



USAID
FROM THE AMERICAN PEOPLE

CAUSAL MODELS AS A USEFUL PROGRAM MANAGEMENT TOOL: CASE STUDY OF PROFIT ZAMBIA

IMPACT ASSESSMENT PRIMER SERIES
PUBLICATION # 5

PRIVATE SECTOR DEVELOPMENT IMPACT ASSESSMENT INITIATIVE

OCTOBER 2007

This publication was produced for review by the United States Agency for International Development. It was prepared by Gary Woller, of Woller & Associates, and Jeanne Downing, of USAID.

CAUSAL MODELS AS A USEFUL PROGRAM MANAGEMENT TOOL: CASE STUDY OF PROFIT ZAMBIA

IMPACT ASSESSMENT PRIMER SERIES
PUBLICATION # 5

PRIVATE SECTOR DEVELOPMENT IMPACT ASSESSMENT INITIATIVE

DISCLAIMER

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

CONTENTS

- IMPACT ASSESSMENT PRIMER SERIES 1
- IMPACT ASSESSMENT PRIMER SERIES PUBLICATION # 5 1
- PRIVATE SECTOR DEVELOPMENT IMPACT ASSESSMENT INITIATIVE 1
- INTRODUCTION..... 1
- CAUSAL MODEL DESIGN AND USE AT PROFIT 1
- PERFORMANCE MONITORING AT PROFIT 4
- CONCLUDING REMARKS..... 6
- ANNEX 1: MONTHLY FIELD REPORT 8

INTRODUCTION

This paper is a follow-up to the earlier Primer Series paper on causal models.¹ The earlier paper demonstrated the usefulness of causal models in designing and implementing impact assessments of private sector development (PSD) programs and in reassessing and revising program design relative to its intended impacts. The paper drew on the case study of the PROFIT Zambia project to demonstrate what a causal model is, how it works, and what its benefits are.

Another benefit of the causal model alluded to in the previous Primer Series paper is its usefulness in developing a program performance monitoring system. This Primer Series paper takes up this topic and expands on it. Specifically, it demonstrates how integrating the causal model into program design and operations can guide program implementation and increase the likelihood that the program achieves its intended impacts. As in the previous paper, it draws on the PROFIT case study for demonstration.

By way of review, a causal model is a formal representation showing the causal (or logical) links between program activities and expected outputs, outcomes, and impacts. The concept of the causal model is not new. It has been around for as long as PSD programs, although at times under different names—as a matter of practical necessity, all PSD programs are based on some kind of underlying causal logic.²

Even though the concept of the causal model is well known, a surprising number of PSD programs do not articulate a formal causal model capturing all relevant program activities and associated outputs, outcomes, and impacts. Almost certainly, an even larger number of PSD programs do not integrate the causal model into their program management or operations. These omissions stem, to a large degree, from a general lack of knowledge regarding the purpose and benefits of the causal model as a management tool.

The purpose and benefits of the causal model in program design are generally much better understood. However, program design is dynamic rather than static; design flaws, unanticipated events, changing market conditions, external events, and the like often dictate that PSD programs adapt and change during the course of their operations. Program or project managers need management tools to help them monitor and navigate this process. As will be seen in below, the causal model is such a tool.

This contribution to the Impact Assessment Primer Series describes how PROFIT has used the causal model and its related industry pathways as a practical management tool. Although the precise ways in which PROFIT has utilized the causal model are unique to it, the primary point—that causal models are a useful program management tool—applies to all PSD programs. It is expected that different PSD programs will find different uses for the causal model and do so at varying levels of complexity (PROFIT is an example of a fairly high level of complexity). Nonetheless, there is not a single PSD program that cannot benefit in one way or another from a careful and detailed delineation of its underlying causal model and an integration of this model into program management and operations. Along these lines, the paper concludes with some general observations and recommendations for all PSD programs.

CAUSAL MODEL DESIGN AND USE AT PROFIT

The Production, Finance, and Improved Technology (PROFIT) program seeks to increase the long-term competitiveness and growth of industry in Zambia while assuring that a growing number of micro and small

¹ See Gary Woller and Jeanne Downing, (2007), “Developing A Causal Model for Private Sector Development Programs,” Impact Assessment Primer Series Paper #4.

² The “logical framework,” for example, is essentially the causal model by another name.

enterprises (MSEs) contribute to and benefit from the growth process. It uses a value chain approach that seeks to create and strengthen the links between MSEs and other actors at different levels of the value chain.

The application of PROFIT's value chain approach is dependent on its field staff's ability to read and react to market signals, make adjustments in tactics, and relay what they are learning to management. This approach presents a number of interesting management challenges; primary among them are: (1) empowering field staff to make decisions in line with program goals and approach, (2) fostering creativity in intervention design, and (3) structuring management mechanisms that capture and process knowledge quickly to inform PROFIT's dynamic decision making processes.

The causal model is one of the primary tools PROFIT uses to address these management challenges. It has created two types of causal models in each of the five sectors where it works: cotton, beef cattle, retail input services, honey, and high value horticulture. The first type is the industry causal model, which lists program activities followed by outputs, outcomes, and impacts. Figure 1 shows the industry causal model for the beef sector.

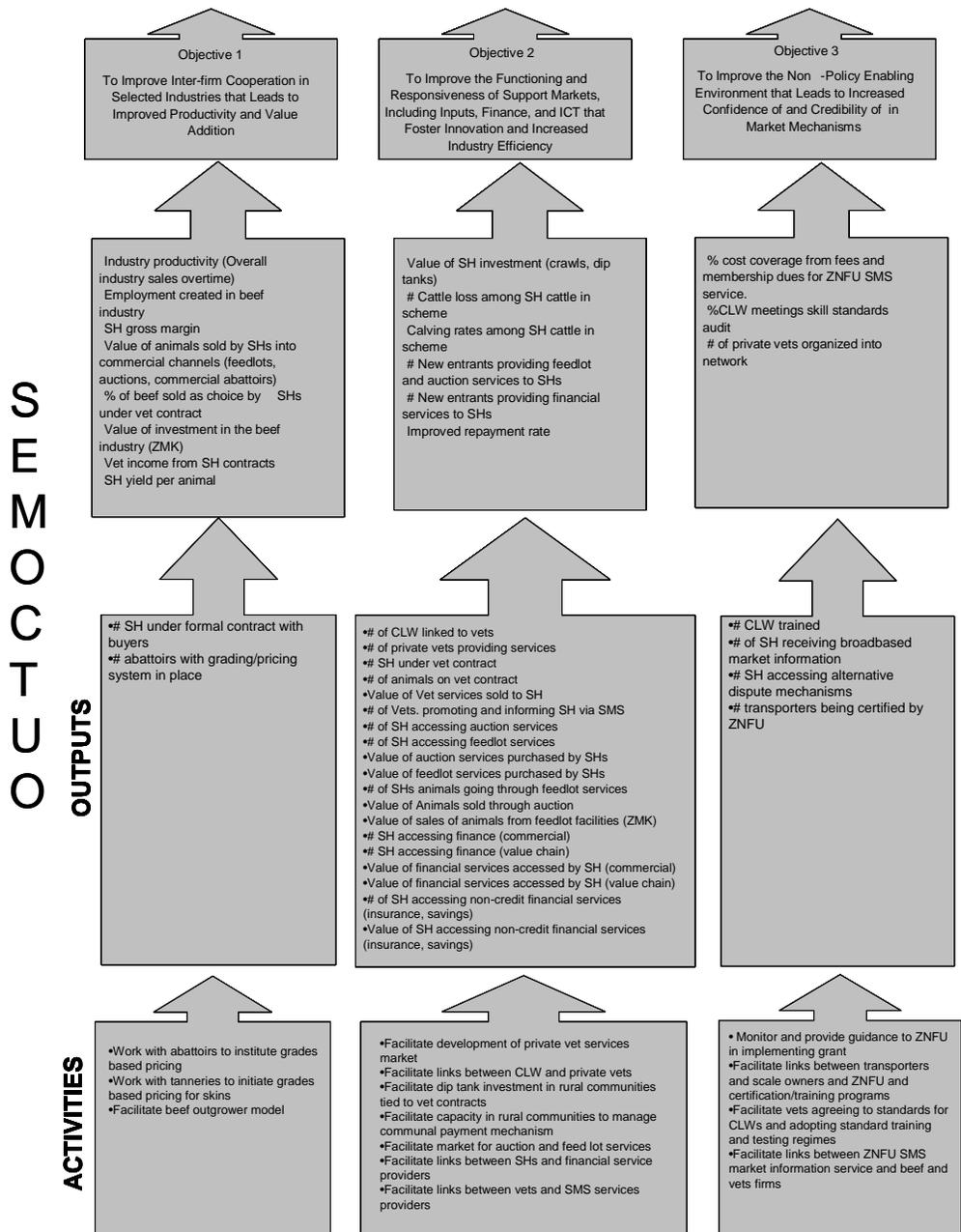
Specific activities defined in this causal model (or in other PROFIT causal models) are not set in stone: activities are merely the instruments that facilitate the industry's movement toward greater competitiveness. Whereas PROFIT rarely changes its desired impacts or the intermediate outcomes to get there, it continually changes its activities in response to how the industry is progressing. This point is central to the development of PROFIT's other type of causal model, the "industry pathway."

The industry pathway—an innovative derivation of the industry causal model - depicts the cause and effect sequencing from activity to end result for each activity that PROFIT undertakes in targeted industries and key support markets. The industry causal model has proven useful in defining PROFIT's vision and monitoring key benchmarks along the path to increased industry competitiveness. It has proven less useful in helping staff understanding the dynamics of PROFIT's approach as applied to specific activities.

PROFIT expects staff activities to change in response to changing sector conditions, the industry's reaction to program activities, and events outside the industry that affect industry performance. Consequently, program managers created the industry pathway to meet this need. The industry pathway matches program activities to the industry causal model so as to show the expected sequencing if the industry is to increase its competitiveness. Industry pathways are not static but are revised regularly in response to feedback from staff and management and industry performance.

The value added of the industry pathway relative to the industry causal model is that it clearly shows the link between industry competitiveness and key support markets. When PROFIT identifies a support market as being critical to an industry's competitiveness, it treats that support market as a separate value chain. Examples of the industry pathways or the beef cattle industry are shown in Figures 2 and 3. Figure 2 shows the industry pathway for beef cattle support services in general, which includes vet services, feedlot services, abattoirs, and auction services. Figure 3 shows the industry pathway for vet services specifically. (PROFIT has also created industry pathways for feedlot services, abattoirs, and auction services.)

PROFIT BEEF CAUSAL MODEL



BEEF Industry Overview Analysis

The beef industry competes based on a combination of efficiency and differentiation. Delivering consistently high quality products that range from low margin high volume raw meat to high-value processed products is critical to the industry's overall competitive position. The industry must form efficient channels for high volume products that maintain a basic level of quality, but it is also important for the industry to develop specialized channels for differentiated products like certain processed meats. In this context, it is critical for firms and the industry to achieve effective and efficient linkages from inputs to production, transport, processing and retail distribution channels for the full range of products that are emerging. At present, the livestock industry is relatively disconnected with weak and ineffective linkages that are plaguing the industry's ability to respond to critical threats such as low productivity, drought, disease outbreak and competition from imports. Further, the disconnectedness in the industry has limited information flows and fostered a general lack of transparency that distorts commercial incentives, limits the adoption of better on-farm practices, and minimizes the demand for critical support products (e.g., veterinary services, financial products and services, and feed services and products).

To interpret Figures 2 and 3, it is helpful to note that the industry pathway is sequential in structure. Moving from left to right implies that the industry is becoming more competitive, as defined by the key benchmark indicators. The narrative at the top of the figure provides a brief problem statement. The pathway itself is divided into three parts. The part with the diagonal text is the demonstration/buying down risk phase.³ The part with the scattered activities is the scale up and exit phase.⁴ Program activities are more likely to change during the demonstration phase based on the initial market response, but they can, and do, change in any phase.

The last part of the industry pathway is a set of benchmark indicators that identify when an industry is becoming more competitive and the time for exit is approaching. PROFIT prefers to exit sooner rather than later, but the exact timing of exit depends on whether and how quickly value chain actors internalize a commitment to promote ongoing firm and industry upgrading. On reaching the exit phase on the pathway, PROFIT assesses its next steps based on responses from communities, lead firms, service providers, and other value chain actors.

Causal modeling at PROFIT has yielded a number of operational benefits.

1. It provides a conceptual foundation underpinning PROFIT's approach, thereby setting a guideline for how the program will be managed.
2. It provides staff a solid vision of an industry's competitive potential, helps staff visualize why certain activities are relevant to program success, and highlights the links between industry competitiveness and key support markets.
3. It provides a conceptual structure for discussing complex issues surrounding industry competitiveness. Program staff regularly uses pathways as a means of determining whether program activities are moving an industry forward and/or are having an unintended effect. The causal models shift the focus of reporting away from outputs based on activities and towards qualitative/quantitative analysis based on whether an industry is moving in the right direction and at an acceptable pace.
4. It reinforces an operating culture that focuses on broader impact and information sharing as opposed to a focus on activity completion and reporting that highlights only successes. Absent a supportive organizational culture, the program risks getting bogged down in activities that produce basic outputs (e.g., number of people trained) but do not systematically build up the capacity of the industry to compete over time, as has been the case with other PSD programs.
5. It provides the foundation for creating an effective performance monitoring system.

The role of causal modeling in PROFIT's performance monitoring system is the topic for the following section.

PERFORMANCE MONITORING AT PROFIT

PROFIT's approach is focused on sustainable industry competitiveness. Producing sustainable results requires behavioral change at multiple levels within an industry, including key supporting markets, and an effective system for keeping track of these behavioral changes. It requires, in other words, the ability to identify and monitor key

³ This phase follows a process from initial engagement with value chain participants (e.g., clients, lead firms, retailers, services providers, and communities) to establishment of new or improved commercial relationships that are mutually beneficial, more formal, longer-term, and supportive of industry level requirements .

⁴ As transactions or contract performance reach a sustainable level, PROFIT either exits completely or moves to the next stage of facilitating a scaling up or expanding process . Monitoring is critical during this phase as the exit decision is not clear cut and requires nuanced information.

benchmark indicators that show whether the program is on the right track and that capture critical learning used to adjust pathways and specific interventions.

A good causal model shows the expected evolution of an industry and the key benchmark indicators along the pathway to get there. If done well, therefore, a direct benefit of the causal modeling process is the identification of key benchmark indicators. This was the case with PROFIT, which used its industry causal models and industry pathways to pinpoint key benchmark indicators related to each of its program activities.

PROFIT took these benchmark indicators and integrated them into the monthly field report completed by all field staff. The monthly field report is the primary data collection tool in PROFIT's performance monitoring system. (Annex 1 provides an example of the monthly field reports for the beef cattle sector.) The monthly field report is supplemented with qualitative information from the field drawn from field staff observations and interactions with market participants. Once a quarter, PROFIT aggregates the figures from the monthly field reports and analyzes them, along with the qualitative information, to obtain project-wide performance trends. In addition to the field reports and qualitative observations, PROFIT's performance monitoring system also includes twice yearly household evaluations and time-series impact assessment being carried out by the Private Sector Development Impact Assessment Initiative.⁵

PROFIT's performance monitoring system provides field staff with both the framework and the practical tools to spot and report trends in the target industry and support markets. Two examples taken from the cotton and beef cattle sectors illustrate this point. In the cotton sector, the primary scheme called for lead firms to offer credit to any interested farmer who were then to repay the credit using the proceeds from cotton sales. The scheme placed substantial risk on the lead firms, while at the same time providing limited incentives for the smallholders to respect the credit repayment process or to create a strong connection between farmers and cotton production. As a result the scheme was susceptible to external shocks, since large investments were required by lead firms, but without a corresponding increase in the assurances of consistent supply.

While PROFIT initially proposed assistance in reforming the structure of this management scheme, cotton companies did not see the potential problem and refused assistance. PROFIT's performance monitoring system identified a serious threat resulting from a substantial shift in the local exchange rate forcing the value of exports down by 30%. As the lead firms realized the magnified affects of the shock due to their management structure, they asked for PROFIT assistance in initiating a restructuring process. The result has been substantial shifts in the use of third party service providers and increased investment in management systems to strengthen the links between smallholder cotton growers and the lead firms. In another example, the monitoring system uncovered demand for spraying services fostered by the lead firm. PROFIT subsequently assisted in the creation of thirty spraying business to meet this demand.

In the beef cattle sector, the monitoring system picked up information that farmers were not honoring vet services contracts during the activity demonstration phase. The initial demonstration emphasized signing contracts for vet services with payment by farmers afterward. The market response, however, indicated a lack of respect for signed contracts; the fact that a farmer signs a contract has little to do with whether he actually pays for services. Early identification of this problem allowed PROFIT to switch its tactics before any significant damage had been done. Vets now require payment before signing a services contract. Meanwhile, PROFIT is working to increase awareness building activities with communities so as to foster a greater commitment to honoring contracts.

⁵ See http://www.microlinks.org/ev_en.php?ID=13088_201&ID2=DO_TOPIC.

PROFIT's capacity to read and react to market signals is grounded in its performance monitoring system. While the system places heavy emphasis on qualitative tools to capture observations quickly and turn them into tactical knowledge, PROFIT also relies heavily on explicit data to assess broader industry wide progress. The combination of tools to capture, analyze and apply explicit and tactic knowledge is critical to the approach. However, the analysis and application of knowledge has to be conducted within a framework defined by PROFIT's causal model and industry pathways. By integrating fully its causal model, pathways, and its performance monitoring system, PROFIT has able to build in flexibility without losing sight of its primary objectives.

CONCLUDING REMARKS

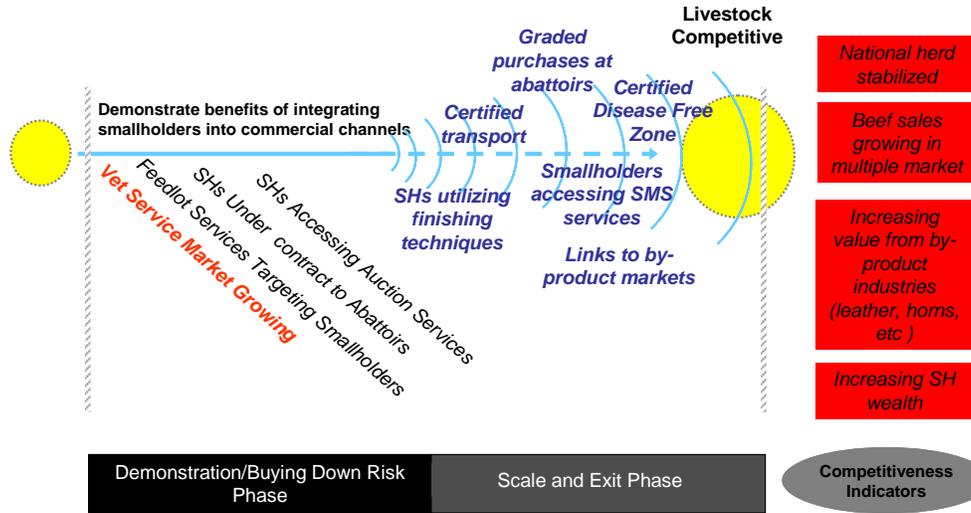
Causal models lay out a set of logical relationships that show how the activities to be undertaken in a PSD program can lead to a desired set of outputs, outcomes, and impacts of different kinds and at different levels. Defining such a logical framework is essential for designing both the PSD program itself and for program impact assessment. It also facilitates the monitoring and management of the program as implementation proceeds. While performance monitoring deals with the middle links of the causal chain by charting the degree to which planned outputs and outcomes are achieved, impact assessment is concerned with the later links in the causal chain – program impacts. Both, however, come from the same causal chain. Performance monitoring and impact assessment complement each other. One is by no means a substitute for the other.

One important issue with causal models, which is particularly pertinent to PSD programs, is that the nature of the causal model may change over time as learning results from implementation experience. Most PSD programs are market-driven and thus to a large extent dependent on the private sector's response, which may always be what was anticipated. The set of activities initially planned under the program may thus need to be modified as the market response suggests that an alternative approach may be more beneficial. Typically, the desired impacts of the program will remain the same, while changes in program activities lead to modifications in expected outputs and outcomes.

PROFIT, for example, hopes to achieve sustainable improvements in the competitiveness of smallholder producers of cotton and beef and raising the incomes of their enterprises and households. The program began with certain analysis-based hypotheses about what program activities were most likely to contribute to these results. Over time, however, it may decide to abandon some of those activities and replace them with others. Performance monitoring based on the original causal model will be an invaluable means of identifying which program activities are succeeding and which are not. As the program evolves, the causal model will be modified to reflect the changes brought about in the activity mix. Performance monitoring will then continue, based on the new causal model.

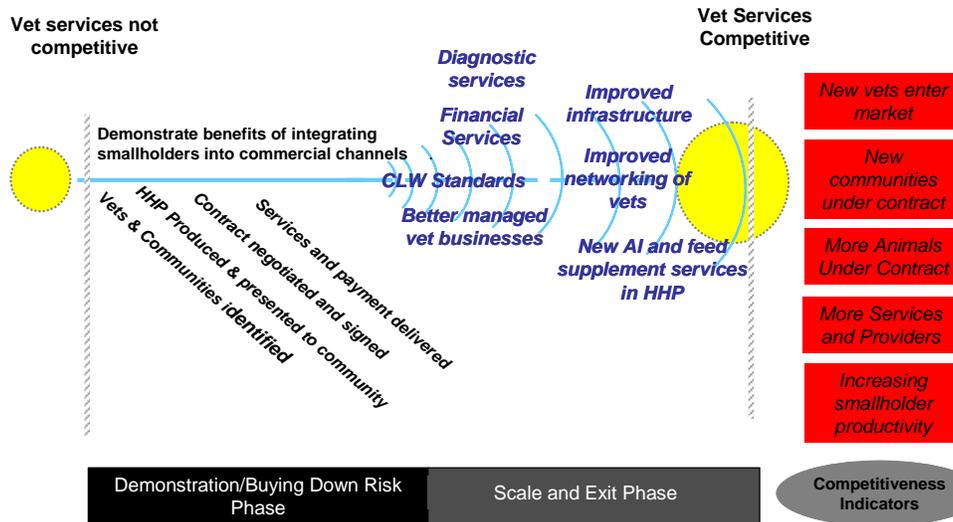
PROFIT Beef Industry Pathway

Smallholders are a critical part of the livestock industry, but do not have access to support services that can upgrade their herd management that would allow them to participate in more commercial and value added channels..... Profit's solution is to foster a range of support services markets on the input and output side of smallholder production....



PROFIT Vet Services Pathway

Small holder need services to improve the health and value of their cattle..... Profit's solution is to foster private sector vet servicesand based on this demonstration take follow up actions for sustainability and exit.



ANNEX I: MONTHLY FIELD REPORT

PROFIT Field Report		
Region:		
Manager:		
Month:		
Year:		
Beef and Vets		
Indicators		Value
Value of vet sales to SHs	HHP Contract	ZMK -
	Drugs and services	ZMK -
# of in community promotional events conducted		
# of SHs attending in community promotional events		
# of agreements between vets and SHs		
# of animals under vet contract		
# SHs under vet contract		
# of agreements between CLWs and vets		
# CLWs trained		
# SHs with agreement to sell beef		
Value of SH beef sold via agreements		ZMK -
# SHs using improved technology	Feedlot	
	Auction	
	Other	
# of animals using services	Feedlot	
	Auction	
	Other	
Value of sales to SH from service providers	Feedlot	ZMK -
	Auction	ZMK -
	Other	ZMK -
Value of SH infrastructure (crawls, dip tanks, etc.) investments		ZMK -
# of CLWs tested		
Value of vet contracts with trained CLWs		ZMK -
# of private vets organized into network		
# vets promoting and informing SH via ICT		
# of transport providers trained		
# New entrants selling services to SHs	Vets	
	Feedlot	
	Auction	
	Other	
# abattoirs with grading/pricing system in place		
Ag Inputs and Crops		
Indicators		Value
Value of input sales to SHs	Agent	ZMK -
	Buying Club	ZMK -
	Store	ZMK -
# new bulk buying mechanism in place	Agent	
	Buying Club	
# of in community promotional events conducted		
# of SHs attending in community promotional events		
# agents/retail managers/buyers club reps trained		
# agreements signed between retailers and agents		
# agreements signed between retailers and communities		
# of internal retail training events delivered without PROFIT assistance		
# new retail outlets (franchise, co-owned, wholly owned)		
Value of improved production technology services sold to SHs		ZMK -
# SH buying improved technology services (tillage, spraying, weeding, IPM, etc.)		
# of agreements signed between retailers and service providers		
# service providers trained		
# SH trained in improved farming practices	In community event	
	Demos	
	Other	
# of demo plots (tillage, IPM, herbicides, spraying, etc.)		
Hectares under improved technology		
# of SHs accessing market and production information via ITC	Retailers	
	Lead firm	

U.S. Agency for International Development

1300 Pennsylvania Avenue, NW

Washington, DC 20523

Tel: (202) 712-0000

Fax: (202) 216-3524

www.usaid.gov