of investments to communities; quality control over distribution systems; basket of products availed from various companies to farmers year around; better adaptive management; distributors are quicker to adjust to rural opportunities and adopt new models; they can also add a new product to their offer of goods quickly to respond to market demand; much more responsive to other market opportunities such as trade and mechanization provision considering the flexibility of business operations.

Obstacles: Cash shortfalls and business capacity are frequently impacting ability of distributors to take adopted models to scale; transparency of business practices questionable at times

Partners: ISS Agro, Greenbelt, CAD producer companies

- Commodity buyer – agent model: A critical element for development of CADs is their ability to serve as marketing agents in the communities to supplement input retail side of business. This includes contract farming arrangements for outgrower schemes that involve a buyer contracting a CAD to manage a community of farmers to directly source agricultural supply from the community. The buyer organizes the supply chain from the top, including collection and processing services, and provides critical inputs, specifications, training, and credit through the CADs. The CADs provide assured volumes of crops of specified quality, on specified dates, at market responsive prices with performance incentives.



Pros – Development of CADs as aggregators allows for buyers to create permanent, trusted relationships with smallholder communities; CADs utilize informal rules and community social structures to develop trusted networks of farmers and to compete with local 'suit-case' buyers; market opportunities become more predictable and guaranteed; access to quality inputs increases; opportunities for product diversification increases; job creation; investments; access to mechanization availed

Obstacles: It takes time to develop relations between buyers and aggregators, and thus introduce in-kind credit schemes; initial aggregation capacity could be insufficient to generate interests from buyers; side selling still potentially a problem

Partners: Large commodity buyers – NWK, Cargill, ETG; local commodity dealers: Delicious Milling, Zdenakie; local processors: Share Zambia, Naniwe, Coolche Coolche, Henwood, Comaco

These models above are designed to specifically feed into investment and job creation objectives of PROFIT+. They have already started to produce results with targeted IIP support delivered by the project to facilitate this process. Some of the results are listed below:

- 124 CADs have already established their own shops, investment valued around ZMW 934,662. They are surrounded and supported by 515 agribusiness groups that have mobilized ZMW 678,995 in savings, and leveraged ZMW219,200 in loans from MFIs and other organizations.
- Input credit for 69 (32 female) CADs with ZNFU for farm input program. Of the 69 CADs, nine CADs (2 females) were linked to the Bunjimi mechanization program, and 5 female CADs signed up for Women Innovation Fund.
- Major input companies invested ZMW 865,095 through training, transport, and trade and or sales in this network by signing stockiest (merchandiser)/agent/franchisee agreements. The trade from these linkages is expected to substantially increase in Year 4.
- Linkages to various buyers led to direct trade amounting to ZMW 12,924,604 this year and will substantially increase in following years as outgrower schemes spread.

- Partners have invested in expanding their operations in Eastern Province. As an example, Delicious Milling constructed a maize mill in Chipata. The project will follow up on the value of this investment in the first quarter of Year 4.
- IP fund leveraged ZMW25,761,258 (US$3,626,766) in investments from various partners.
- The project participated actively in all planning sessions for the roll-out, and expansion of ZAMACEand for the capacity building for ZAMACE trade partners. Although the ZAMACE program was delayed, the project is prepared to support targeted set of activities in Year 4.

The Innovation Investment, and Partnership Fund (IIP Fund)

The Innovation, Investment, and Partnership Fund (IIP Fund) aims to foster public private partnerships as outlined above. It is one of the ways the project leverages private sector investment to supplement the selected agriculture value chains.

Due to funding constraints in Year 3, the IIP fund was not utilized in to its full capacity. A full obligation in Year 4 will present an opportunity to implement rapid investments in expanding private sector development in PROFIT+ intervention areas.

IIP also supported roll out of capacity building efforts in year 1 and 2, such as PHH and aflatoxin training, and initial demonstration efforts at a value of ZMW 3,081,004.

The table below shows IIP fund performance to date:

Purpose	Grantee	Location	Year 3 ZMK	Year 2 ZMK	Year 1 ZMK	Leverage ZMK
CADs franchise partnerships/ISS Agro	20 x CADs	Lundazi	552,960			1,587 *(input sales to be captured)*
Groundnut basic seed provision	ZARI	Chipata	121,500			561,000.00
Groundnut certified seed production	EPFC	Chipata	378,500			326,800 +18,000sales
Groundnut certified seed production	COMACO	Chipata	48,500			54,000 + 450,109 sales
Groundnut certified seed production	SAZ	Chipata	124,250			109,168 +166,400 sales
Groundnut certified seed production	Jungle Beat	Chipata	109,250			Grant leverage +1,080,000 sales of certified + 82,280 sales of basic
Horticulture production and marketing	Mitengo Women Association	Chongwe	198,841			186,352 *(sales of tomato and onion to be captured)*
Sell More for More training and postharvest handling training and roll out	37 Cooperatives, 4 district women development associations, 4 district farmers associations & 3 community associations	Lundazi, Chipata, Katete, Petauke.		2,182,094		17,052,222 *(Following up with the study in Year 4 on leverage and trade performance)*
Expansion of processing capacity	COMACO	Chipata		171,180		5,626,269
Grant Total			1,533,801	2,353,274	0	25,714,187.00

Cross-cutting

Gender Equality

Gender is an essential cross-cutting component of PROFIT+. The project continues to mainstream gender across all IRs as an integral element of every activity and not just a stand-alone component. The project implements specific activities targeted at increasing awareness of gender issues and at women's participation in value chain activities, productive asset ownership, and participation in key decision making. In Year 3, these activities included:

- Evaluating and re-aligning all project interventions with the Women Empowerment in Agricultures Index (WEAI) indicator.
- Ensuring that women are trained and mentored in business and entrepreneurship. As a result, 65 females are now CADs. This has led to substantial investments from women into agribusiness operations, amounting to ZMW 206,174.
- The gender component was integral to the training of CADs and partners on integral on demo protocols and farmer field management and to stakeholders' workshop on the project's new strategic focus. As a result:
    - 36 percent of CADs selected to host the 2014/15 demos were female
    - 32 percent of stakeholders who attended training on demo management and through FFS were female
- Women were encouraged to access products from ZNFU and under the Women Innovation Fund grant initiative. As a result:
    - 56 CADs (30 females) signed up with ZNFU for the Lima credit scheme program
    - 11 CADs (9 females) in Chipata registered for the Bunjimi asset plus program to access farm equipment and two female CADs have registered with ZNFU to get tractor loans
- 68 percent of the membership in agribusiness groups were women (9,487 of 12,261 farmers were female)
- Of the 620 jobs created by project activities, 298 jobs went to females.

There are numerous success stories for women under PROFIT+. A good illustrative example of how gender inequality is impacted through expansion of sustainable opportunities is Diang'amo Violet, a CAD from peri-urban Lusaka. After identifying an opportunity in community management for different buyers/markets through linkages facilitated by PROFIT+, she initiated a tomato out-grower scheme with 40 tomato producers in her areas - all members of the FFS she managed for PROFIT+. She built on this effort with a ZNFU loan for enterprising farmers, valued at ZMW20,000 which she coupled with ZMW20,000 of her own money made as a CAD to purchase a processing machine for tomatoes - providing for a year around market for her outgrowers.

In Year 3, the project also partnered with IREX, a DC-based organization that organizes internships and learning opportunities for emerging leaders across the world. PROFIT+ hosted one of their emerging leaders, Ms. Ruka Yaro De-Liman from Ghana, for two months to provide training on the CAD model so that this knowledge can be transferred to her communities in her home country.

In Year 4, the project plans to work with the Integrating Nutrition and Gender within Agricultural Extension Services (INGENAES) to track performance of gender equality responsiveness between CADs and traditional cooperatives.

Environmental Stewardship

PROFIT+ continues to ensure the implementation of all activities in an environmentally sustainable manner through training, control of input and output sales in the communities, investments in processing, transport and trade, and produce health control.

The report has discussed throughout issues related to climate change, and projects mitigating measures in terms of preserving soil health, crop rotation/intercropping, diversifications and awareness rising regarding extremely damaging practices, such as land clearing and bush fire. The major environmental concerns addressed by these activities relate to adjustments to shifting climate patterns, intensive agriculture production (particularly the use of agro-chemicals), and potential for soil erosion and degradation. In this regard, all farmers selected as CADs and DHFs were required to attend integrated pest management (IPM) and spray service provision (SSP) training by CropLife, and environmental management and mitigation plan (EMMP) training. These trainings serve as an important means for reinforcing environmental awareness messages.

Processing activities also pose environmental and safety risks. There is the potential for spoilage or contamination of products and the surrounding environment, as well as the health and safety concern for workers. Food processing in particular, creates substantial amounts of organic and inorganic wastes. Minimizing waste saves on the cost of supplies and labor needed for waste disposal. In this regard the project ensures that processing plants draw up and implement agreed upon environmental mitigation and monitoring plans (EMMPs).

As a condition of support, grantees must employ adequate environmental management techniques that at a minimum, satisfy Zambian law and the appropriate USAID environmental procedures.

Monitoring and Evaluation System

Measuring Outcome Indicators – Outcome Surveys
In the year under review, the project completed the Year 2 annual outcome survey as an input into adjusting the performance management plan (PMP) and PMP targets. Gross margins analytics provided a clear direction on decisions and activities to be implemented in the new strategy. Specifically, the data from the Year 2 outcome survey provided a platform for review of how the WEAI should be measured. A number of custom indictors and learning questions mirroring the five domains of WEAI were developed and mainstreamed in marketing, productivity, and cross-cutting sectors of the project.

Changes included:

- Jobs indicator

  In Year 3, the project created a number of jobs through the CADs, buyers who employed personnel to help support the aggregation centers, and cooperatives who received SMFM trainings. Going by the Feed the Future definition, the project has created a total of 620 permanent jobs. However, it is worth mentioning that the government considers anyone who earns a wage or an income as being employed or having a job. In this regard, the project created a total of 32,700 jobs for people who earned an income through activities facilitated by the project.

- Regional Export Trade Indicator

  Required as a part of Presidential Trade Initiative funding that the project will receive in FY2016, this indicator was added and a specific target will be set by the end of the second quarter of FY2016.

SharePoint Management Information System (MIS)

In Year 3, the project strengthened the monitoring and evaluation (M&E) system based on lessons learned from Year 2. The primary activity was to ensure that all the data was migrated and uploaded in the electronic SharePoint management information system (MIS). The MIS allows real-time analysis of data for management decision making and reporting. Hands-on training in improved modelling and analysis of data was provided to the M&E unit, including five M&E interns. As a result, the two-year backlog of data for various project interventions has been migrated from paper to an a SharePoint database.

The project has further strengthened the M&E system by decentralizing the SharePoint database and deploying the M&E interns to help with data collection, verification and entry. In addition, the project reviewed data collection tools such as the jobs tracker, private investment tracker, and the sales data collection tracker. Project also incorporated CADs profiles, and organization, community-based groups and private-sector company profiles into the SharePoint database. Furthermore, the project is implementing the forward contract approach and the savings and credit data capturing tools to ensure evidence-based data is available on partnerships and private sector investment.

Data Audit Reviews
The project was audited by the ACDI/VOCA regional specialist and the USAID economic growth team. The teams were led by Mr Damasake Mlotha who is the project AOR and Ms Olive Kaluwa,USAID Private

Sector Development Specialist. Auditable data trails is a good proxy for quality data and this was evident during the audit. The team commended the project for creating systematic and organized documentation for all indicators providing for much improved data management and reporting, including the customization of the database. In their commendation, the audit team noted that PROFIT + was the only USAID project in Zambia that had put together such impressive audit trails. The SPRING project also conducted a review of the M&E process and they were equally impressed with PROFIT+'s good practices on data management.

Management

The project underwent substantial changes in Year 3. In addition to obstacles caused by the lack of funding, major staffing changes were implemented. Mr Sylvester Kalonge was replaced as the COP by Mr. Alex Pavlovic in December of 2015. Also, the project has hired a new finance manager, office managers for Lusaka and Chipata, and two new administrative assistants. The horticulture lead, and finance and private sector lead are also no longer with the project.

Simultaneously with staffing changes, the project created internship opportunities for more than 30 fresh graduates, five of whom have found permanent jobs with renowned organizations upon completing their internships. The internship program was designed to improve efficiency and effectiveness in monitoring field implementation, while ensuring that the interns received proper exposure and training in rural entrepreneurship deemed necessary to change perceptions regarding agriculture related careers. Most of the interns are exhibiting good leadership and are quickly developing skills through interactions with project partners and beneficiaries, namely CADs. As a result, one of the interns (Mwampu Shikapande) has been promoted to the position of the Lundazi senior district coordinator for PROFIT+, and Alfred Moyo has been offered the agribusiness coordinator position in Lusaka. Several other interns are receiving considerations of fulltime employment. The project will continue to implement the internship program in Year 4.

Annexes: PMP, Case Stories