SMALLHOLDER FARMER INSIGHTS
Captured through Mercy Corps AgriFin Accelerate Human Centered Design (HCD) field research
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BACKGROUND

- Globally, more than 1 billion people are employed in agriculture. Most are small-scale farmers in developing countries.
- Smallholders face complex that include lack of access to markets and quality services, competition over land, over-reliance on rain-fed agriculture, lack of water for irrigation, massive urban migration, and shocks caused by climate change, including floods and drought.

PROGRAM APPROACH

- AgriFin is leveraging the power, convenience, and prevalence of mobile phones to help smallholder farmers boost their harvests and incomes.
- AgriFin employs a market facilitation model to drive scalable, commercial innovations for smallholders with agricultural ecosystem partners who include mobile network operators, financial institutions, service providers, farmer networks, technology innovators, agriculture value chain players, government and other stakeholders.
- The core problem AFA seeks to address is the inclusion gap for smallholder farmers (SHF) who lack access to affordable, accessible, demand-driven financial products and services that drive higher productivity and income for their households.
Overview: Smallholder Farmer Insights

Most of the 7 million smallholder farmers in Kenya live in poverty, largely due to barriers accessing Inputs, Knowledge, and Finance

- In Kenya, the agriculture sector employs **over 75% of the workforce** and accounts for 30% of GDP
- There are over **7 million smallholder and subsistence farmers**, who account for over 85% of Kenya's agricultural output and 70% of marketed produce
- The majority of smallholders live in poverty – earning under US$ 2.50 per day
- **Poor quality inputs, limited access to finance, and lack of knowledge** are major impediments to farmer income, given their effects on farmer productivity and farm management

**Expensive and poor quality inputs reduce yields**

“Hay is expensive for me and I also don’t have big land to grow enough hay. These seeds I got from Nyala will go bad before I plant them”
- Richard, Laikipia

**Existing lending practices limit access to finance**

“I know I’ll have more milk if I feed my cow more. But whenever I request more inputs, I don’t get as my coop thinks I won’t be able to repay”
- Mwahiu, Ndaragua

**Lack of knowledge on farm practices reduces incomes**

“If only I knew what to feed my cow each passing day, I am sure I would have more milk”
- Helen, Laikipia

In-field research was aimed at understanding farmers’ challenges, aspirations, needs, financial behaviors and preferences.

We used the following tools during interviews to help uncover these insights:

- Expenditure calculator
- Inspiration cards
- Product prototyping
- Loan package calculator
Mercy Corps AFA mapped smallholder farmers' agricultural activities, key considerations and decision points, and major expenses and earnings throughout a typical year. We explored their experiences and strategies for managing all aspects of their agricultural practice in Zambia.

As we discussed their season, we probed further into the families' underlying values, attitudes, and the relational obligations that drove their decision making. Through this exercise, we worked to surface recurring challenges and unmet needs across the sample of SHFs. This helped us identify opportunities to develop affordable, accessible, demand-driven financial products and services with the potential to drive higher productivity and income for farming families.

We believe the feedback and learnings from the SHF mapping are similar to our learnings from Kenya and Tanzania.
There are multiple capacity constraints that limit smallholder farmers from engaging in more profitable forms of agribusiness. Constraints include low levels of digital and financial literacy as well as poor agronomy and market linkages.

### Limitations faced by farmers

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<th>Financial Literacy</th>
<th>Agronomic practices</th>
<th>Market Linkages</th>
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<td>• Not fully aware of the range of digital, financial and information services available to them</td>
<td>• Are not aware of the various financial products available, often relying on perception and hearsay</td>
<td>• May not begin farming cash crops because they require new and more sophisticated agronomic know-how</td>
<td>• In non-cash-crop related value chains, marketing organizations such as cooperatives do not exist</td>
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<td>• Do not fully understand how to use the digital financial services in the market</td>
<td>• Continue to use traditional financial services due to cultural norms</td>
<td>• Some continue to use traditional agronomic practices due to cultural norms</td>
<td>• Farmers are unable to add value to their produce, limiting revenue</td>
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<td>• Not aware of key MNO contracting information e.g., what happens when a customer loses a SIM card, the cost of using digital services</td>
<td>• Do not have required financial planning and management skills</td>
<td>• Often do not generate enough income to purchase inputs or mechanization</td>
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<td>• Struggle with signing up for digital financial services</td>
<td>• Perceive formal financial services as expensive to use</td>
<td>• In many regions, although government extension workers exist, they are few and can’t support all farmers adequately</td>
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<td>• Have concerns over money loss when using digital services as compared to tangible cash</td>
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While digital products can help overcome challenges associated with financial literacy, agronomic practices and market linkages, farmers do not have the right skills to use digital platforms.
“Planning is very important to the farming cycle. Planning well means a successful farming season and profit.”

- Daka, Farmer, Mumbwa

Farmers methodically plan and budget to manage cash flow to meet farming and household needs throughout the year.

Farmers plan and budget very carefully for the season, balancing household needs, farm needs, and unforeseeable circumstances. Farming is a cash-intensive business and large households have outsized needs. It is difficult for farmers to manage these needs especially when timing of income does not meet expenses. Farmers plan and budget for the following components:

- What to plant and how much land to allocate to each
- What inputs to buy for each crop
- Whether to take input credit and if so, how to put together down payment or plan for repayment
- How to secure and pay for labor, draft power, post harvest storage, and transport
- How much to keep in reserve for disease/pest outbreaks, and other unexpected issues
- How much to save for school fees, holiday and other related expenses.
- How to store financial reserves
**Planting decision making**

"We sit together as a family to see how much food we will need, and we cultivate crops to create a cushion of food at home. This helps to determine how much land to allocate to each crop."

- Rhoda, farmer, Monze

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**Farmers review past performance, current resources, and future expectations when deciding what to plant**

When deciding on what crop to plant, how to allocate land, and invest resources, farmers take the following considerations into account:

- Current state of the finances
- Past years crop yield vs costs: ROI on certain crops
- Perceived trends in demand and pricing
- Access to markets
- Expected availability of markets for cash crops
- Weather trends and expected rainfall
- Availability of labour and draft power
- Soil quality and crop rotation need
- Income smoothing through crop rotation
Role of Women

“I make most decisions around the farm. My husband is always away and that also means I decide what we spend our money on today, tomorrow and in the future.”

- Magdalene, Ndaragua

Women farmers believe they play a pivotal role in shaping their family’s financial situation. They plan, budget, save and invest more than their husbands.

Because the women farmers are trusted partners and make key financial decisions, they are more receptive to the DigiFarm concept as it presents them the opportunity to increase their financial stability.
“I try to track how much milk we produce using a table I put together. It helps me see how the cows are doing but it’s hard to know what to improve on.”

- Richard, Laikipia

**Farmers’ paper-based record keeping is overwhelmed by the complexity of tracking multiple, irregular sources of revenue and costs.**

Unaware of their current financial picture, farmers’ long-term financial planning is often guesswork. We evaluated a prototype of a mobile receipt for a dairy sale. Farmers immediately took to the idea of gaining access to their daily sales on their phones.
Choice of Inputs

“The inputs I got last year were limited to one brand. The seeds and the foliar fertilizer were not suitable for this area, so we had lower yields. If there were a way I could choose my preferred input package, this would be ideal for farmers in this area.”

- Imani, Lugoda
Most of the farmers complained about the labour involved during the harvesting period. They have lost market opportunities due to delays caused by activities that could be automated example use of power tiller.

- Ukomola, Iyai, Lugoda farmers
Two Critical Periods

*Post Planting Season (Weeding & Harvesting)*

“Last season was terrible. We had drought and my tractor was in poor condition. I couldn’t find labor, which delayed my planting and I struggled to raise money for weeding... I expected 60 bags of maize [per hectare], but only got 25... I’m still repaying last year’s loan.”

- Banda, Farmer, Kapiri Mposhi

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**SHF face two critical periods critical periods where they have no income and struggle to finance essential agricultural activities**

Over the course of the year, farmers experience two critical periods of hard to meet financial need: during the weeding period from December to February and during the maize harvest from May to July. By the time these periods arrive, many farmers have exhausted much of their earnings from the previous season, yet they need to pay for labor, weeding chemicals, treatments for disease and pest outbreak, and post harvest costs, as well as household needs.

Farmers employ several strategies to meet financial needs during critical periods:

- Plant and sell cash crops that mature in late March and April like sweet potatoes, tomato, and soy, though this helps finance maize harvest it exacerbates financial pressure during the weeding period.
- Sell off assets like livestock and reserved crop.
- Develop secondary sources of income outside of agriculture to cushion their finances during these periods.
Need for Training

“We we’re failing before we got training... CFU came to us, to our community. Now things are moving up.”
- Steven (52), farmer, Kapiri Mposhi

FARMERS WANT MORE AND BETTER TRAINING ON AGRONOMIC AND BUSINESS PRACTICES
Farmers are constantly absorbing and learning new information to adapt to changes in the market, environment, and local value chain. Yet they struggle to get the information they need most to run a successful farming business. Some farmers have attended agronomic and business trainings from organizations such as CFU and ZNFU, others rely on information broadcast through radio or word of mouth. Some farmers have very limited access and report never having attended a training, especially women. Many have complained that the trainings they have accessed are redundant, especially those on conservation agriculture. Farmers consistently indicated that would value training materials sent through mobile phones provided the content is relevant to their needs.
Need to Diversify

*Market Access*

"We have a problem with marketing ground nuts. With crops like cowpeas, we can take them to WFP. For ground nuts there's no aggregator."

Peggy, farmer, Monze

Many SHFs view crop diversification as essential, but lack markets for most cash crops

SHFs we spoke with have poor access to market information essential to their business. For many, the local agrodealer, cooperative, and extension officer are their main sources of information. Many farmers we spoke with want to diversify crops, but not know of or have access to a ready market. Many view maize as highly problematic and political, and would like to reduce their reliance on it as a cash crop.
SHF INSIGHTS

Understanding Options

Storage Best Practices

Farmers are unsure about the best practices and best technologies available for maize storage. Most farmers follow traditional practices which require bags and pesticides that are a recurring expense that limits the post-harvest lifetime of their maize. They consider the village aggregation center the “safest” place to store their maize, for lack of awareness about hermetic technologies. Even at the village center, farmers have timid confidence - at best - in the durability of their maize.
Challenge of Selling

Farmer Selling Decisions

"As a farmer you have to plan for some maize that you take to FRA and some you take to other buyers. If you plan properly, then there isn’t a problem."

- Judith, Farmer, Mkushi

Farmers sell to various buyers to balance efforts for top price with timely payments

Farmers sell to various buyers such as the private buyers (briefcase buyers), private aggregators including agrodealers, and the government in any given season not only to take advantage of capturing the highest price in the market but also to mitigate the risk of receiving delayed payments or default payments.
Aside from the pinch that comes with extremes in season, breaches in buyer contracts and distrust with contracted buyer prices lead to side-selling by farmers. Farmers expressed discomfort with the way forward contracts are executed, and feel they have little insight into and control over the process. FGLs and FOs both want FGLs to have more decision-making information earlier on in the contracting process. Farmers too want to have access to summarised contract before committing.
Payments to Farmers

“If we get money on time, it means we get inputs on time, plant on time, harvest on time, and market on time.”

- Sanford, Farmer, Kalomo

Delayed payments undermine farmers financial planning and budgeting, and disrupts their agricultural cycle

Delayed payments is major pain point for farmers. Farmers financial management strategy is grounded in careful planning and budgeting, and delayed payments throw off their entire cash flow management strategy, causing many complications that endure for months. Delayed payments lead to delayed input purchases, which delays them further in planting their crops and leads to delays in taking their produce to the market (sometimes resulting in lower sale prices). On time payments are critical to healthy yields, household resilience, and effective planning for the coming season.
Timing of Payments

"WFP comes around August, but harvest comes around June and in between prices are hard.... with brokers, the price is low, brokers start at a price that is shameful."

- Yasini Gidos, Masakta
"If the government would link my orders to my phone, then I would be sure of getting information and my inputs on time.”
- Sanford, farmer, Monze

**MOBILE USAGE AND OPPORTUNITIES**
Farmers value mobile phones, but connectivity is barrier to usage. They mainly use phones for connecting with friends and family, sharing agricultural information, and arranging farming logistics. Some use SMS subscription services from MTN for sports and news. Cooperative leaders and agrodealers also use phones to coordinate with suppliers and off-takers, and trade information. Mobile has clear potential as:
1) a channel to provide and receive information direct from farmers;
2) a channel to facilitate better inputs ordering and harvest delivery;
3) a means to reduce payment and transport related costs
“Whenever I can’t repay my loans, I normally just ask my coop for an extension.”

~ Francis, Laikipia

The inconsistent cash flows of farmers make repaying loans impossible at times. They however appreciate the flexibility that coops extend when repaying their loans.

Farmers’ incomes are inherently unpredictable due to reliance on weather, exposure to disease and milk price fluctuation. As a result of unpredictable returns, farmers avoid long term loans making them underinvestment in dairy farming, reducing their future income.
Input Credit First

Farmer Demand for Input Credit

"I’ve put it [input credit] at the center because it’s there when you’re really stuck."

- Francisco, Farmer, Monze

Farmers recognize the limits of informal credit networks and the benefits of input credit; many would like access

SHFs mostly buy inputs with earnings and subsidies, but told us that input credit could be very beneficial. They regularly borrow from one another when short on cash, though in small sums (~K500), and prefer borrowing from people with whom they have clear channels for communication and share mutual trust in fair treatment should problems arise. Many farmers expressed fear of formal lenders. Farming is risky and some formal providers treat defaulters harshly, seizing livestock and imprisoning debtors. Borrowing and lending within local financial networks is less risky and strengthens essential community bonds; although these networks are insufficient to meet credit needs.
Aiming for Asset Loans

“...I just moved to this new piece of land. I am building a new home for my family. My ideal loan now would be for buying a new cow or paying for the new home.”

-Mr. Andika, Uasin Gishu

Farmers do not prioritize loans for inputs; instead, they want loans to acquire better breeds of cows or meet other non-agriculture needs, like school fees.

In western Kenya, the input package is least requested by farmers as they prefer open grazing. In central Kenya, farmers have smaller plots of land hence prefer zero grazing. They however grow their own hay/grass to reduce their input costs.


We recycled the seeds from last year... Maybe 2 or 3 out of 10 [in our community] don’t recycle seeds...only 3 of 10 apply the recommended dose of fertilizer...we are limited by money.”  

- Hilda (34), Farmer, Kapiri Mposhi

At prevailing market rates (28-60% interest), input credit leads many farmers to recycle seeds and underdose crops, suppressing yields.

The largest input credit service we encountered charges 53% interest on a full input package sufficient for 1ha of maize. The loan requires no down payment and is repayable in cash or with 48 bags of maize at harvest. Used properly on 1ha, the full package including enhanced seeds can yield 90 bags of maize. Most farmers we spoke with said the max yield they can expect is 60 bags of maize/ha. According to their calculation, the input package must be spread across 2 or more hectares to be economical.

Spreading 1 ha. worth of fertilizer over 2 hectares of maize generates the exact same yield, all else equal, at twice the cost of labor, tillage, land usage etc. Moreover, due in part to the high costs, farmers using the credit service whom we spoke with estimated that 80% of their neighbors recycle seeds because they cannot afford the full package with enhanced seeds. Recycled seeds on average yield 30% less than enhanced seeds.
“We mostly sell animals when we have a problem, or have more than our target. We use the money for buying things for the house, for groceries, for whatever we need.”
- Collins, farmer, Kalomo

FARMER STRATEGIES FOR BUILDING ECONOMIC & FINANCIAL RESERVES

Many of the SHFs we met are reluctant to save in cash, whether under the mattress or in an account. They do not view cash savings as “working money” and are afraid they will spend it down quickly. Moreover, they are uncertain of its value due to currency fluctuations. Instead, farmers build reserves by saving part of the harvest for later use and investing in livestock.

Livestock works for farmers in multiple ways:
1) as insurance to be consumed, bartered, or sold when the household is under pressure;
2) as an investment that grows, reproduces, and produces cash-flows/food (e.g. milk);
3) as social capital strengthening farmers social safety net;
4) as collateral for loans and input credit
“It’s easier and doesn’t seem like a lot when the cooperative deducts a shilling or two per liter of my milk. This in time gives me some stability but I don’t feel the heavy burden of saving a lot at once.”

- Mrs. Rono, Uasin Gishu

Farmers believe in the value of savings, but need a system that allows them to save more consistently.

They appreciated an idea for a DigiFarm product extension that forces small deductions from their everyday milk deliveries to cooperatives to enable them to build collateral and protect against financial shocks.
Saving on M-Shwari is strongly preferred due to its perceived ease and strong social proof

R: I can say that Safaricom is a very big organization and when they came up with Mpesa, it was really good because it saves time instead of going to the bank account to line up and fill forms, it has really helped a lot of people. It is a good technology which saves time. And Safaricom made sure to advertise through the radio, television, newspapers so that all people can be reached with that information. And they even tell you how to subscribe among other things

- Farmer, Kibera
"The idea [of insurance] is ok, but we need to be educated on that. Someone needs to come here and explain it to us,... I've heard of it on the radio, but don't understand the details."
- Judith (51), Farmer, Mkushi

CROP INSURANCE CAN ALLEVIATE SHF ANXIETY AROUND USING INPUT CREDIT, BUT MOST LACK KNOWLEDGE AND ACCESS
Many farmers we met fear input credit because of the consequences of defaulting. However, few know how it works or how to get it. When we explained it as a feature of input credit, farmers clearly saw its value. Crop insurance has the potential to increase uptake of input credit and improve household resilience. However, farmers need the details clearly explained, and want the explanation face-to-face from the agent as a matter of trust and understanding. Several farmers felt that insurance companies would never visit their communities to market and sell their products.
Using Technology Now

Farmers already use their mobile phones to call their friends to ask for weather predictions and the local market prices. This varies since the sources are not reliable and inconsistent hence they incur yield loss.

-Masakta AMCOS farmers
"I show my dad everything on his phone. I thought he was ignorant in the beginning but I came to learn that he just can’t do what I can with my phone."

- Steve, Isaac’s Son - Ndaragua

Older farmers only use their mobile devices for very simple tasks. They struggle with texting and other minor tasks. Whenever they receive mobile money, they rely on agents to assist with transactions.

Most farming is led by older farmers. Their children are in urban areas and come back only for holidays. Their digital literacy is very low. They shy away from performing complex tasks with their devices.
Mobile Money Use

Mobile Wallet
In addition to a savings product, many farmers interviewed were active users of M-PESA. While there is a strong dislike for M-PESA transaction fees, this is overcome by the major convenience factor of M-PESA, especially for transactions between friends and family members. Farmers also cite the large agent network as a benefit that reduces the burden of cash handling. When probing transactions, we find that tiers should be aligned to the real amounts of transactions that farmers deal with in their work, the biggest typically being linked to produce sales (max = 100 bags maize, 9 chickens, 3 bags sunflower, etc.).
Access to Data

Farming Trends / Data Access
Farmers want access to their data - in a manner that’s useful to them. While periodic SMS updates and notifications are nice, the real value is seen to lie in accessing aggregated data that can help farmers learn and understand from broader trends, e.g. a long-term view of their financial activities, or reports of how input use or regional weather patterns have impact on yields in their region. Some farmers are wary of sharing data with third parties, and expressed interest in having some contract or agreement on how their data will be used. Others are ok giving data to a third party, but with the assumption that their data will be used to benefit them, with third party recommendations / advice, and access to better service.
Realizing the Value of Production Data

There is a big delta between a farmer receiving his/her produce sales receipt, and practicing smart financial planning and management. Many farmers currently don’t keep their receipts for longer than a single harvest season, as they are used mainly as a reconciliation tool to receiving payment after sales. Some express interest in using receipts as a benchmarking tool, though most farmers do not bother to translate receipts in their current form into a more robust financial tracking system. In addition, many farmers don’t keep production data from year to year, instead relying on memory.

“It would be nice to put the records into writings”.
"They forget that we are the people driving their business. We are supposed to be partners, but there is no negotiation. We get swindled."

- Chippate (44), village headman and farmer, Kabwe

Lack of transparency leads to breakdowns in trust between farmers and stakeholders across the value chain

Many SHFs we spoke with feel that aggregators do not see them as partners or care about their well-being. Farmers are price takers, yet most do not know how prices are set or profit and risk is distributed across the value chain. They think the price is set arbitrarily by actors who only care about maximizing their own profits. Many want to be able to negotiate prices, or at the very least have more control over the terms on which they sell their crops.
Thank You!