USAID FROM THE AMERICAN PEOPLE

PATHWAYS OUT OF POVERTY
CASE STUDY

PROFIT: Creating Access to Agricultural Inputs through an Agent Network Model[1]

INTRODUCTION

Zambia is one of the poorest countries in the world. Eighty-one percent of its people live on less than $2 a day (at purchasing power parity) and nearly two-thirds live in severe poverty, earning less than $1.25 a day, according to the World Bank. At least 75 percent of Zambians make their living from farming. But they do not make a very good living, using only rudimentary farming practices and lacking access to high-quality seeds, herbicides and fertilizer. Efforts to alleviate rural poverty in Zambia are thwarted by a combination of vast distances, a sparse population and poor roads. Most 'roads' in Zambia are little more than dirt tracks, impassable in the rainy season, leading to tiny villages of impoverished smallholder farmers.

Zambia has a thriving agricultural inputs industry, but input companies focus exclusively on large commercial farmers and, understandably, do not bother with smallholders, whom they perceive to be too hard to reach, too poor to pay, and uninterested in buying inputs in the first place. So smallholders are caught in a classic poverty trap—their isolation prevents them from having access to productivity-increasing information and inputs that would ease their poverty, but their poverty means commercial markets have little incentive to build distribution channels that would increase access.

USAID's PROFIT (Production, Finance and Improved Technologies) project pioneered a way to help farmers in remote areas break out of this poverty trap through an *agent network model*. As this case study will explain, there are three reasons why this model can serve as a template for opening a pathway out of poverty for large numbers of very poor people:

1. The agent network model leverages the energy and incentives of the private sector, with very little subsidy, and continues to grow and develop organically, even now that PROFIT has come to an end.
2. The model is already having substantial positive impact on the lives of many poor people in rural Zambia.
3. The model can be scaled up quickly, with certain limits, and can be replicated in countries where geographic isolation and high transport costs are binding constraints to poverty alleviation among small farmers.

One of the most important aspects of this case study from a poverty perspective is that PROFIT was not a poverty-focused project. Its mandate was to improve overall agricultural productivity, particularly among smallholder farmers, rather than to reduce poverty *per se*. The agent network model improved the lives of poor people not by targeting them exclusively, but rather by changing the surrounding market systems in a way that allows poor farmers to engage with markets on more beneficial terms, both as producers and as consumers.

DEVELOPING THE MODEL

USAID's $22.4 million PROFIT project was launched in 2005 under a cooperative agreement with the Cooperative League of the USA (CLUSA), in partnership with Cardno (then known as Emerging Markets Group) and International Development Enterprises. CLUSA had been working in Zambia for about seven years when the project began and had built good working relationships with farming communities around the country through its field offices—an advantage which helped get the agent network model off to a quick and a strong start. Soon after project launch, the PROFIT team realized that smallholders typically achieved very low yields compared to larger commercial farmers, regardless of whether they were growing cotton, maize or other crops. Also, smallholders' crops were particularly vulnerable to drought and disease, further

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depressing average yields along with rural households' incomes and food security. The problem of low and unstable yields was largely due to the fact that smallholders had only very limited access to key agriculture inputs and the knowledge of how to use them properly. Many smallholders live far from towns with input supply shops and were forced to rely on 'briefcase traders'—itinerant, untrained and often unscrupulous individuals who move from village to village, selling inputs without providing instruction on their safe and effective use, and sometimes offering expired, adulterated or counterfeit products. It became clear to the PROFIT team that building a better channel to get good quality inputs and information to poor smallholders in remote areas could seriously improve productivity and resiliency. The team devised four options for selling inputs in poor and remote villages. It then approached the manager of a major input supplier, CropServe, whom the team knew through personal networks. Together, PROFIT and CropServe evaluated each option in terms of feasibility, risk and cost. Their conclusions are shown in the table below.

Model and Description	Advantages and Disadvantages
Community-Based Buying Clubs: Remote villages, with help from PROFIT, would organize bulk orders from input suppliers and collect payments	• Requires least investment from input suppliers and little subsidy from PROFIT... • ...but does not offer a mechanism for providing knowledge on safe and effective use of inputs or a way for suppliers to stimulate demand.
Wholly-Owned Retail Space: Input supplier would purchase or build shops in 'hub' villages, provide inventory and hire managers to sell inputs	• Requires most investment from input suppliers and/or considerable subsidy from PROFIT… • ...and requires supplier to transport inventory without knowing if it will be sold, creating considerable financial risk—as well as additional carrying costs—for supplier.
Shared Retail Space: Input supplier would sell through existing village kiosks or team with other retailers to open new shops in hub villages	• Requires less investment from, and creates less risk for supplier than wholly-owned space… • ...but still calls for advance placement of inventory and also introduces new risks and management complexity by including third-party partners with different interests and incentives.
Agent Network: Villages, with help from PROFIT, would select agents who would then be trained by input suppliers and PROFIT to sell inputs in designated areas for a commission on goods sold.	• Requires modest up-front investment from supplier to train agents, conduct initial demonstration meetings ('field days') in villages, and upgrade internal systems to manage agent network… • ...but provides mechanism for disseminating knowledge on safe and effective use of inputs as well as a means of stimulating demand by offering financial incentives (i.e., commissions) to agents.

CropServe and PROFIT agreed that the agent network model seemed to be the best approach. It is interesting to note that CropServe was not entirely convinced at this point that the model could deliver meaningful numbers of new sales, but the risks were low and the company saw an opportunity to demonstrate corporate social responsibility by working with PROFIT to reach out to poor farmers. CropServe agreed to participate in a pilot program with the following arrangements:

- PROFIT would select a few communities in which to test the idea. It chose communities which seemed commercially-oriented enough to appreciate the value of inputs, but remote enough to see an agent as a valuable alternative to a long journey into the nearest town to purchase inputs.
- PROFIT field staff and CropServe regional managers would visit the selected communities together to demonstrate the use and value of their products and ask farmers to nominate someone to serve as agent—ideally, someone trusted by the community, with enough motivation and basic business acumen to do the job successfully.
- Agents would be brought together for a short training course. CropServe would train them on the use of its products, as well as their potential benefits, such as increased yields and reduced vulnerability to drought and disease, while PROFIT would provide training on relevant business skills, such as marketing, cash handling, and record keeping.
- PROFIT would provide CropServe with a modest amount of technical assistance to help build the internal management systems needed to run an agent network—tasks such as determining transport costs and minimal order sizes required for free delivery, keeping track of orders by agent, product and location, and recording commissions paid.
- Agents would be given the exclusive right to represent CropServe in their designated area[2] and would be paid a 10 percent commission on any inputs they sold. CropServe (and subsequently, other input suppliers working with PROFIT) pledged to charge smallholders the same prices they charged in their shops. In other words, the agents' commissions would not be passed on to customers in the form of higher prices. CropServe, in effect, would sell its products at a 10

[2] Originally, agents were assigned an area with a radius of about 10 km—small enough to be covered by an agent traveling on foot or by bicycle. Over time, the size became more variable as areas were tailored to the desires and capabilities of individual agents. Some companies purchased motorbikes for high-performing agents, while some agents expanded their territory by engaging their own 'sub-agents'. The size of agents' territories now varies widely by region, company and individual agent.

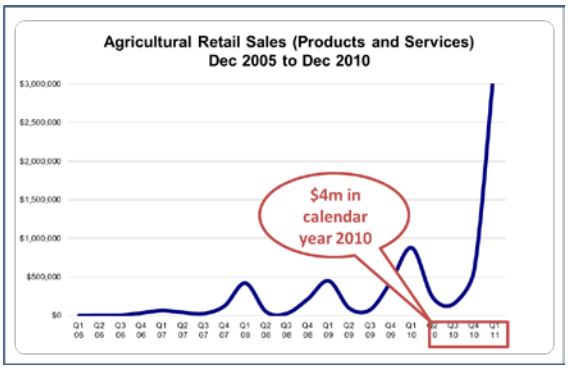
percent discount in exchange for access to an entirely new market, as yet untapped by any competitors.

- Importantly, CropServe would not offer agents or their client farmers any form of credit. Agents would collect cash in advance from their customers and hand the money over to CropServe upon taking possession of the inputs. If an agent sold more than a certain threshold volume of pre-paid orders, CropServe would deliver the goods to the agent's location free of charge. Otherwise, the agent would have to collect the product from CropServe's nearest distribution point and would bear the cost of transport. Threshold volumes differed based on distances and travel times.
- Finally, CropServe agreed to share data with PROFIT so the project could assess the progress of the pilot program.

BRINGING THE MODEL TO SCALE

Initial results were promising. By the end of the first full year of the program (2006) four more companies—not wanting to cede a potentially lucrative new market to a competitor—had agreed to work with PROFIT under essentially the same terms as CropServe. Together, they engaged 17 agents and trained 2,500 farmers on the proper use of hybrid seeds, herbicides and other inputs through on-site 'field days.' Smallholder farmers purchased nearly $25,000 worth of inputs that year.

Despite its early success, the agent network model faced several challenges. One unexpected problem was a supply constraint. Smallholder demand for certain products was so high that the input companies were unable to fill all of their orders, and in some cases money had to be returned to the farmers. New companies entering the program repeated the mistakes of their predecessors (despite PROFIT's warnings), so overall supply only caught up to demand in PROFIT's final full year (2010). Another persistent challenge was a high rate of attrition among newly-selected agents. Many individuals who had been selected by their communities because they were trusted and well-regarded turned out not to have the aptitude or the inclination to become active, independent business persons. Some left the program voluntarily while others were rejected by the input companies because they were not able to 'pass' the training or generate enough business. A third challenge was the failure of the model to take root in Zambia's most far-flung and least developed regions, particularly in Western and Northwestern provinces and in the far north (Luapula Province and parts of Northern Province), all of which have very unsophisticated agricultural economies, highly dispersed populations and little commercial activity.



The supply challenge has been addressed. Once input companies started factoring smallholders into their forecasts and import orders, pent-up demand was unleashed and sales skyrocketed, as seen in the adjacent chart. The agent attrition rate remains high for new communities coming into the program, but that might be inevitable. A certain number of false starts are to be expected in any free market system, and often a community's second or even third choice of agent turns out to be much more motivated and capable than their first choice proved to be. Expansion into the remotest provinces remains a challenge, and Musika, the non-profit organization founded by former PROFIT staff, is now turning its energy and attention to addressing that challenge. In Western Province livestock, rather than maize, might prove to be a better entry point for working with the poor, since the local culture there revolves around cattle and since the province's sandy and flood-prone soils make it difficult to grow field crops. In the far north, farmers are extremely resistant to change—perhaps because of their extreme vulnerability and isolation from commercial markets. In the absence of any significant activity among input companies in that area, Musika expects to adopt a more hands-on, intensive approach there.

Despite these challenges, the agent network has experienced phenomenal growth. Now, at the end of 2011, 15 firms representing nearly all of Zambia's agricultural inputs industry work through rural agents. The network has grown to include more than 2,500 agents, some 300 of whom are women. It counts 180,000 smallholder farmers as its customers and accounted for $4 million in total sales in 2010. The agent network is active in all major regions of Zambia except in Western and Luapula provinces. Moreover, the network continues to grow organically, without any further assistance from PROFIT. Many agents have created their own mini-networks of sub-agents, with whom they share commissions, in order to expand their geographic reach and incomes. One female agent in Kabwe district claims to have recruited 50 sub-agents. A large number of agents leverage their customer relationships to provide other services, such as spraying and tillage, while at least a few have started representing multiple, but non-competing, companies (such as a seed supplier and a chemicals

supplier). A large national input company, SeedCo, recently adopted the agent network entirely on its own, without any formal prompting or assistance from PROFIT (or Musika). Finally, several companies have begun offering discounts for early purchase of inputs and, in at least one case, a cell-phone based payment mechanism.

IMPROVING THE LIVES OF THE POOR

Since PROFIT was not designed as a poverty-focused program, it did not systematically collect information on the poverty levels of its beneficiaries. Nevertheless, it is clear that the agent network model is opening a pathway out of poverty for a large number of poor people, for three reasons: 1) farmers who purchase inputs through the agent network tend to be poor, although not the 'poorest of the poor'; 2) inputs purchased have a significant positive impact on their productivity and resiliency; and 3) it is likely that the agent network benefits the 'poor' and 'very poor' disproportionately.[3]

First, it is virtually certain that the vast majority of the 180,000 farmers buying inputs through the agent network—as well as the 2,500 agents themselves—are, in fact, poor. According to the USAID-funded Food Security Research Project (FSRP), poverty rates in rural areas are even higher than the national average, and higher still in more remote communities. The rural non-poor, with the exception of large commercial farmers, are more likely to live close to towns and are therefore *less* likely to purchase inputs through an agent. Therefore, the overwhelming probability is that most beneficiaries of the agent network model are poor and that a large number of them live in severe poverty. This is supported by the fact that the annual average purchase for an individual customer in 2010 was worth about $22—an amount which would be within the reach of even very poor farmers. Further, a baseline survey, conducted for PROFIT in 2007, found that more than 80 percent of farmers in both its treatment and control groups lived in homes made of mud or cow dung, with thatched roofs and pit latrines, without electricity or running water. This is consistent with the living conditions that PROFIT observed among both agents and their customers and suggests that both groups are quite poor.

Moreover, the exclusion of Western and Luapula provinces from the agent network's reach does not mean that the network did not extend to large numbers of poor people. In a report published in July 2011, FSRP found that the percentage of people who are 'consistently poor' (the lowest income category in the study) is not especially higher in those provinces than in others. The report observed that "a large share of the poorest smallholder households in Zambia are the neighbors of well-off smallholder households." That finding suggests that the agent network model, if it has not done so already, has *more* potential to reach the 'very poor' than a more geographically-targeted or poverty-focused approach would have. The poorest farmers might not be the first to experiment with herbicides or hybrid seeds, but they have ample opportunity to observe—and eventually emulate—the improvements that those inputs bring about for their better-off neighbors. That would *not* be the case if PROFIT had chosen to focus exclusively on the very poor or work only in the remotest provinces.

Not only did the agent network reach a large number of poor people, it helped many of them realize substantial gains in productivity, income and resiliency. Farmers interviewed for this study reported that the hybrid seeds they bought through agents delivered yields of 100-120 bags of maize per hectare, versus the 60 bags they were producing with the subsidized seeds provided (sporadically) by the government or the 20 bags that recycled local (i.e., free) seeds could produce. An impact assessment conducted in 2010 found that farmers who purchased hybrid seeds and other inputs increased their maize sales by 185 percent over 3 years, on average, versus 67 percent for farmers who did not purchase inputs. That difference equates to about $190 for an average farmer—a considerable income increase for people living on $2 a day. The impact assessment data also suggest that the agent network model improved food security for the very poor. Cash consumption expenditures rose slightly more for farmers who bought inputs than for those who did not (103 percent versus 89 percent). But farmers who bought inputs actually spent *less* on food purchases than farmers who did not buy inputs, even though they had more money to spend. That could indicate that 'very poor' farmers consumed some of the extra maize they grew.

In addition to improved incomes and food security, the agent network also improved smallholders' resiliency: The hybrid maize seeds sold through the network are known to be more resistant to drought and disease that either the seed types typically distributed by the government or the local, recycled seeds that the poorest farmers tend to use. Moreover, the agent network benefits poor farmers in two other ways that have so far not been quantified. First, the use of appropriate herbicides not only increases yields, it also reduces the amount of time a family must spend weeding, which frees up time for

[3] See USAID microReport #173, page 7, for a definition of these terms.

education or off-farm employment. Second, and perhaps more importantly, the agent network delivers valuable knowledge into remote communities. In addition to providing instruction on the safe and effective use of inputs, agents share information on conservation farming techniques and other productivity- and resiliency-enhancing practices. While the impact of that knowledge-sharing is difficult to measure, it certainly took place. In 2007, only 18 percent of farmers were receiving information on agricultural products and services, according to the baseline survey. By 2010, nearly 90 percent were receiving that information. Perhaps as a result, the portion of farmers who cited 'quality' as a key factor in deciding whether to buy inputs, and which inputs to buy, rose from 25 percent to 75 percent among project participants.

SUCCESS FACTORS AND LESSONS LEARNED

PROFIT's agent network model delivers substantial benefits for a large number of poor people—at present, about 20 percent of all smallholders and emerging commercial farmers in the country. By no means are the benefits restricted to the 'less poor' nor does the model exclude the 'very poor'. The model works because it harnesses the power of markets, deploying only very modest (and temporary) subsidies. Because the approach relies on market actors, however, it does not work perfectly and it proceeds by trial-and-error (see Box 1). The model is scalable, as its exponential and organic growth over the last few years has demonstrated. The model is also replicable if there is at least a rudimentary input industry in place to begin with, and if high transport costs and a lack of awareness are the primary constraints to smallholders' access to inputs. The model has been transferred to veterinary services in Zambia, where PROFIT helped establish a network of community livestock workers, some of whom are also input agents. The agent network model might also be useful for expanding rural access to private healthcare, for example, or possibly even education.

Admittedly, PROFIT's agent network model does not reach the very poorest people in rural Zambia—those with no land or so little land that they will never be able to feed themselves by farming it. But PROFIT was not designed to specifically reach that segment. Furthermore, focusing agricultural value chain development projects exclusively on the 'poorest of the poor' in a country where all but a small minority of rural households face grinding poverty every day seems unnecessary at best, and at worst, ethically questionable. Targeting the poorest households for such programs might also be counter-productive. It risks stigmatizing beneficiaries, alienating 'less poor' members of the community and weakening or distorting market signals. Also, targeting the poorest regions is not particularly useful in a country like Zambia, where poverty is so widespread and the very poor are as likely to be found in one region or village as in any other. Certainly, the agent network model developed by PROFIT would not have worked had it been forced to focus on particular regions or work only (or even predominantly) with the very poor.

What PROFIT's agent network model demonstrates most clearly is that a well-implemented, systems-oriented market facilitation project which does *not* specifically focus on the poorest households or regions can make lasting improvements in the lives of the poor and open up promising and sustainable pathways out of poverty.

Box 1: Why Not Provide Credit for Poor Farmers?

The PROFIT team was surprised to find that most poor smallholders were able to pay cash in advance for their inputs. Not only did it seem to be unnecessary for input companies to offer credit, it turned out that doing so actually threatened the success of the agent network model. "The model relies on it *not* happening," says Rob Munro, PROFIT's Private Sector Advisor and one of the model's architects. In 2006, input supplier CropPack joined the network and, against PROFIT's advice, decided to provide credit to its agents, who could thus offer payment terms to their client farmers. CropPack's program quickly collapsed as the farmers failed to pay for the inputs they had received.

In the absence of formal credit schemes, a lack of cash might be a constraint for the poorest farmers. But enterprising agents and the farmers themselves have come up with innovative workarounds. For example, several agents reported that 2 very poor farmers will often agree to share a 10 kg bag of hybrid seed (the smallest quantity sold), which costs $25 and covers half a hectare. The extra maize they grow allows them to buy more seed the next year. One agent allows her poorest customers to pay for their inputs with chickens or goats instead of cash. Several other agents offer informal, in-kind credit to cash-poor but trustworthy customers. One lets some customers pay half the cost of the inputs in cash upfront and the other half in maize, once the crop comes in. Another has, on occasion, accepted livestock as collateral, allowing poor customers to pay in installments.

Agents know their customers, and are in a good position to determine which of them are creditworthy. Unlike input companies or banks, they can bring peer pressure to bear on farmers who fail to repay, and are flexible enough to offer tailored solutions.