the sustainable trade initiative

Service Delivery Model Analysis

Landmark Millers Limited, Sorghum/Maize, Uganda

Case report

October 2022

PUBLIC REPORT

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Relevance of SDM Analysis

Smallholder Livelihoods

Agriculture, including forestry, plays a key role in the wellbeing of people and planet. 70% of the rural poor rely on the sector for income and employment. Agriculture also contributes to and is affected by climate change, which threatens the long-term viability of global food supply. To earn adequate livelihoods without contributing to environmental degradation, farmers need access to affordable high-quality goods, services, and technologies.

Service Delivery Models

Service Delivery Models (SDMs) are supply chain structures which provide farmers with services such as training, access to inputs, finance and information. SDMs can sustainably increase the performance of farms while providing a business opportunity for the service provider. Using IDH's data-driven SDM methodology, IDH analyzes these models to create a solid understanding of the relation between impact on the farmer and impact on the service provider's business.

Insights and Innovations

Our data and insights enable businesses to formulate new strategies for operating and funding service delivery, making the model more sustainable, less dependent on external funding and more commercially viable. By further prototyping efficiency improvements in service delivery and gathering aggregate insights across sectors and geographies, IDH aims to inform the agricultural sector and catalyze innovations and investment in service delivery that positively impact people, planet, and profit.

*IDH would like to express its sincere thanks to **Landmark Millers Limited** for their openness and willingness to partner through this study. By providing insight into their model and critical feedback on our approach, **Landmark Millers Limited** is helping to pave the way for service delivery that is beneficial and sustainable for farmers and providers.*

Glossary

EAC	East African Community
EBT	Earnings Before Tax
ERP	Enterprise Resource Planning
FIs	Financial Institutions
FMS	Farmer Management System
GAP	Good Agricultural Practices
KPIs	Key Performance Indicators
LMM	Landmark Millers Limited
NTBs	Non-Tariff Barriers
PDC	Primary Data Collection
PHH	Post Harvest Handling
PHL	Post Harvest Losses
SDM	Service Delivery Model
TA	Technical Assistance
UBL	Uganda Breweries Limited
UGX	Uganda Shilling
USD	United States Dollar
VSLAs	Village Savings and Loans Associations

Throughout the report, you can click the corresponding icons on the right of each page to be taken to the first page of that chapter

1. Executive summary

Landmark Millers Limited (LMM) seeks to understand how it can grow its profitability, while enabling farmers it sources from to increase their income through decreased post-harvest losses and/or increased productivity.

About LMM

Growth ambitions: Established in 2015, LMM is a social enterprise involved in the production and processing of maize, sorghum and cassava. The company seeks to enhance its market share and grow profitability in the next 3 years by increasing their sourcing and value addition capabilities. The company intends to increase the number of farmers it works with.

Sourcing channels: Agents play a critical role in service delivery and off-take. The 75 agents who are part of the network are responsible for training, input distribution and aggregation from farmer groups and individual farmers. The agents work with four agronomists who are responsible for their training and performance management.

Service package: LMM provides a wide range of services to their farmers including training (through the agents), inputs (currently undertaking multiplication of sorghum seeds), input loans (through Equity Bank) and mechanization services.

Organization and financial capacity: LMM faces capacity gaps in certain areas e.g., lack of clear standard operating procedures for key business processes, inadequate organization structure, HR capabilities and working capital. They are currently implementing a farmer management system to digitize key supply chain processes.

Focus of the SDM analysis

This SDM analysis aims to provide critical insights to refine the growth strategy and SDM structure of LMM focused on three key levels:

Farmer level	• Understand the main farmer segments and their economic performance. • Compare current farmer incomes to the living income. • Understand the drivers that are likely to increase farm productivity by 70% and reduce PHL by 50%.
LMM level	• Determine the key pressure points and efficiency improvements in the supply chain that can be achieved easily and cheaply. • Assess the main profitability drivers of the business. • Assess the business case for the block-farming seed multiplication model. • Evaluate the business case for the tractor services. • Conduct a working capital needs assessment.
Agent level	• Evaluate the business case for the village agent model.

By analysing and segmenting their farmers LMM can tailor services in a more effective manner leading to increase in farmer incomes. Graduating the farmers also results in higher loyalty levels.

	Observations	Recommendations/Opportunities
Farmer segments	▪ Landmark Millers has currently not segmented its farmer base making it challenging to customise service offering. ▪ Based on our analyses, 80% of the farmers are small scale, relying on sorghum and maize as the main crops grown on 2 acres of land out of a total of 3 acres. ▪ Most of the farmers are female with total average land size of 2 acres and yields lower than the male farmers for both maize and sorghum.	▪ Implement a farmer segmentation and graduation approach to incentivize loyalty and income increase for both LMM and the farmers. ▪ Fully leverage data collected through the E-prod farmer management system (FMS) to understand performance of the different farmer segments (segregated by gender) and tailor services.
Farmer income	▪ Marketable surplus of both maize and sorghum is projected to increase substantially over the five-year period driven by increased farmer productivity (particularly from the high yielding seeds) and decrease in post harvest losses (using tarpaulins). ▪ Consequently, overall net income of SDM farmer is also estimated to grow by over 200% within the period to USD 1.6k (UGX 6.0Mn) for small scale farmers and USD 2.4k (UGX 8.4Mn) for medium scale farmers by year 5. ▪ With increased income, there is a projected reduction in the living income gap from 79% in Year 1 to 33% in Year 5 for medium scale and from 85% in Year 1 to 53% in Year 5 for small scale farmers. ▪ Closing the living income gap of the farmers is expected to be largely driven by production area, productivity, and price.	▪ By implementing their envisioned four product model, LMM is able to further boost the income of the farmers. However, there is need to conduct more analyses on the economics of the additional two products as this was not covered in this SDM analysis.

LMM needs to align their sourcing volume targets to their processing capacity in order to fetch higher margins from value-added products.

	Observations	Recommendations/Opportunities
LMM business case	*For business sensitivity reasons, we have excluded this section from the public report.*	

**USD/UGX exchange rate = 3750*

There is an opportunity to enhance service impact through mechanisation and credit provision. Further, outlining a clear plan for graduating the agents can help build loyalty and enhance performance.

	Observations	Recommendations/Opportunities
Service impact	▪ Hired labour accounts for a significant proportion (40%) of the costs of production yet its not included in the loan package to be provided to the farmer. Hired labour costs are primarily driven by the cost of land preparation (28%), weeding (21%) and planting (15%). ▪ Mechanisation of land preparation and planting is 3times the cost of manual hired labour. The high cost as well as the small land sizes for most farmers discourages utilisation of the tractor services. ▪ Based on the current graduation assumptions the required tractor capacity to serve Star 3 farmers exceeds the available capacity. ▪ Overall, cost of service provision decreases over time as farmers increase their productivity and loyalty to LMM and initial cost of establishing the SDM steadily decrease.	▪ Consider including and prioritising labour (hired/mechanised) as part of the loan (provided through Equity Bank) after the pilot phase. ▪ Explore grouping farmers that graduate to star 3 based on location to increase efficiency and enhance the return on the tractor services for LMM and/or other external service providers. ▪ Conduct further research to understand the acceptability and business case of different mechanised services (tractors, threshers) exploring additional positive effects on the farmers.
Agent business case	▪ LMM's normal agents are projected to only earn 15% of their income from grain and seed commissions which raises questions on the attractiveness of the agent activities compared to other income generating options. Super agents, however, earn a substantial proportion (61%) of their income from agent activities. ▪ The analysis projects that by year 5 upto UGX 221Mn and UGX 45Mn worth of grain will be aggregated by a super and normal agent, respectively. This is significantly higher than the current capacity of the agents (storage, working capital).	▪ Leveraging agent performance data from the E-Prod system, LMM can incentivize the normal agents to graduate to super agents in order to grow incomes. ▪ Introduce additional incentives such as bonuses based on loyalty, volume sourced, number of farmers recruited/managed etc. ▪ Further assessment to understand the capacity of the agents, and the number of farmers to align with the sourcing targets.

2. About the SDM

Understanding the SDM's strategy, and business model

Landmark Millers Ltd (LMM) envisions growing its market share to 5% and increasing profitability by 15% in the next three years by enhancing how it engages with and sources from farmers.

Goals & Aspirations [1)]

Market ambitions and share

- 5% market share in the next 3 years (2022-2024)
- Increased milling capacity for cassava, and establish own milling capacity for maize and sorghum

Business growth

- From 1,100 to 8,000 MT of Maize in 2024
- From 1,200 to 15,000 MT of Sorghum in 2024
- From 1,200 to 5,000 MT of cassava starch in 2024
- Profitability increase by 15%

Impact goals and farmer reach

- Increase number of farmers served and sourced from 10,000 to 18,000.
- Of which 15,000 have access to affordable finance
- Increase farmer productivity by 70% and profitability by 50%

Where to Play

High priority areas

- Digitization of the supply chain and farmer database
- Increase access to premium markets
- Enhance milling capacity by acquiring additional equipment
- Partner with financial institutions (FIs) to provide affordable input finance to farmers.
- Increase regional market for grain to reduce overdependence on local markets
- Enhance fleet and fleet management
- Expand service bundle with tractor and threshing services

Lower "priority" areas

- Support water storage and irrigation infrastructure
- Training on Village Savings and Loans Associations (VSLAs)
- Engaging in micro health insurance for farmers

How to Win

Points of differentiation

- LMM works with farmers who sign a commitment agreement that gives them favorable prices for maize.
- LMM closely collaborates with local authorities and other key partners in their SDM.
- Farmers are paid at point of sale by agents under the supervision of agronomists
- Large agent network.
- Long term relationship with farmer not only transactional based, strengthened by strong service and engagement package
- Engagement with premium markets leading to higher prices

Points of parity

- Skilled and dependable agents are required in this SDM as they are responsible for many activities including training, input distribution and off-take. Some of the agents also work for other aggregators.

Capabilities Required

HR / organizational capabilities

- Increased staff numbers from 18 to 50 by 2023
- Build staff capacity on key areas e.g., technology

Finance

- Finance partners to finance inputs and sourcing of grain

Digitalization

- Digitizing profiling, communication and sourcing activities (ERP, FMS)

Assets / infrastructure

- Enhanced warehousing and storage
- Complete grain cleaning machinery
- More fleet to manage distribution of inputs and sourcing of grain

Sources: 1) Landmark Millers business plan, IDH TA proposal

LMM business model aims to increase the supply of quality maize and sorghum grain sourced from farmers in Uganda

Overhead (management, HR, legal, finance, utilities, etc.)

Core business

Sourcing
- LMM works with agents to recruit, organize, train and manage farmers across the focus districts.
- Each farmer signs a commitment form, a kind of contract which allows them to receive services.
- Agents aggregate grain in their stores after which LMM collects and delivers to their central store in Soroti using their own truck as well as hired trucks (from Teso Cooperative Union and other providers)

Storage and processing
- LMM has a central storage facility of 5,000 tons in Soroti and satellite storage facilities in other districts.[2]
- The company owns and operates a cassava milling facility in Soroti where it processes 1,200MT of cassava starch.[3]
- LMM is also in the process of procuring a grain cleaning and milling machine (to be installed by September 2022).

Marketing
- LMM sells unprocessed grain to key players mainly in Uganda.
- Major clients include; UBL, Kawanda Grain Millers, Egonya and GrainPulse limited who account for 25%, 12%, 9% and 7% of total revenues, respectively.[4]

Farm services

Training
- LMM provides capacity building to farmers (in groups) through the agents and agronomists.
- Agents establish farmer field schools either in their own farms or in a farm of a group member to demonstrate practices and transfer knowledge.
- Trainings include; agronomy, PH, farming as a business, backyard gardening and financial literacy (conducted by FIs).

Inputs
- LMM procures improved seeds and sometimes fertilizers and provides these on credit to the farmers. Cost are recouped during the off-take
- LMM has also selected lead farmers to undertake seed multiplication in 600acres block of land (250 acres have been planted).
- LMM has previously provided soil testing services to support application of fertilizer (donor funded)

Mechanization
- Tractor and threshing services are provided to farmers at low scale
- LMM has 2 tractors and a few threshers.

Post-Harvest
- LMM links farmers to service providers that sell PHH kits (tarpaulin, chippers).
- LMM intends to start providing grain cleaning services to farmers and other players from September' 22.

Supporting activities

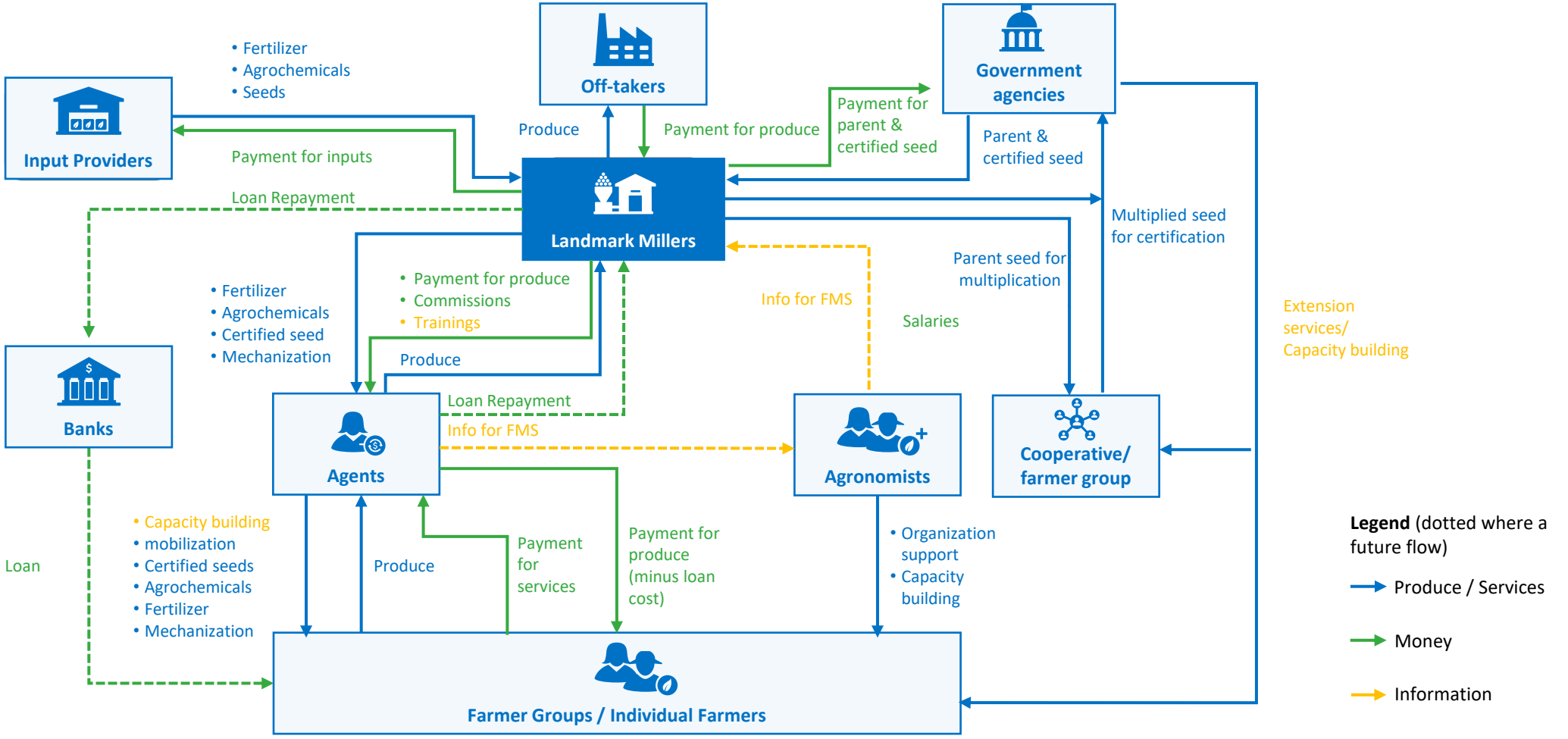
Access to finance
- Flexible repayment system for seeds and fertilizer provided on credit.
- At point of sale, the farmers are paid immediately by the agents.
- LMM is currently working with Equity bank to provide a holistic input finance package where farmers apply for a loan to the bank (initially targeting 500 farmers).

Digitization
- LMM desires to digitize their entire supply chain and is currently implementing the E-prod farmer management system.

Margin

Source: 1,2,3,4) Landmark Millers Limited

LMM leverages a network of agents to source from and provide services to over 10,000 farmers across 10 districts in the country and works closely with the agronomists.

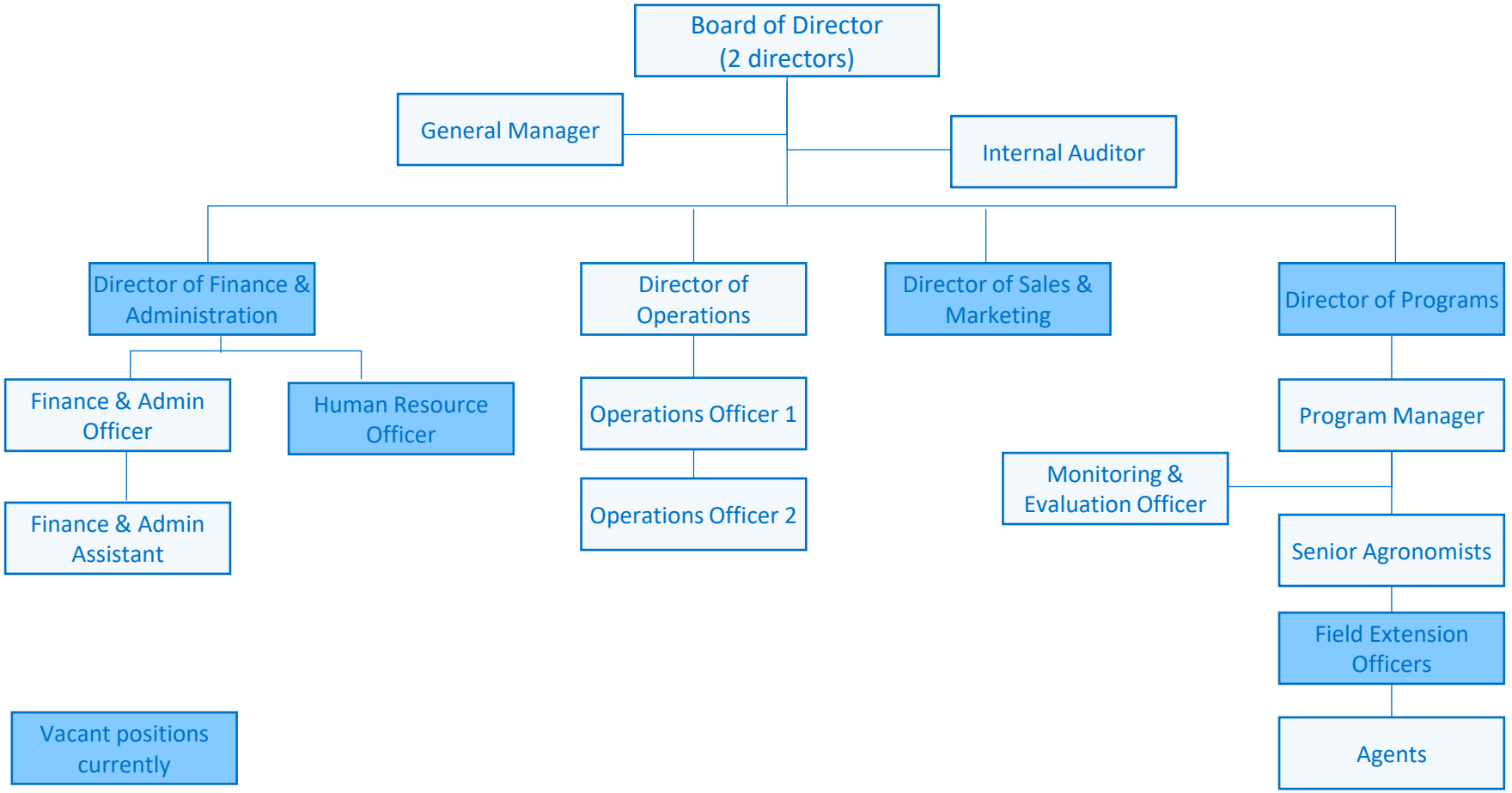


LMM works with a broad range of partners to improve the productivity of the farmers they source from.

Stakeholders	Organizations	Function (within this SDM and business model)	Revenue model (within this SDM)	Incentive to participate (within this SDM)
Extension services	• NAADS (National Agricultural Advisory Services)	• Provide rural agricultural services through their extension officers	• N/A	• Support the development of agricultural value chains in Uganda
Financial Service Providers/Investors	• Equity Bank • Yunus Social Business • Mango Fund	• Working capital and CAPEX financing for LMM • Provision of input finance package to the farmers	• Interest income on working capital and capex provided to LMM • Interest and fee income on farmer loans	• Obtain access to farmers to expand customer base. • Growth in the loan portfolio
Support organizations/NGO	• Mastercard Young Africa works program, GOAL Dynamic, aBi Trust	• Provide training on agribusiness • GOAL: youth casava production	• N/A	• Improve youth engagement in agriculture in Uganda. • Promote farming as a business in the country
Input providers	• National Agricultural Research Organization (NARO); National Semi Arid Resources Research Institute (NaSARRI); private input providers	• Provides cassava cuttings, maize, sorghum and millet seed for multiplication and demo on LMM farms. • Provide fertilizers, agrochemicals and certified seed.	• Sell of breeder seed, cassava cuttings • Sell of fertilizers, agrochemicals and certified seed	• Increased sales volumes
Off takers	• UBL • Grainpulse limited • TradeAble Africa (Kenya) • Outback Limited (Kenya) • Schools	• Off-take produce • Processing and/or sale to end-customers	• Margin on processing and product sales	• Improved quality and quantity of produce

The SDM is fully integrated within the wider organization of the company; SDM activities are executed under the programs and operations departments.

ORGANOGRAM



- The current organization structure is top heavy with 5 positions in the management team. There are potential overlap in activities between the programs and operations department.
- Farmer services (related to input provision and off-taking) are provided by the operations department and managed by the Director of Operations.
- Capacity building and organizational support is carried out under the programs department, overseen by the Director of Programs
- Agents are responsible to both the operations and programs departments:
  - Their commissions (and advances) from input distribution and sourcing are paid for by the operations department
  - Their work on capacity building is managed by the programs department
- The company has **15 full** time employees with a male: female ratio of **80:20.**
- There are **75 agents** with the normal agents managing **upto 30 farmers** and the super agents **upto 300 farmers*.**

**LMM agents have been segmented into normal and super agents based on key characteristics including number of farmers and volumes sourced.*

To achieve the envisioned growth, LMM needs to address existing challenges and gaps and build capacity across key organizational areas.

	PARAMETERS	OBSERVATIONS/GAPS
PROCESSES	Farmer /agent selection and management	• **Lack of a clear framework/criteria and documented procedures** for selecting, segmenting, servicing, assessing performance and graduating farmers and agents.
	Input procurement	• **Unreliability of seed** supply both in terms of quantity and quality. Lack of mechanisms to verify counterfeited seeds resulting in losses. • **Working capital challenges** limit LMM from supplying quality seeds to all farmers as payment is usually done once the farmer delivers produce.
	Grain buy back	• **High levels of side selling where f**armers only supply between **50-60%** of their produce to LMM. • **Manual process of recording** farmer deliveries at agent level which limits real time visibility for LMM to arrange for transport and to effectively measure agent performance.
	Storage and warehousing	• **Limited storage capacity at** the agent level leading to loss due to poor storage techniques. LMM is currently setting up satellite storage facilities nearer to the farmers. Can also consider village and/or community aggregation centers as they increase their sourcing volumes.
	Transport and logistics	• **Dependence on rented transport services** which is not always reliable and available.
	Quality management	• **Limited quality checks** at the agent level due to lack of equipment– e.g., agents lack moisture meters to check moisture content. • **Undocumented procedures** for quality management to be leveraged by both LMM staff and agents.
	Sales and marketing	• **High market concentration/limited diversification where** the top 4 buyers account for more than 53% of the revenues with UBL accounting for a quarter of the revenues. LMM also mainly supplies to the local market with untapped opportunities in premium markets such as Kenya.
PEOPLE	Organisation structure	• The current organogram **is outdated and needs updating** to **make it future proof**. Some considerations include; renaming the programs department to service delivery; merging the roles of director of programs and program manager; merging the operations and programs/service delivery departments.
	HR capabilities	• There is need to **build the digital capacities/skills** by onboarding an IT officer to oversee digitalization. The role of sales and marketing is also rotational, **which limits full focus on the marketing** function. Further, there is need for a dedicated person to oversee development and performance of agents..
TECHNOLOGY*	Digital capabilities*	• In the process of implementing the E-Prod FMS for farmer profiling and management which was previously done manually. Leverage Tally Prime system for accounting and inventory management. The company has not fully leveraged digital marketing channels to grow the business.

**Detailed digital maturity assessment outlined on slide 17*

Landmark Millers is gender intentional with demonstrated commitment from the leadership to advance gender equality.

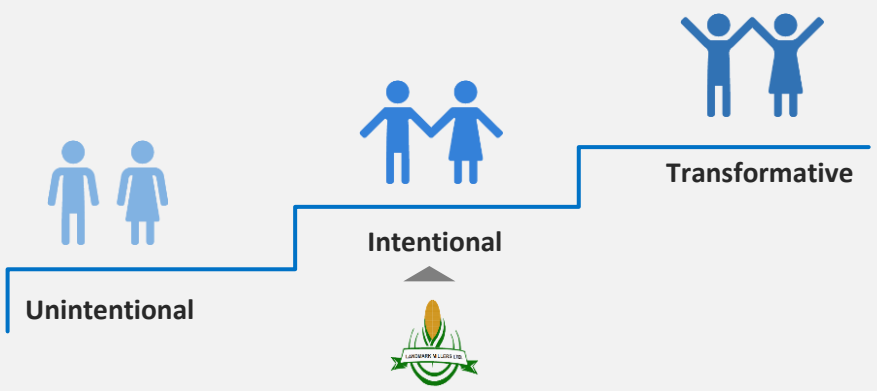
Category	Status	Observations
Gender Strategy Is gender equality a strategic goal for Landmark Millers which is communicated in documents?	YES	There is a high interest on gender equality at the leadership level where the directors seek to ensure inclusivity of women and youth in the business. There is currently a **draft policy** that lays the foundation for gender mainstreaming in the company. There is also a **gender focal person** who champions the company's gender related activities. E.g., she oversees trainings delivered by agents to ensure inclusivity and leverages data collected to advice on gender.
Data Collection Does Landmark Millers collect data on staff or customers / farmers disaggregated by gender?	YES	All the farm level data collected and shared by the agents is disaggregated by gender – this includes data on acreage, and volumes delivered. The gender focal person assesses the data collected, informs on the trends and advices on how to get more women farmers involved.
Inclusive workplace Does Landmark Millers have policies or practices to make the workplace inclusive for both women and men?	YES	Both the company's human resources and gender policies advocate for workplace inclusivity. Specifically, the policies advocate for Landmark to be an equal opportunity employer and remuneration is independent of religion, community, race or gender.
Inclusive consultation Does Landmark Millers speak to or consult both male and female customers (farmers) to learn about their different needs and preferences when designing a product	YES	Through their agents (both men and women) the company consults both male and female farmers. Consultation is usually done during the group meetings where Landmark Millers agents and agronomists attend. Through the consultation, then they decide which trainings need to be done for which groups.
Inclusive tailoring If services are tailored based on customers' needs and preferences, does Landmark Millers tailor these based on how needs may be different for men/women?	PARTLY	The company has been eager to tailor the services based on the needs and preferences of the farmers e.g., trainings for female farmers are never conducted in the morning or in the evening when women need to be catering to the household needs. This, however, does not extend to other services provided.
Independence and control over resources Does Landmark Millers provide services that allow women to have more independence and control over resources or move into roles in which they can gain more value?	PARTLY	The company seeks to promote female farmers to become agents – they currently have 28 female agents out of 75. By empowering women to become agents, they drive them into roles where they can gain more income and influence more female farmers.

Landmark Millers is gender intentional with demonstrated commitment from the leadership to advance gender equality.

Gender Assessment

JOURNEY ON GENDER INTENTION LADDER

Gender Journey



Current situation

- Landmark Millers is gender intentional. The company has developed a gender policy to ensure gender is mainstreamed across the key activities internally and externally.
- The company has been intentional in working with women farmer groups as well as women agents in order to address any gender related challenges that may hinder them to source from female farmers.
- Landmark Millers maintains a gender disaggregated farmer database and seeks to understand the unique needs and preferences of the male and female farmers they work with.

Possible measures to be taken

INTERVENTIONS / KPIs

Best practices to implement in becoming transformative

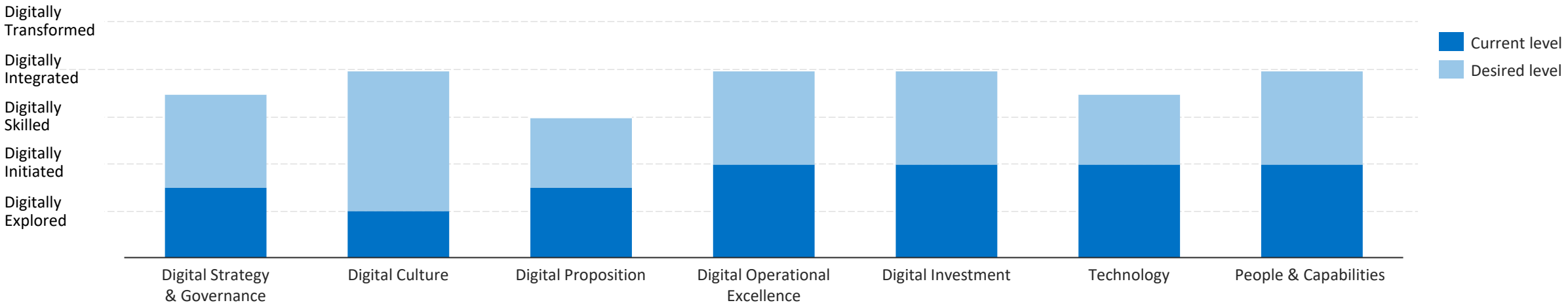
- **Establish Key Performance Indicators (KPIs)** e.g., targets on the number of male and female farmers they are aiming to reach, develop a roadmap to get there and allocate resources to monitor and measure gender goals.
- Use **sex disaggregated data collected** to inform service delivery to farmers e.g., track sex disaggregated farm level metrics such as yield and income to understand gaps and need for services and skills. PDC analysis for example indicated that access to credit for both male and female is low. On average however, female farmers have higher loan sizes compared to the male counterparts. On the other hand, the yield for female farmers are lower, indicating a higher need for GAP training.
- **Inclusive tailoring of services** by identifying women farmer's needs and preferences in view of the types of trainings, times and location.

Potential KPIs to monitor on the gender journey

- Number of women farmers with reduced living income gap
- Number of women with access to and control over income
- Increase in income for women
- Increase in the number of women accessing services
- Increase in women agents

See annex for details on the gender ladder.

Landmark Millers is digitally initiated and is currently focused on implementing a farmer management system (FMS).



Results

The digital maturity assessment for Landmark Millers shows that the organization is digitally initiated:

- Overall, the leadership acknowledges the role that digital technologies play in enhancing operational experience.
- The company leverages an ERP system for their accounting and inventory management processes.
- They are also in the process of digitizing their supply chain using the E-prom FMS.
- The company has set aside an annual budget of US$ 4,000 towards digitization activities with US$ 104,000 of the IDH TA budget dedicated towards the same.
- The company has however, not fully embraced the role of digital in marketing with limited digital media presence.

Recommendations

- Ensure employees from all layers of the company are onboarded with the digital agenda (particularly on the understanding of the FMS), to avoid a lack of alignment and working at different speeds.
- Continue the focus on digitization from a strategic perspective, including integrating the FMS with other internal systems, training on farmer/agent digital literacy, and increasing access to digital solutions such as smartphones for the agents.
- Hire a person to oversee the design and implementation of the FMS including training/ capacity building of the relevant stakeholders.

To assess the digital maturity the DMA tool was filled in based on answers given and expert judgement from the IDH interviewees. For all questions, the average score given is shown in the dashboard as the result. See annex for methodology.

The company has selected the E-Prod farmer management system to profile and manage their farmers; there are key considerations for the successful implementation of the system.

FMS design and implementation best practices

1. **Understand business needs:** understanding the business needs that LMM envisions to solve at the onset helps in customizing the system to capture the crucial data points that need to be collected. For example, since LMM intends to leverage some of the data to enhance financing, it will be important to align with the financial providers on the data needed for credit scoring.
2. **Create ownership both at LMM and farmer level:** there needs to be full support from the company's management team**.** LMM should onboard a person to oversee the design and implementation of the FMS including data collection, training/ capacity building of the staff and agents. Also identify lead farmers/early adopters as champions to drive behavior change and enhance acceptability.
3. **Design clear workflows/roadmap:** clearly articulate all the activities that need to be undertaken and assign responsibilities between E-Prod and LMM staff involved with implementation.
4. **Capacity building and facilitation of agents:** Success largely depends on LMM agents' ability to collect and verify data, maintain relationship with farmers and influence adoption. As such, the agents need to be well trained and equipped to implement the FMS. Particularly, LMM should provide the agents with smartphones and data bundles to facilitate onboarding.
5. **Gender integration:** to incorporate gender into FMS implementation, LMM can a) collect gender disaggregated data and continuously assess the data to identify trends, b) encourage women participation in initial trainings and demos, and c) have women agents to cater to the needs of women farmers.
6. **Data security and consent:** involve an external expert if needed when it comes to data security (e.g., when mobile money payments are integrated) and integrate farmers consent when sharing data with 3rd parties.
7. **Clarity on costs:** Aside from the initial hardware and software costs, LMM should get clarity on other continuous costs such as maintenance; costs of data collection, costs for bulk SMS, training of users and additional application programming interface (API) after initial set-up to ensure these are considered in the annual budget.

It is crucial for LMM to understand its data and decision needs across the various supply chain nodes to ensure the FMS is customised to meet those needs.

	Farmer level	Agent level	LMM level
Business needs	• Timely communicate with farmers (market, weather information, training tips, event days etc). • Track production cycles/calendar and follow up of farm activity. • Measure performance/ productivity of farmers • Track farmer loyalty and potentially decrease side selling. • Leverage data to inform farmer graduation/tailor services	• Gain visibility on volumes aggregated by agents to inform transport arrangements/ route planning. • Easily forecast volumes collected per agent based on previous performance. • Track performance of agents through the seasons/years. • Understand training capacity (needs/ delivery). • Leverage data to inform agent graduation/ tailor services.	• Understand the capital needed to procure produce. • Timely process payment for produce collected. • Trace produce delivered from the agent/farmer • Ability to link annual procurement needs to the budgets. • Ability to leverage the FMS data to facilitate access to credit for farmers. • Manage advances to agents and loans to farmers. • Monitor capacity building activities of the agronomists. • Link performance of the agents to the agronomists.
Data points	• Farmer personal data • Production data • Farmer account (mobile, bank) details • Contract details (crops, volumes etc.) • Service data (Type of services received) • Farmer group details	• Agent personal data • Agent account (mobile, bank) details • Volumes collected per agent • Services delivery data (e.g., seeds, fertilisers distributed) • Farmers managed per agent • Extension services content/plan.	• Credit details (amount of loans, type of loan, repayment period etc.) • Agronomists' extension services content/plan and status. • Market information data e.g., prices
Potential risks	• Reluctance of the farmers to share their data. • Accuracy of the data provided/collected • Low levels of digital literacy and mobile phone/mobile money account ownership.	• Digital and financial literacy of the agents. • Access to digital/finance solutions (e.g., mobile phones, mobile money accounts) of the agents. • Lack of ownership /reluctance by the agents.	• Ability to onboard people with the right digital skills. • Lack of ownership by LMM staff. • Inadequate capacity building support to staff. • Limited budget dedicated to the digitization agenda. • Ensuring data security.

3. LMM Business Case

For business sensitivity reasons, we have excluded the pages of 'LMM business case' chapter from the report.

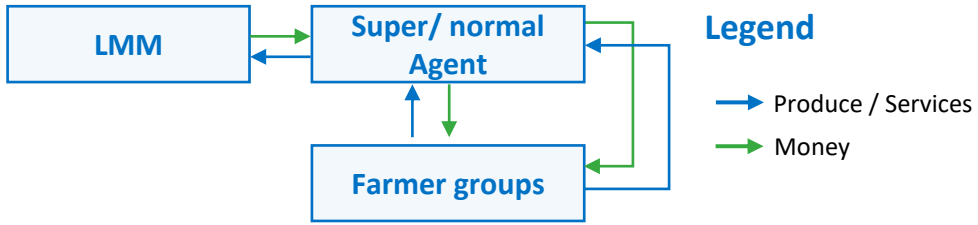
4. Agent Business Case

The network of 75 agents in the service delivery model segmented into super and normal agents perform a critical role in service delivery and off-take.

Key activities undertaken

1. Agents work with Landmark Millers to mobilise, sensitize, register farmers and facilitate group formation.
2. They work closely with the 4 agronomists of the company to deliver trainings on GAP. For, this the agents are required to set up demo farms and conduct Farmer Field School.
3. Distribute inputs – seeds, fertilizers and pesticides to the farmers
4. Continuously monitor the farmer and the crops and conduct spot visits to ensure good practices are being applied all through the season.
5. After harvest, they aggregate the grain at their store until LMM picks (>10Mt) or delivers the grain directly to LMM's central stores. With the growth targets, LMM can evaluate the potential of super agents to also provide a central aggregation point for the normal agents.
6. Pay the farmers immediately upon delivery of the produce.
7. The agents are also playing a crucial role in the implementation of the FMS by collecting, validating data and registering farmers.

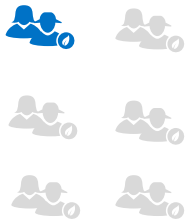
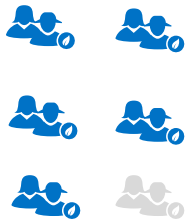
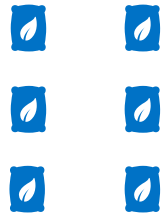
Sourcing structure



Critical gaps/weaknesses

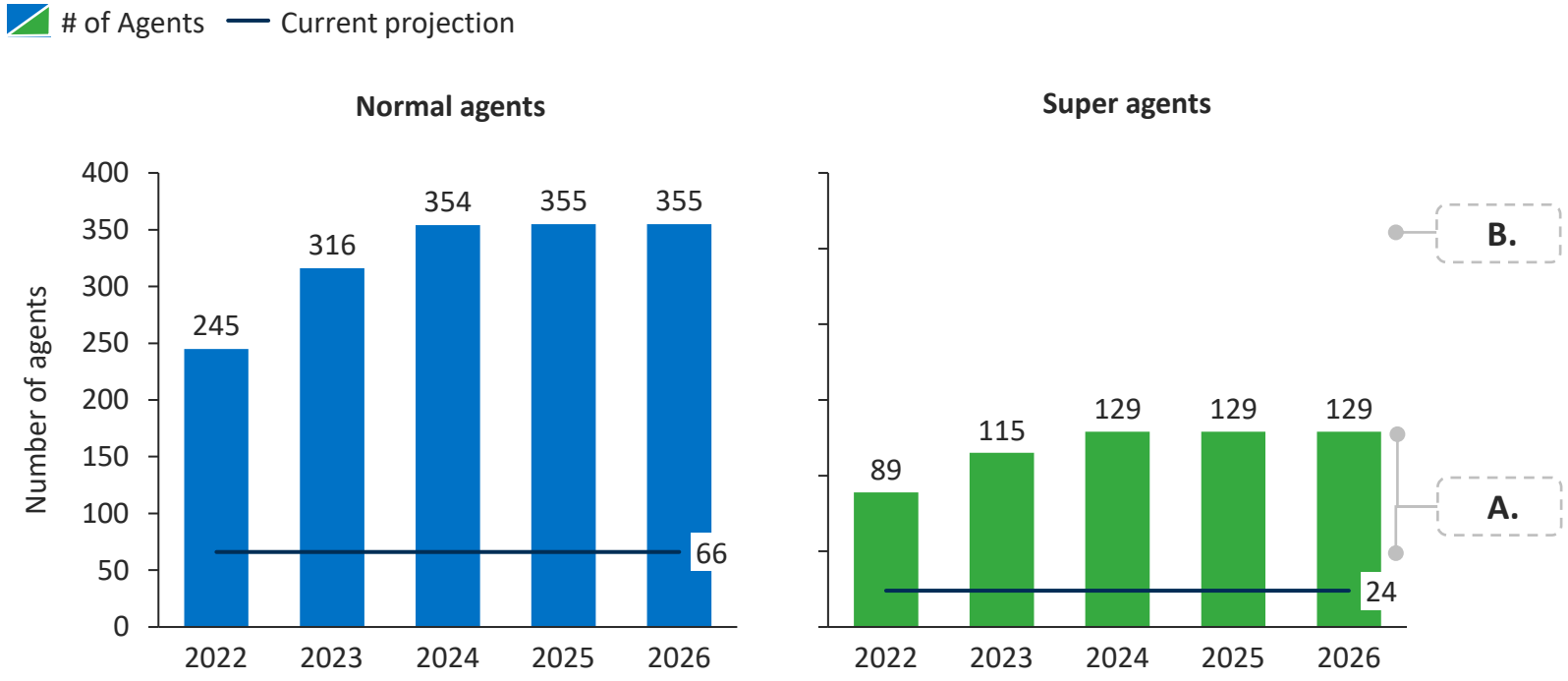
1. Agents have inadequate working capital which limits their sourcing ability.
2. Lack of clear accountability, performance management and monitoring system for the agents. Further, there are no structured incentives to encourage performance and loyalty of the agents.
3. High risk and possibility of side selling to other market players – sometimes using funds advanced by LMM.
4. Inadequate storage capacity at the agent level inhibiting their ability to source more volumes.

The majority of Landmark Millers agents base is made up of normal agents who manage upto 10 farmers on average and source less than 50 tons of grain annually.

	NORMAL AGENT	SUPER AGENT
DESCRIPTION *Indication of agent behaviour and loyalty*	• Farmer, similar characteristics as the medium size farmer, part of the SDM, who applies GAP and is member of a farmer group. • Besides farming, the person performs agent activities: sourcing volume, training farmers, and acquiring/mobilizing more farmers.	• Farmer, similar characteristics as the medium size farmer, part of the SDM, who applies GAP and is member of a farmer group. • Besides farming, the person performs agent activities: sourcing volume, training farmers, and acquiring/mobilizing more farmers.
FINANCIALS *Financial performance enablers from LMM*	**Commissions** • 30 UGX/kg grain • 500 UGX/kg certified seed **Procurement advance** • Upto 3,000,000 UGX **Cost** • 4x group visit at 22,000 UGX/visit • 4x training at 1,000 UGX/farmer	**Commissions:** • 50 UGX/kg grain • 500 UGX/kg certified seed **Procurement advance:** • Upto 30,000,000 UGX **Cost** • 4x group visit at 22,000 UGX/visit • 4x training at 1,000 UGX/farmer • Storage 600,000 UGX/year
PERFORMANCE Farmer segmentation and graduation follows logic outlined for SDM-level = 10 farmers = 20 bags	**Farmer base**  **Sourcing capacity** 	**Farmer base**  **Sourcing capacity** 
REPRESENT *% representing total of agent base per 2022*	73%	27%

LMM requires four times more agents compared to the number of agents that were originally projected (90) to onboard farmers and meet the target volumes; which increases the monitoring and training costs.

Required number of agents to operate the sourcing model | **Farmers/year**



	2022	2023	2024	2025	2026	
Normal agent *	14.5	20.5	27.0	36.5	47.0	**Mt/year**
Super agent *	73.0	103.0	136.0	182.0	234.0	**Mt/year**

B.

A. Based on the current segmentation characteristics of agents and sourcing targets, LMM requires 355 normal agents and 129 super agents from 2024 onwards. The total number of agents is 4 times the current projection.

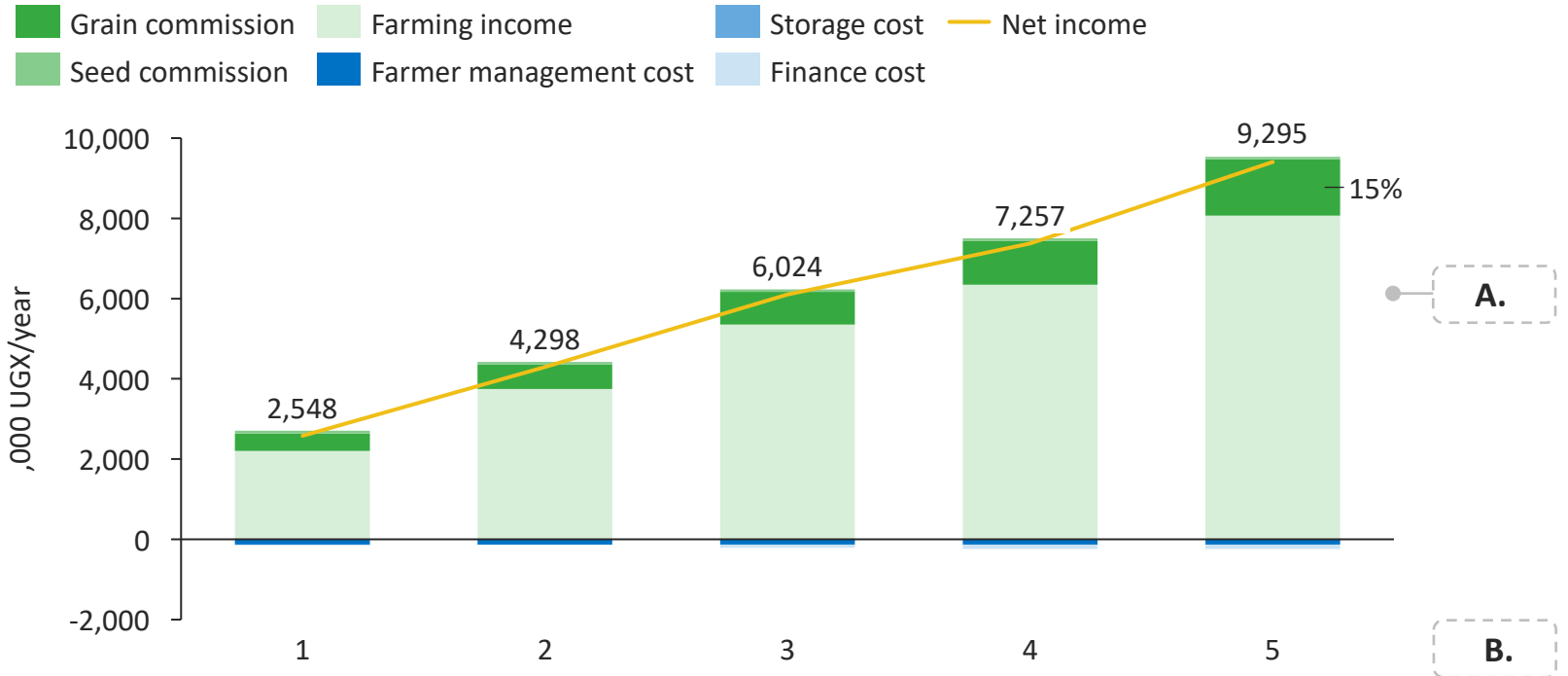
B. The sourcing volume to be managed by the agents is projected to increase by 220% for both the normal and super agent between 2022 and 2026. There is a need to evaluate to what extent agents have the capacity to operate the projected volumes.

C. The calculations in this report are based on the maximum (484 by 2024) number of agents needed to manage the farmer base.

NOTES: Total sourcing volume of sorghum and maize combined per year per agent.

LMM's normal agents are projected to only earn 15% of their income from grain and seed commissions which raises questions on the attractiveness of the agent activities.

Annual income from farming and other normal agent activities 2022 – 2026 | **NORMAL** | **,000 UGX/year**



A.

i) Normal agents are projected to generate **15% of their** income from agent activities with this income increasing **by +360%** between year 1 and year 5.

ii) The lower income from agent activities relative to the farming income however raises questions on the attractiveness of the model to the normal agents.

B.

Current assumptions project normal agents to annually supply up to **45 Mt of grain** after five years, which will require agents to invest in expansion of their storage capacity and ensure sufficient transport.

C.

Normal agents are projected to source produce worth **UGX 45 Mn by year 5** which significantly exceeds the current procurement advance provided by Landmark Millers.

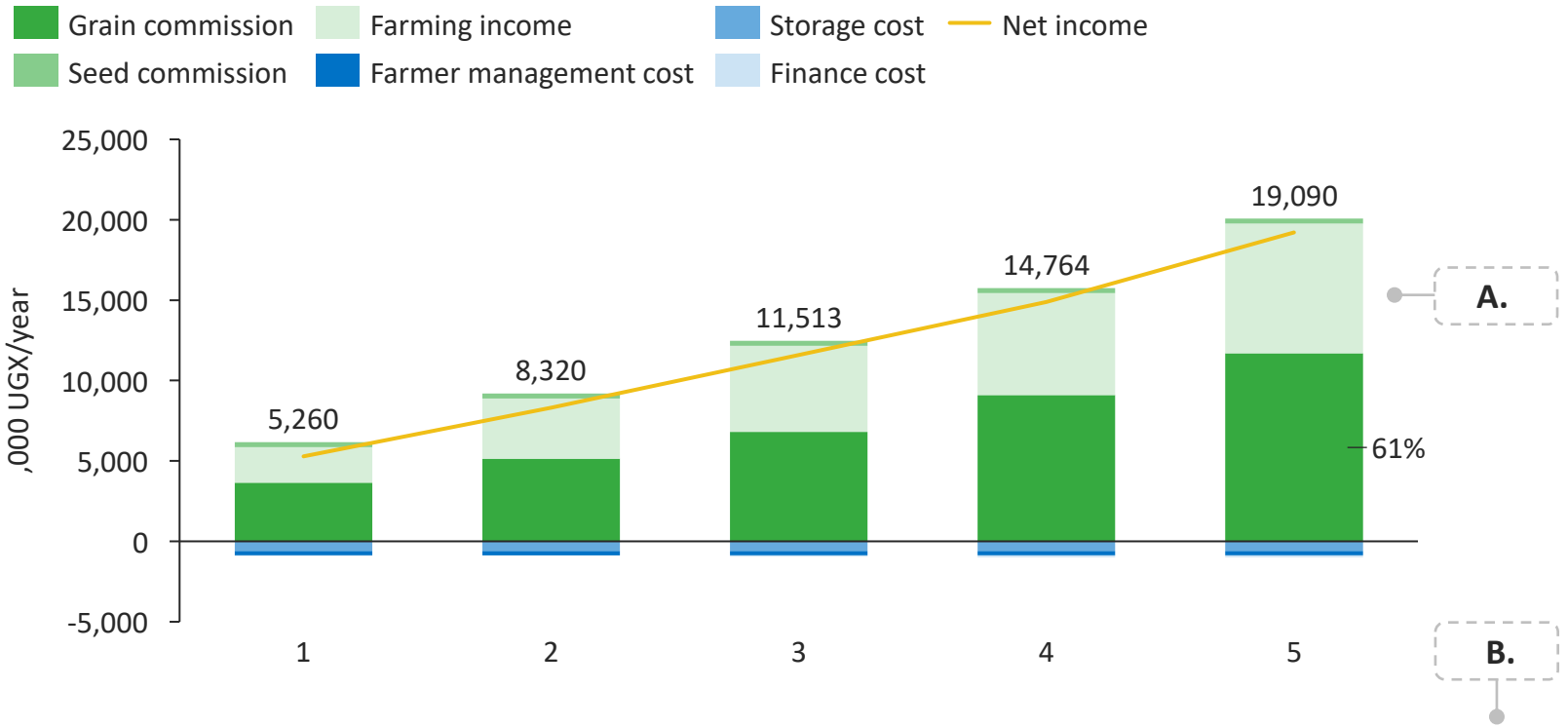
Sorghum volume	6	11	14	18	24	**Mt/year**
Maize volume	5	8	12	16	21	**Mt/year**
Sourcing value	11	19	26	34	45	**M UGX/year**

B.

C.

LMM's super agents are projected to earn up to 61% of their income from grain and seed commissions, which increases their income by 136% compared to solely performing farming activities.

Annual income from farming and other Super Agent activities 2022 – 2026 | **SUPER** | **,000 UGX/year**



Sorghum volume	31	54	70	92	118	**Mt/year**
Maize volume	23	42	58	78	103	**Mt/year**
Sourcing value	55	95	128	170	221	**M UGX/year**

C.

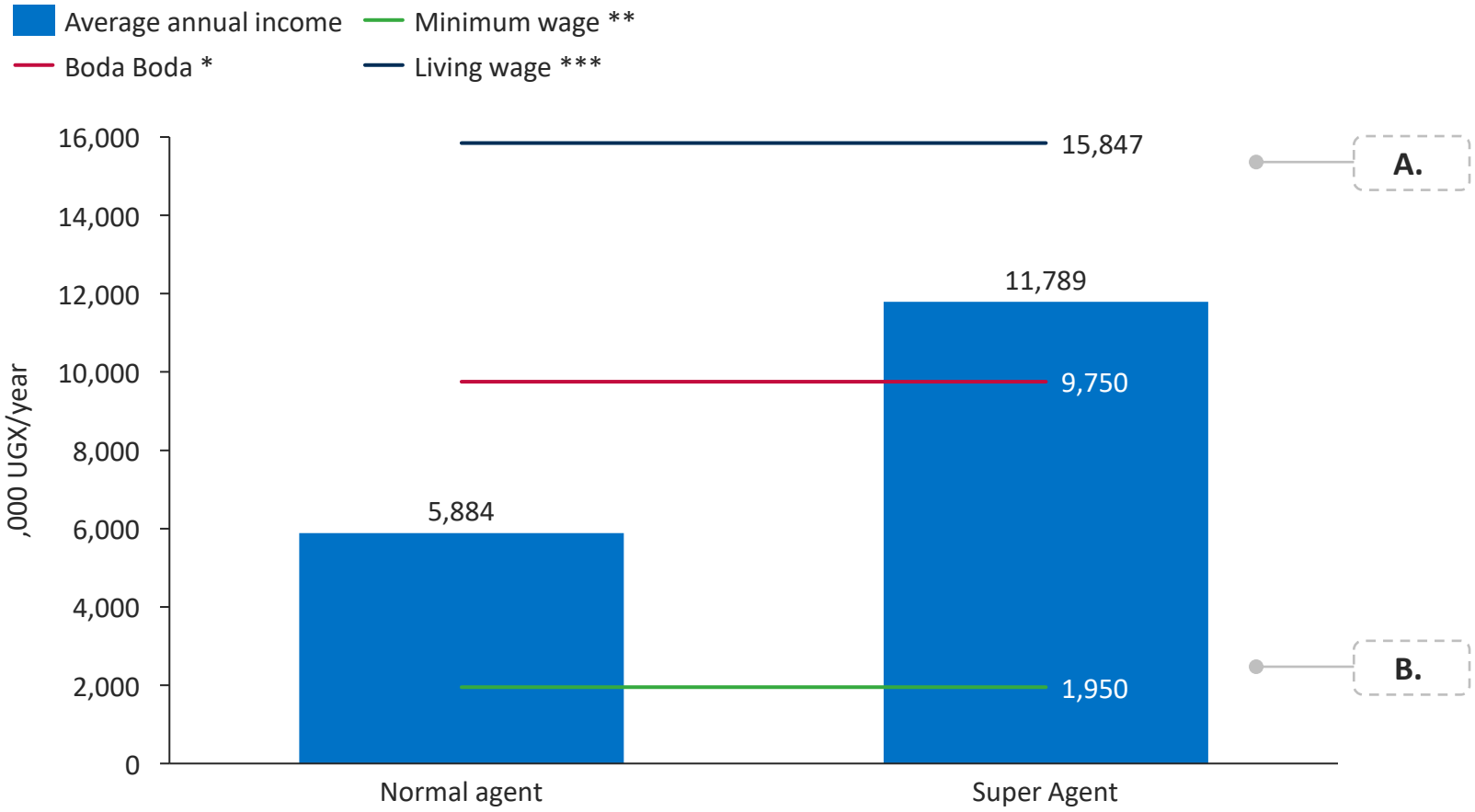
A. Agents are projected to generate **61% of their** income from agent activities with this income increasing **by +360%** between year 1 and year 5.

B. Current assumptions project super agents to annually supply up to **221 Mt of grain** after five years, which will require agents to invest in expansion of their storage capacity and ensure sufficient transport.

C. Super agents are projected to source produce worth **UGX 221 Mn by year 5**, which significantly exceeds the current procurement advance provided by Landmark Millers.

Combining agent and farming business, shows to be more competitive to other income generating activities such as boda boda operations or performing off farm labor for a minimum wage for the super agents.

Income comparison between Agent and other professions (5 year average) | **,000 UGX/year**



A. On average the normal agent earns **63% less compared to the living wage** and **40% less than the boda boda operator.** While on average the super agent earns **25% less** compared to the **living wage but 22% more than the boda boda operator**. Both normal and super agents generate higher incomes from their activities than just providing labour for off-farm activities (minimum wage).

B. LMM can incentivize the normal agents to graduate to super agents in order to grow their incomes.

*NOTE: * Monitor Team (2021); Boda boda operation is one of the main income generating activities taken up by the youth in Uganda .** Minimum Wage.org (2022); *** Wage Indicator (2019)*

LMM needs to evaluate the effective and efficient agent-base needed to reach the target sourcing volumes based on the agent capacity and the number of farmers they are able to manage.

Sensitivity analysis on number of agents — #/year

Sourcing volume of sorghum and maize combined (Mt/year)

Normal	Super	5,000	12,500	20,000	27,500	35,000	42,500	50,000	57,500	65,000	72,500	80,000
73 %	27%											
5	25	168	419	670	922	1173	1424	1676	1927	2178	2430	2681
6	30	140	349	559	768	977	1187	1396	1606	1815	2025	2234
7	35	120	299	[B] 479	658	838	1017	1197	1376	1556	1736	1915
8	40	105	262	419	576	733	890	1047	1204	1361	1519	1676
9	45	93	233	372	512	652	791	931	1071	1210	1350	1489
10	**50**	84	**209**	[A] 335	461	586	712	838	964	1089	1215	1341
11	55	76	190	305	419	533	647	762	876	990	1104	1219
12	60	70	175	279	384	489	593	698	803	908	1012	1117
13	65	64	161	258	354	451	548	644	741	838	935	1031
14	70	60	150	239	329	419	509	598	688	778	868	958
15	75	56	140	223	307	391	475	559	642	726	810	894
16	80	52	131	209	288	367	445	524	602	681	759	838

Number of farmers reached per Agent segment

A. Based on the sensitivity analysis assumptions [1)], with Normal Agents reaching 10 farmers (35 Mt/year/agent), and Super Agents 50 farmers (177 Mt/year/agent), Landmark Millers, on average requires approximately 209 agents annually to reach its current sourcing targets, **[A]** , and here for detailed projection

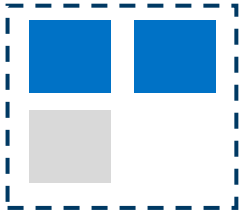
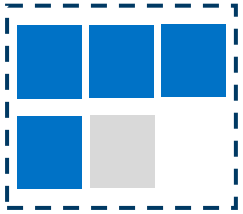
B. While decreasing the number of farmers per agent and hence achieving a more realistic volume per agent will require LMM to increase the number of agents four fold to upto 300 agents, **[B]**

C. With costs to serve driven by the onboarding and management of agents and service uptake by farmers, LMM could evaluate the insights of agents performance, service performance, and required number of agents to determine an updated target number of agents to work with.

*NOTES: 1) The sensitivity analysis assumes a 5-year average farmer productivity of **3.5 Mt/farmer** (see assumptions), with Super Agent working with **5 times more farmers** compared to Normal Agents, while the agent-base consists of **73% Normal Agents and 27% Super Agents***

5. Farmer Business Case

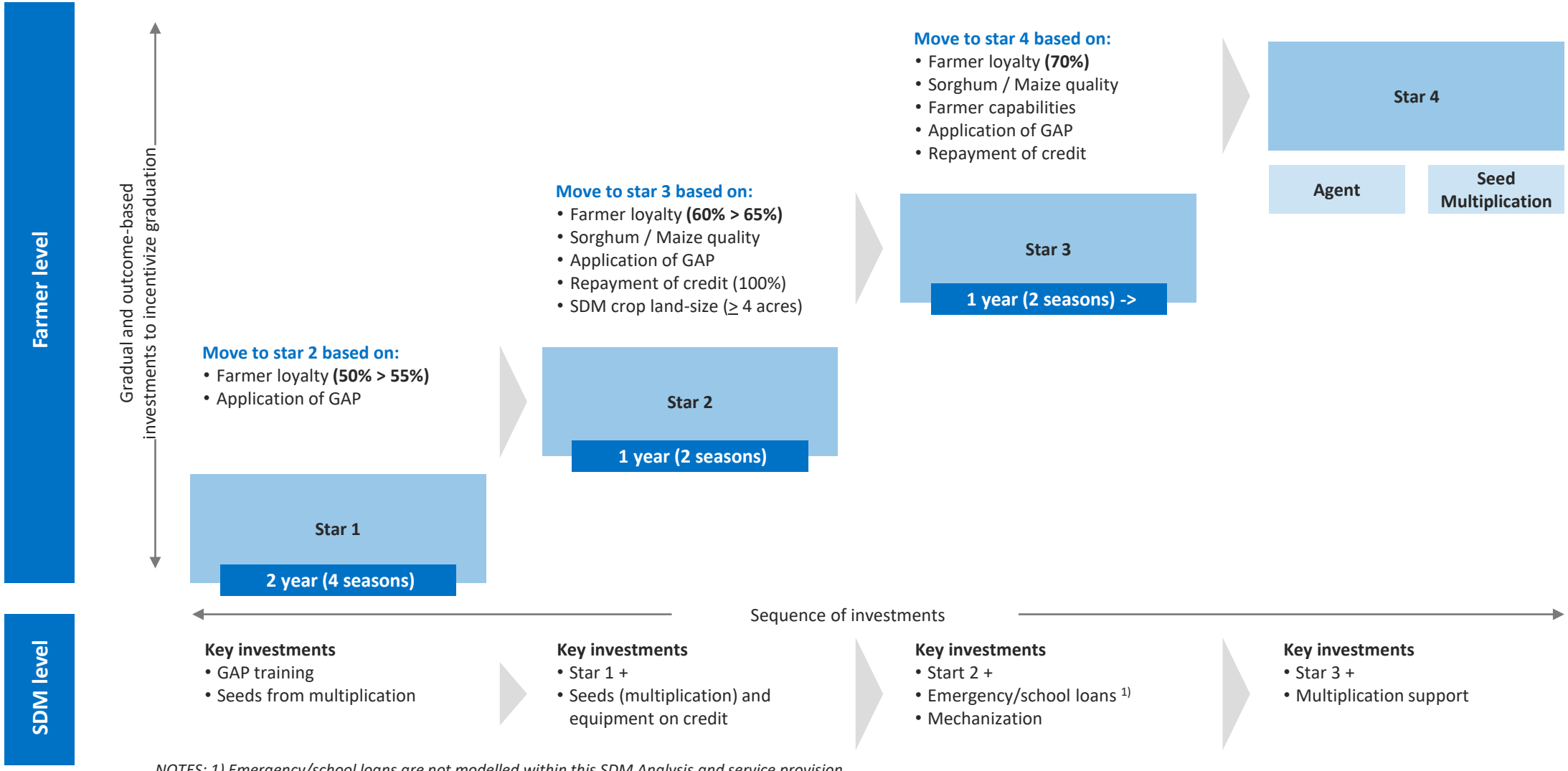
The analysis established two distinct segments based on land size; 80% of the farmers are small scale farmers with an average of 3 acres.

	SMALL SCALE	MEDIUM SCALE
DESCRIPTION *Indication of farmer behaviour and loyalty*	• Farmers, part of the SDM, who apply GAP and are member of a farmer group • Start as a 1-Star farmer and have the ambition to grow over time to become a 2-Star farmer here. • Household consists of average 7 people (3 adults and 4 children)	• Farmers, part of the SDM, who apply GAP and are member of a farmer group • Start as a 1-Star farmer and have the ambition to grow over time to become a 3-Star farmer here. • Household consists of average 7 people (3 adults and 4 children)
LAND-SIZE *Available land-size and crops cultivated*	 **Total**: 3 acres **M/S***: 2.5 acre **Other crops:** 0.5 acre 2) Ground nut, cassava, sweet potato	 **Total**: 5 acres **M/S***: 4 acre **Other crops:** 1 acre 2) Ground nut, cassava, sweet potato
CULTIVATION *Number of seasons / practises*	• **Seasons:** 2/year • **Practice:** Rotation, Annual seed purchase	• **Seasons:** 2/year • **Practice:** Rotation, Season seed purchase
BASELINE *Indication of farmer behaviour and loyalty*	• Have the same characteristics as the SDM farmer, but don't have access to seeds, credit, mechanization, or the GAP training	• Have the same characteristics as the SDM farmer, but don't have access to seeds, credit, mechanization, or the GAP training
REPRESENT 1) *% representing total of farmer base per 2022*	80%	20%

M=Maize, S=Sorghum

NOTES: 1) Representation determined on cohort analysis from PDC data and confirmed with LMM; 2) For more detailed analysis on 'other crops', see [here]; 3) For more farm-level assumptions, see [here];

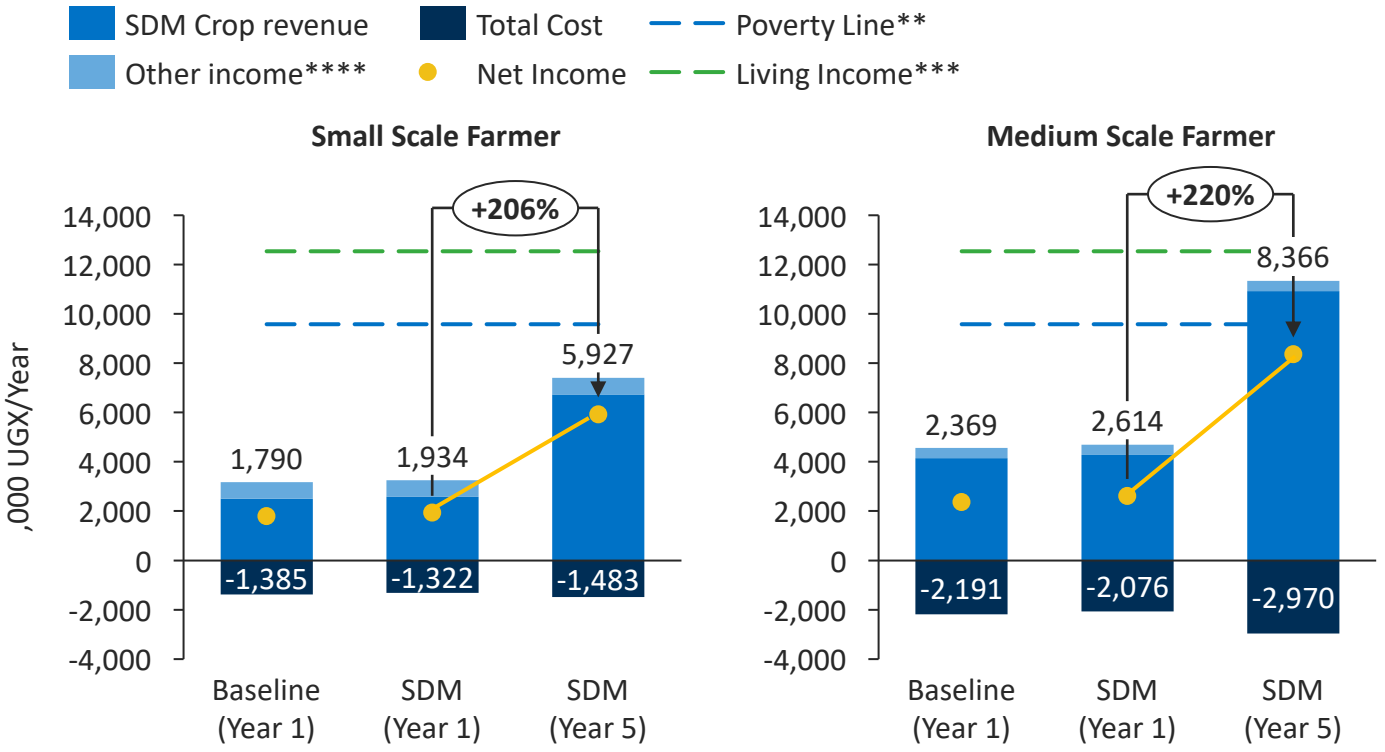
By implementing a farmer graduation model, Landmark Millers can incentive farmers to stay loyal and secure more grain volumes, while increasing the income of the farmers they work with.



NOTES: 1) Emergency/school loans are not modelled within this SDM Analysis and service provision

There is a gradual income growth and reduction of living income gap for the SDM farmer attributed to the increase in productivity due to the services provided.

Income analysis for small and medium scale farmers | **,000 UGX/year**



	Small Scale Farmer			Medium Scale Farmer			
	Baseline (Year 1)	SDM (Year 1)	SDM (Year 5)	Baseline (Year 1)	SDM (Year 1)	SDM (Year 5)	
Sorghum	1,450	1,494	3,582	2,350	2,421	5,762	kg/year
Maize	1,050	1,087	3,153	1,800	1,859	5,165	kg/year

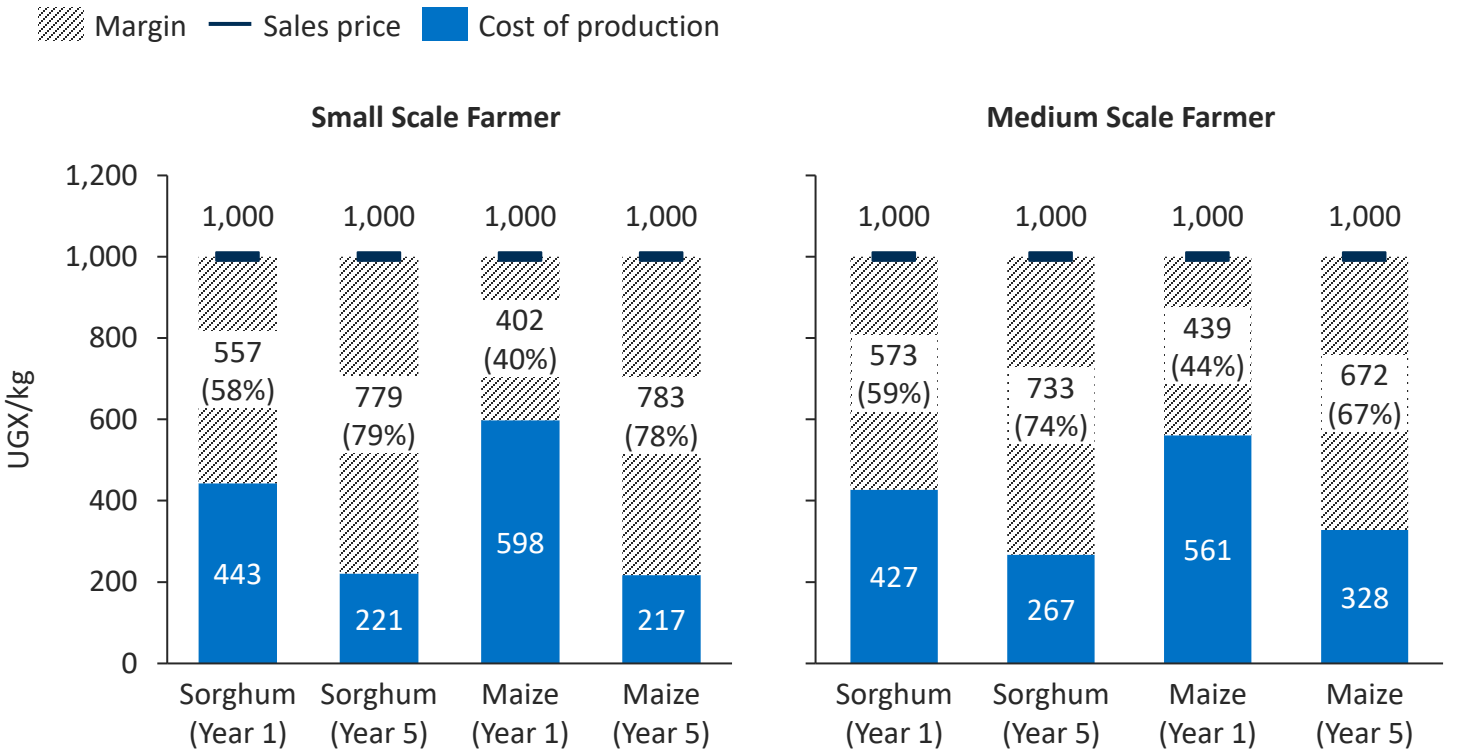
A. Compared to baseline farmers, SDM farmers are projected to increase their net income by **>200% between** Year 1 and Year 5 due to increased productivity (from higher yielding seeds and application of GAPs) and better post-harvest handling techniques.

B. With increased income, there is a projected reduction in the living income gap from **79% in Year 1 to 33%** in Year 5 for medium scale and from **85% in Year 1 to 53% i**n Year 5 for small scale farmers.

*NOTES: * Quantity in Kg/year; ** Data on poverty line is obtained from World Bank (2022); *** The Living Income (LI), see Shift (2022), is an approximate income needed to meet a family's basic needs including food, housing, transport, health, education, tax deductions and other necessities. The difference between the LI benchmark and actual income is referred to as the living income gap. The living income benchmark depicts a typical family of Seven members (3 adults and 4 children). ****Other income includes; income from other crops, income from livestock and income from farm labor and non-labor activities. Income from other crops (mainly cassava and groundnuts) account for only 4% of other income.*

Sorghum has higher margins per acre compared to maize due to the lower cost of production. Sorghum also has higher productivity per acre compared to maize.

Margins per Kg crop for small and medium scale farmers | **UGX/kg**



	Small Scale Farmer				Medium Scale Farmer			
	Sorghum (Year 1)	Sorghum (Year 5)	Maize (Year 1)	Maize (Year 5)	Sorghum (Year 1)	Sorghum (Year 5)	Maize (Year 1)	Maize (Year 5)
Kg/acre *	598	1433	435	1,261	605	1,440	465	1,291
Margin **	345k	1,130k	174k	987k	347k	1,056k	204k	867k

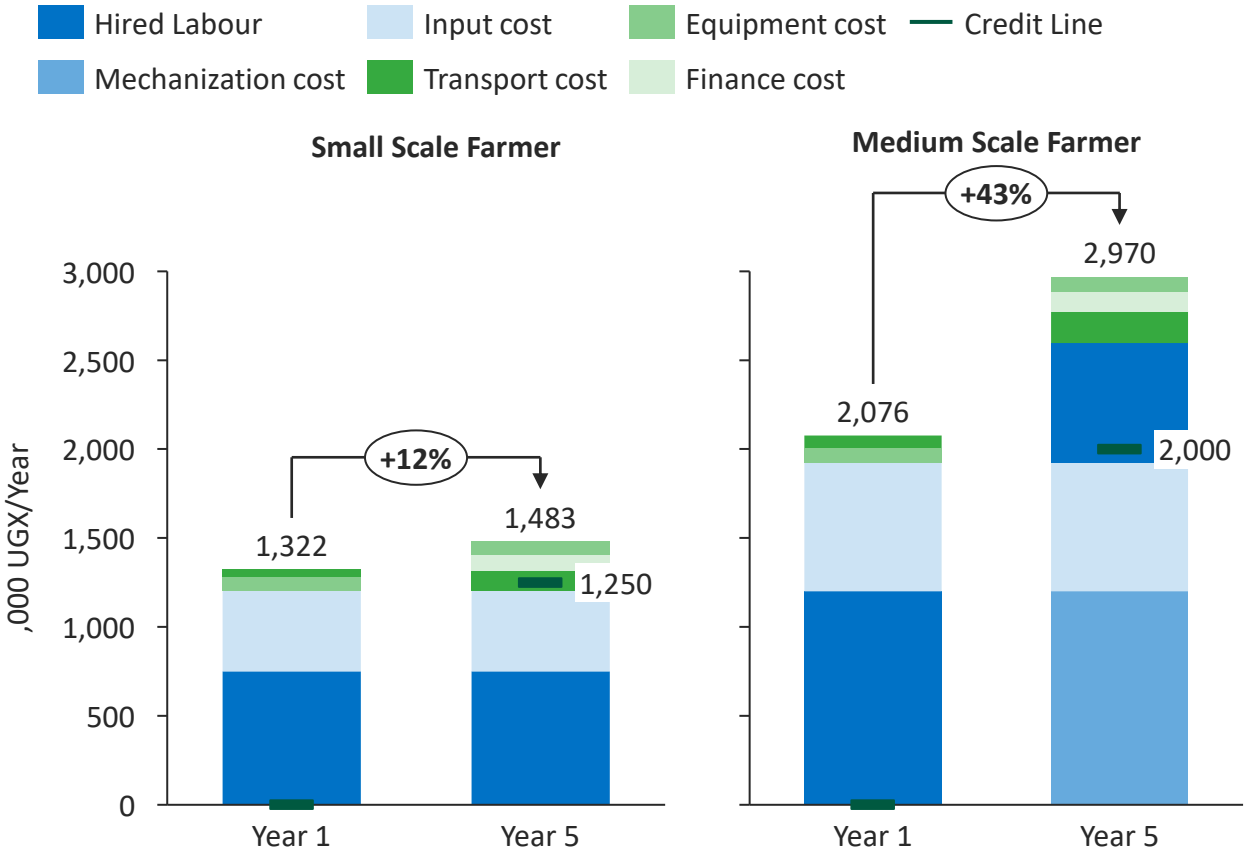
A. Sorghum has **higher margins per kg** compared to maize for both farmer segments. Farmers are however, encouraged to grow both crops for rotational purposes and to diversify income. There is also a larger market and higher demand for maize across the East Africa region compared to sorghum.

B. The difference in the cost of production for the two crops is due to the seed cost - maize seed is **+29% more** expensive than sorghum seed.

*NOTES: * Kg/acre refers to the productivity a farmer has of that particular crop per acre/season; ** Margin refers to the margin in UGX/acre/season*
Sorghum and maize are cultivated on a rotational basis across the seasons with maize typically being grown in the first season and sorghum in the second season.

The cost of production is largely driven by the cost of labour (both mechanized and hired) and the cost of inputs. Providing services that lower these costs, results in increased income for the farmer.

Cost of production for small and medium scale SDM farmers | **UGX/year**



A. Production costs are mainly driven by the cost of **hired labour (51%)** for the small-scale farmer and the cost of **mechanization (40%)** for the medium scale farmer.

B. Hired labour costs are primarily driven by the cost of **land preparation (28%)** and the cost of **weeding (21%)** which are labour-intensive activities. Approximately **40% of the total labour** required is hired. The rest is provided by the family.

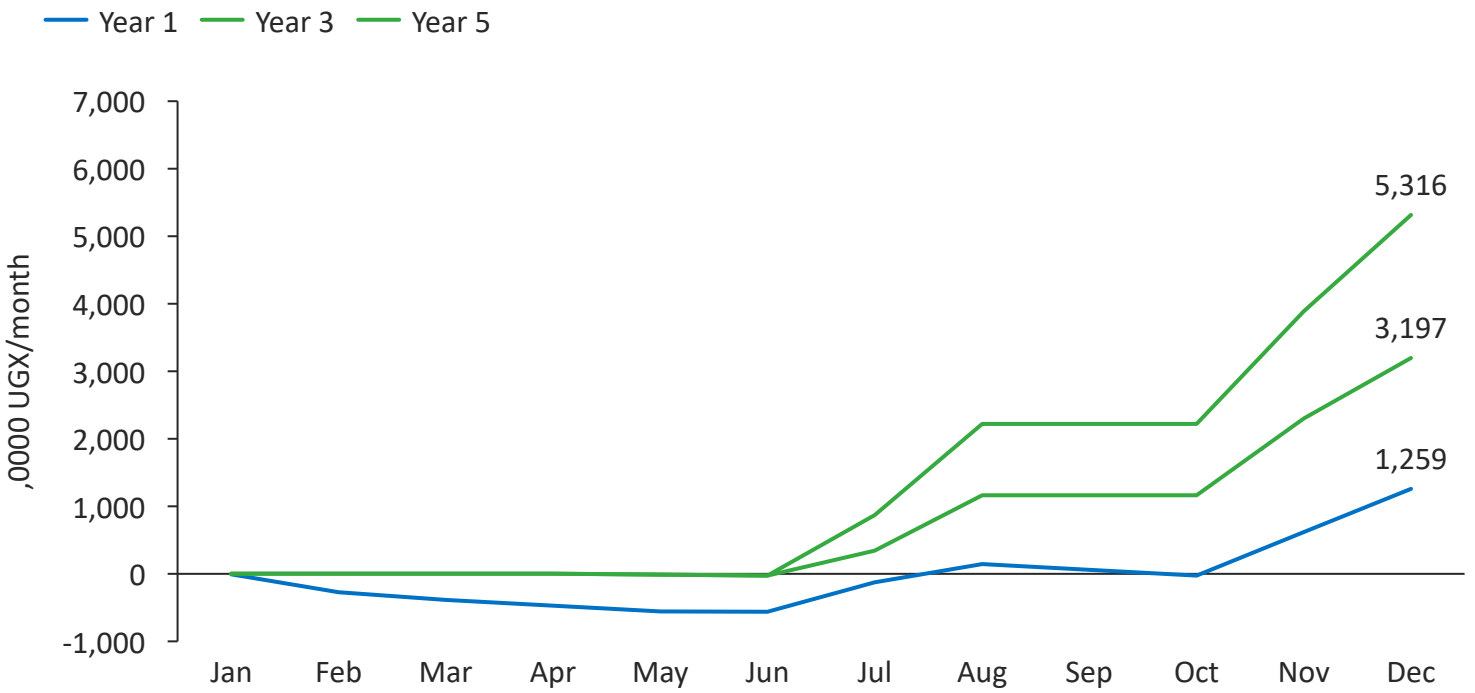
C. The cost of inputs, the second driver of production cost is relatively low as most farmers only **purchase seed and pesticides**. The use of inorganic fertilizer in the region is very limited.

D. Currently the credit line prioritizes the **purchase of seed (input cost) and tarpaulins (equipment cost)** and can be used to finance cost of labour where the farmer has not exhausted the credit line of 500,000 UGX/acre on the priority costs. There is potential to also finance mechanisation services particularly for the medium scale farmers.

Notes: Based on the graduation matrix, farmers are eligible to a credit line from their third year in the SDM. The difference in the cost increase between the small scale farmer and the medium scale farmer between Year 1 and Year 5 is attributed to the changes in the cost of mechanization. 1) Atube et al., 2021

Cumulative net cash position of the small-scale farmer improves gradually across the years with increasing productivity and availability of a credit line facility from the 3rd year in the SDM.

Cumulative net cash flow per month from maize and sorghum activities | **SMALL SCALE** | **UGX/month**



% utilized *	0%	22%	31%	38%	44%	44%	0%	5%	12%	19%	19%	0%
Finance cost **	0	-206	-2,715	-3,898	-4,794	-5,557	-5,407	-623	-623	-1,486	-2,380	-1,734

A. Farmers have cumulative negative cash flows for **7 months in a year** moving into a positive cashflow position after the first harvest in August in the 1st year.

B. From the third year, the farmer is sufficiently liquid. This is informed by the credit line which is able to provide the farmer with cash required during the first half of the year, when they incur expenses with no revenues from the SDM crops.

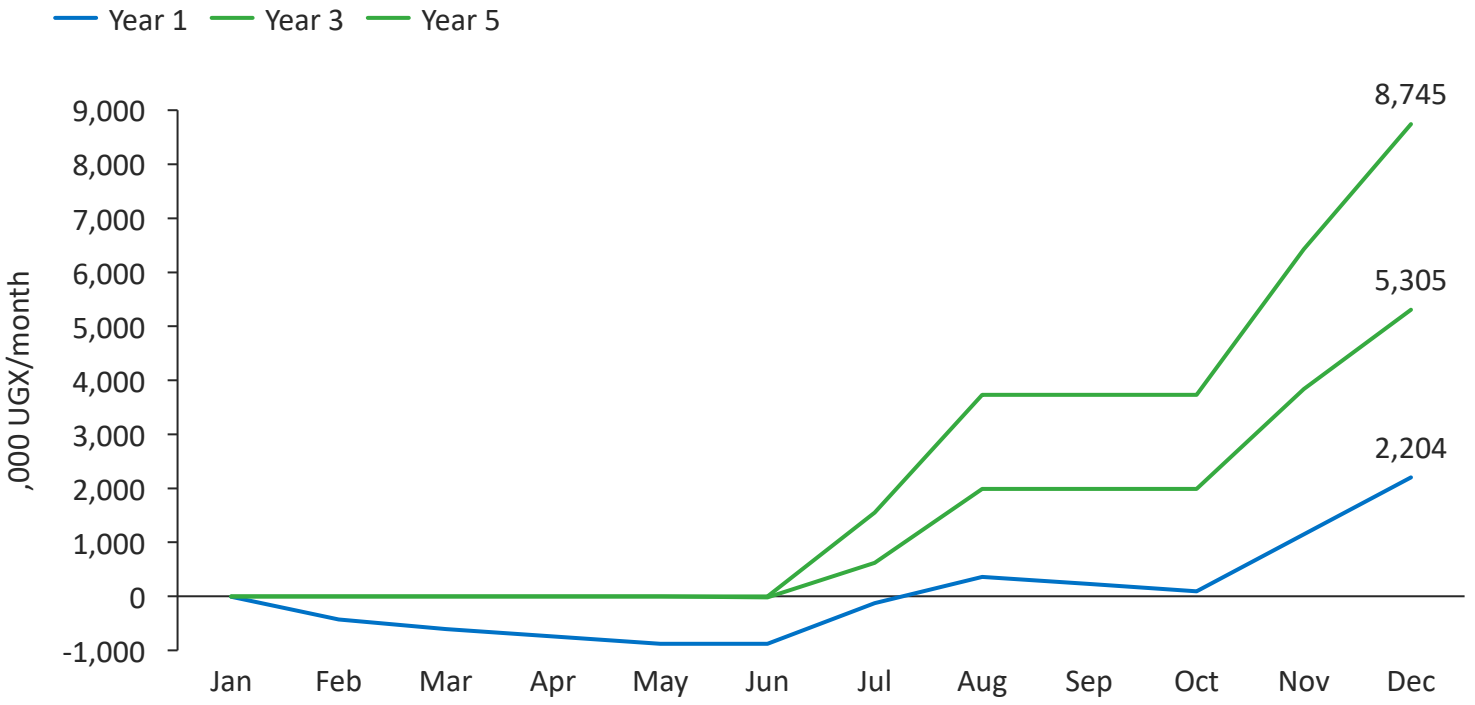
C. Changes in the cash movement of the farmer over the years are informed by the increasing revenues from the SDM crops

D. Income diversification is critical to improving the overall liquidity of the farmer throughout the year.

*NOTES: * Average % utilization of the credit line in the years the farmer is eligible for finance (year 3-5); ** Average cost of finance UGX/month for the years and months the farmer is eligible for finance (year 3 – 5)*

Similarly, cumulative net cash flows of the medium-scale farmer improves gradually across the years with increasing productivity and availability of a credit line facility from the 3rd year in the SDM

Cumulative net cash flow per month from maize and sorghum Activities | **MEDIUM SCALE** | **UGX/month**



% utilized *	0%	21%	30%	37%	44%	44%	0%	5%	12%	19%	19%	0%
Finance cost **	0	-296	-4,116	-5,973	-7,369	-8,765	-8,620	-995	-995	-2,341	-3,736	-2,706

A. Farmers have cumulative negative cash flows **for 7 months in** a year moving into a positive cashflow position after the first harvest in July in the 1st year.

B. From the third year, the farmer is sufficiently liquid. This is informed by the credit line which is able to provide the farmer with the cash required during the first half of the year when they incur expenses with no revenues from the SDM crops.

C. Changes in the cash movement of the farmer over the years are informed by the increasing revenues from the SDM crops

D. Income diversification is critical to improving the overall liquidity of the farmer.

*NOTES: * Average % utilization of the credit line in the years the farmer is eligible for finance; ** Average cost of finance per month for the years and months the farmer is eligible for finance*

The price of sorghum has been relatively stable as it's determined by UBL. The price of maize on the other hand is highly volatile. This however, doesn't have a negative impact on the incomes of the farmers.

MAIZE [1)]

Marketable surplus (kg/farm/year) →

Farm-gate price (UGX/kg) ↑↓

	2,500	3,000	3,500	4,000	4,500	5,000	5,500	6,000	6,500	7,000
600	4,274	4,574	4,874	5,174	5,474	5,774	6,074	6,374	6,674	6,974
700	4,524	4,874	5,224	5,574	5,924	6,274	6,624	6,974	7,324	7,674
800	4,774	5,174	5,574	5,974	6,374	6,774	7,174	7,574	7,974	8,374
900	5,024	5,474	5,924	6,374	6,824	7,274	7,724	8,174	8,624	9,074
1,000	5,274	5,774	6,274	6,774	7,274	7,774	8,274	8,774	9,274	9,774
1,100	5,524	6,074	6,624	7,174	7,724	8,274	8,824	9,374	9,924	10,474
1,200	5,774	6,374	6,974	7,574	8,174	8,774	9,374	9,974	10,574	11,174
1,300	6,024	6,674	7,324	7,974	8,624	9,274	9,924	10,574	11,224	11,874
1,400	6,274	6,974	7,674	8,374	9,074	9,774	10,474	11,174	11,874	12,574
1,500	6,524	7,274	8,024	8,774	9,524	10,274	11,024	11,774	12,524	13,274

SORGHUM [1)]

Marketable surplus (kg/farm/year) →

	2,500	3,250	4,000	4,750	5,500	6,250	7,000	7,750	8,500	9,250
600	3,844	4,294	4,744	5,194	5,644	6,094	6,544	6,994	7,444	7,894
700	4,094	4,619	5,144	5,669	6,194	6,719	7,244	7,769	8,294	8,819
800	4,344	4,944	5,544	6,144	6,744	7,344	7,944	8,544	9,144	9,744
900	4,594	5,269	5,944	6,619	7,294	7,969	8,644	9,319	9,994	10,669
1,000	4,844	5,594	6,344	7,094	7,844	8,594	9,344	10,094	10,844	11,594
1,100	5,094	5,919	6,744	7,569	8,394	9,219	10,044	10,869	11,694	12,519
1,200	5,344	6,244	7,144	8,044	8,944	9,844	10,744	11,644	12,544	13,444
1,300	5,594	6,569	7,544	8,519	9,494	10,469	11,444	12,419	13,394	14,369
1,400	5,844	6,894	7,944	8,994	10,044	11,094	12,144	13,194	14,244	15,294
1,500	6,094	7,219	8,344	9,469	10,594	11,719	12,844	13,969	15,094	16,219

A. Maize prices are highly volatile, historically ranging between 800 – 1,100 UGX/kg. [2)] In 2022 the prices ranged between UGX 1,000 (high supply) – UGX 1,600/kg (low supply) [3)] and varied depending on the location.

B. Assuming maize prices decrease to UGX 600, with current production (3,500 kg/farm/year), farmers still earn a positive income.

C. Sorghum prices on the other hand have been relatively stable. The average price of sorghum has been UGX 1,000 per kg for the last five years. [3)] The highest reported market price in 2021 was UGX 1,400 per kg outside the harvest season. [3)]

NOTES: 1) Change in maize/sorghum production, with other variables remaining unchanged; 2) WFP, 2019 2) Advocacy Coalition for Sustainable Agriculture, 2022 3) Famine Early Warning Systems Network, 2022 4) International Food Policy Research Institute, 2022

Farmers need to rely on multiple income drivers to close the living income gap. Although increase in price provides the largest change in income, this is unlikely to be achieved given past trend in price change.

Feasibility

Unlikely — Likely

Change to close living income gap *

Current | Sorghum | Maize | Diversification | Feasbile

Income (UGX by year 5)

Production area
Current sorghum/maize land-size and required change

- To achieve a change in the living income, the required change on production area is on average +6.6 acres. Small scale farmers are, in the short term, only able to lease additional land (100,000 UGX/acre/season), perhaps to meet graduation requirements. Medium scale farmers have little incentive to increase the area under production.

Productivity
Current productivity per acre and required change

- To achieve productivity beyond the current yield/acre/season, farmers will need to apply fertilizer. Productivity will need to increase by 744 and 621 kg/acre/season for sorghum and maize to reach obtainable yield of 2,200 and 1,900 kg/acre/season for the two crops respectively. The increase in income is limited, due to the increasing price of fertilizer.

Price (value add)
Current price incl. premium and required change

- Prices require to increase to 1,700 UGX/kg (+70%) for sorghum and 2,150 UGX/kg (+115%) for maize for income change to be achieved. The prices of sorghum and maize have however only reached an increase of 500 UGX/kg (+40%) in the past. *** / ****

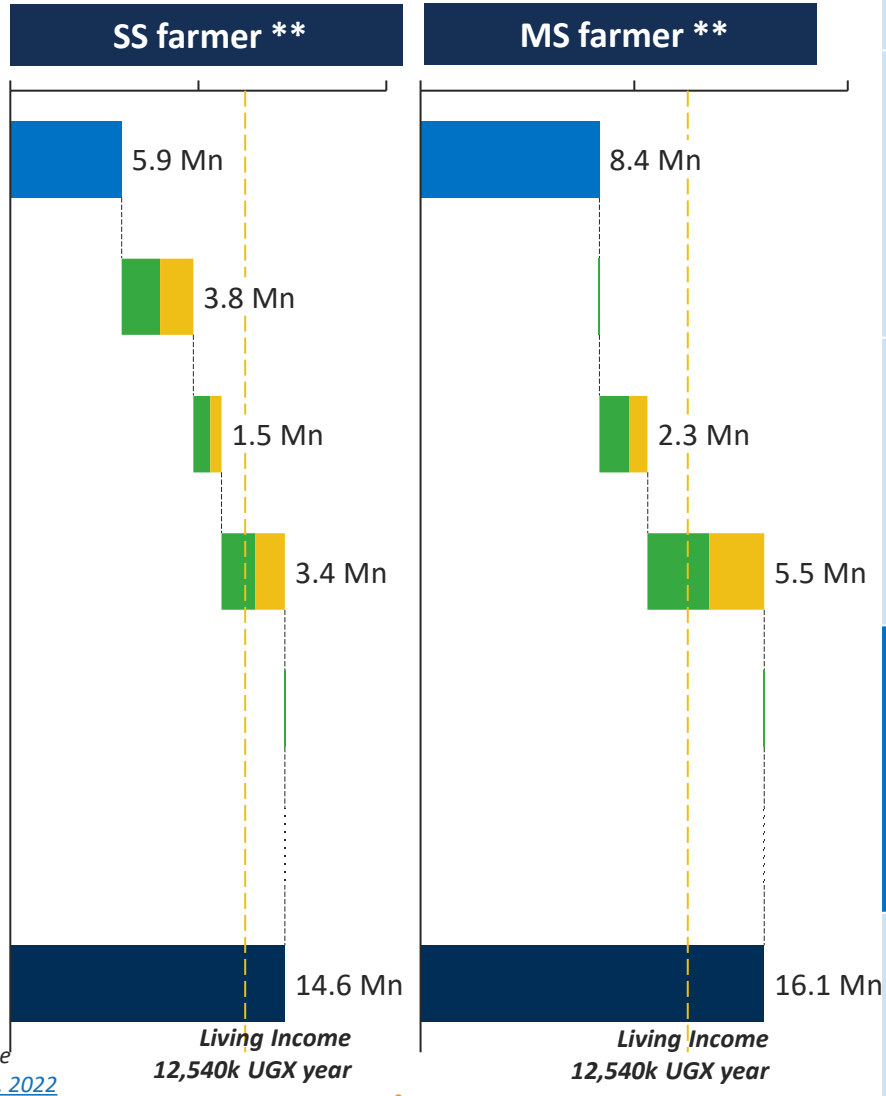
Cost of Production
Current cost of production per acre and required change

- Although the cost of production might change if more benefits are identified from mechanization, for this analysis we assume the cost of production to remain relatively stable and potentially only to increase.

Diversified income
Current non-sorghum/maize income and required change

- To close the gap with diversified income, the farmer requires on average 5,540k UGX/year from other activities. Implementing the '4 Crop model' might close part of this gap, but further research is required to see whether net income from intercropping outweighs the loss of off-farm labor income, and can be linked to current market demand.

Feasible income (UGX/year)



*Notes: *For the analysis of each of the driver, all the other factors that influence the income are held constant ** The values presented in the graphs is the income change that can be attained with the context of the SDM *** Famine Early Warning Systems Network, 2022 **** Advocacy Coalition for Sustainable Agriculture, 2022*

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IDH Annual Report 2021

IDH Shifting Gears

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6. Annex

This section includes the following subchapters:

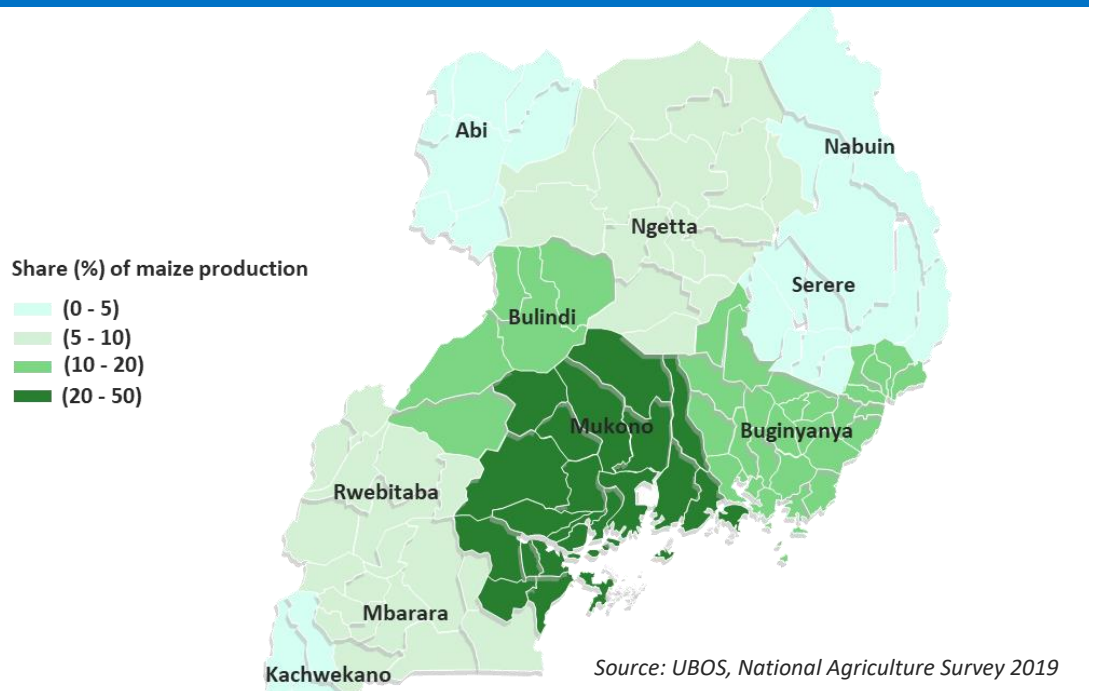
- *6.1 Context of the SDM*
- *6.2 Profile of farmers (PDC data)*
- *6.3 Assumptions and methodology*

6. 1 Context of the SDM

Maize is a major crop grown by a significant proportion of farmers in Uganda, while sorghum is mainly grown by farmers in drought prone areas

- Maize is grown by **4.1mn** agricultural households (close to **60%**[1] of all agricultural households) with highest production witnessed in the central, western and eastern regions of the country in two seasons annually.
- Production is largely rain-fed with two farming seasons per year. In 2020, maize accounted for **10%** of total agricultural production (4th most produced crop)[2] in the country and **13%** of total area harvested (3rd crop by area harvested).[3]

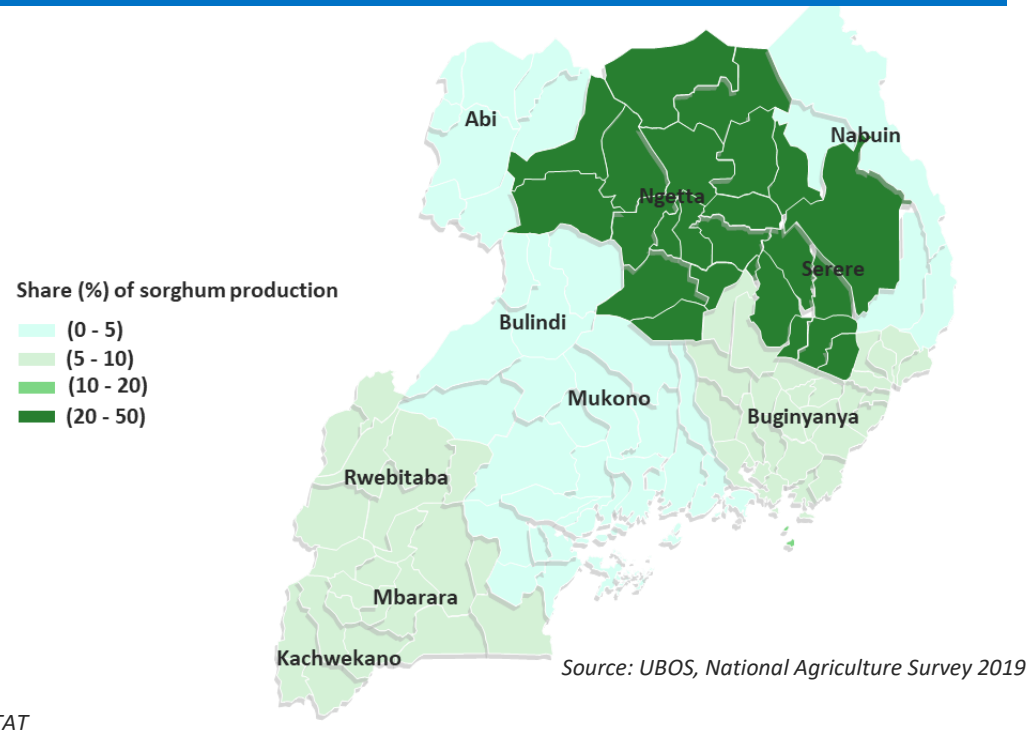
Maize production by agricultural zones*, 2019



Source: UBOS, National Agriculture Survey 2019

- Sorghum is produced by **753,000** agricultural households (**11%**[4] of all agricultural households) mostly in Northern, Eastern and Southwestern regions of the country that are more prone to droughts in two seasons annually.
- In 2020, sorghum accounted for **1%** of total agricultural production (13th most produced crop)[5] in the country and **4%** of total area harvested (8th crop by area harvested).[6]

Sorghum production by agricultural zones*, 2019

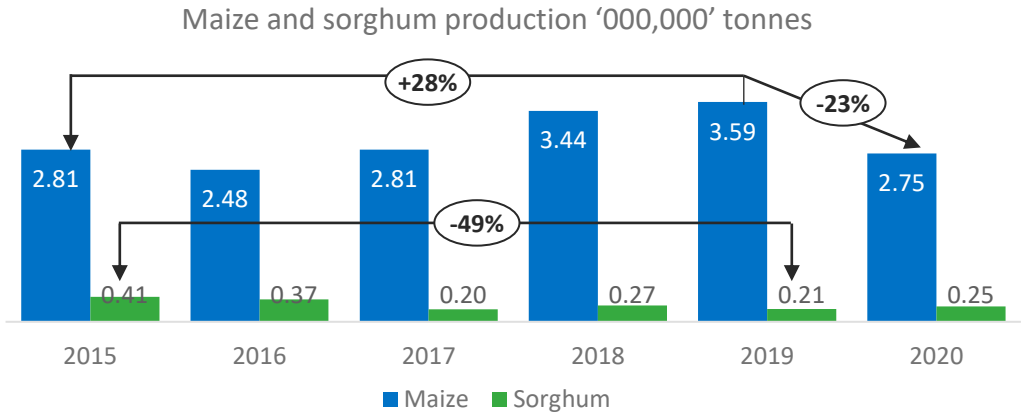


Source: UBOS, National Agriculture Survey 2019

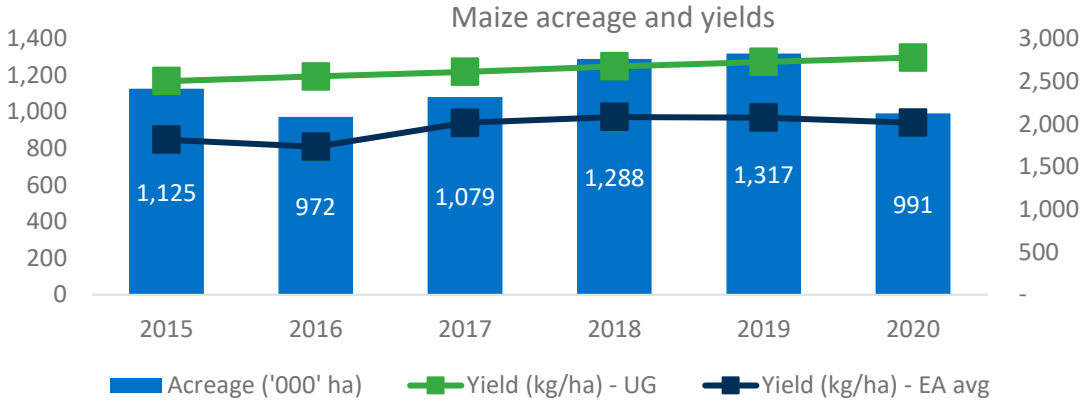
Sources: 1)UBOS, National Agriculture Survey 2019 ; 2) FAOSTAT; 3) FAOSTAT; 4) UBOS, National Agriculture Survey 2019 ; 5) FAOSTAT; 6) FAOSTAT
**Zonal Agricultural Research and Development Institutes (ZARDI)*

Maize production has experienced moderate growth in the last years, largely driven by a steady expansion of acreage, and little from improved productivity. Sorghum production on the other hand has been declining

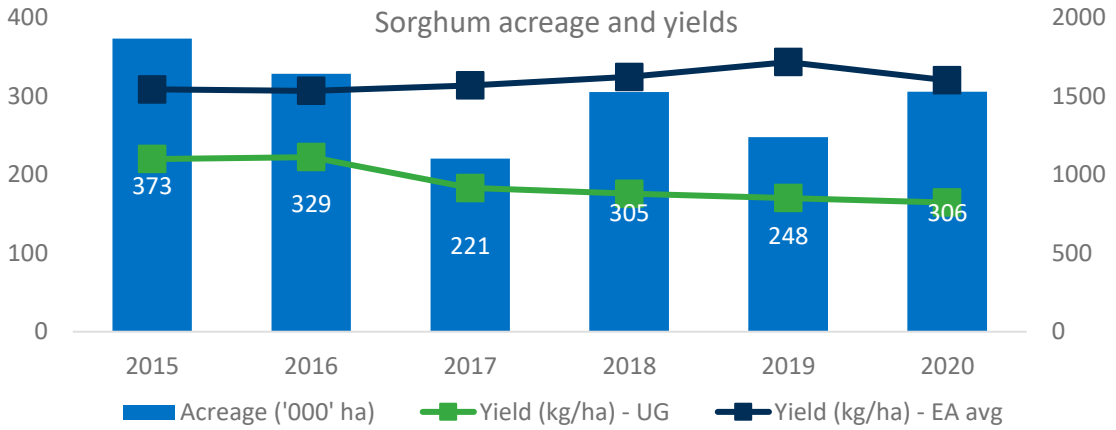
Fluctuation in production of maize was experienced in 2019/2020 as a result of disruptions brought about by COVID-19[1]



While there has been limited productivity growth for maize in recent years, Uganda performs better than the Eastern Africa* region average[2]



On the other hand, sorghum productivity levels are significantly lower than the Eastern Africa* region average[3]



Production dynamics

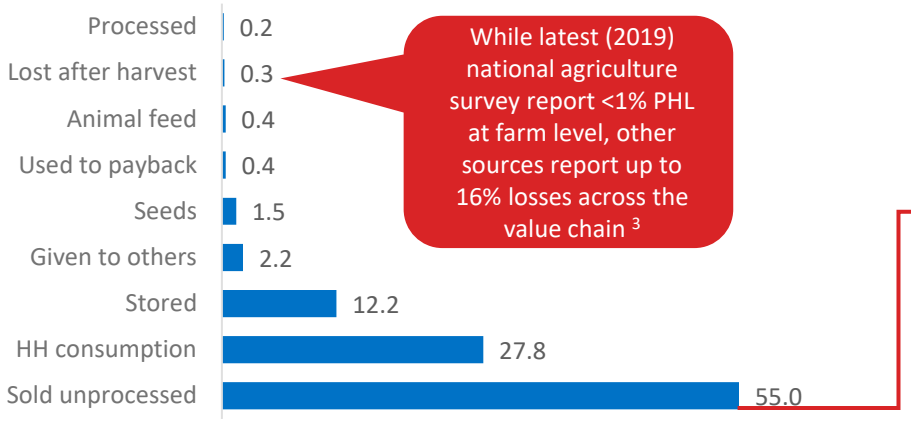
- Maize production increased by 28% between 2015-2019 largely driven by increase in area under cultivation that grew by 17% over same period.[4]
- Maize productivity continue to be strained by use of low-quality inputs where the informal market accounts for 85-90% of all seeds used by farmers and only 5-15% of total seed is improved.[5] Further, only 5% of maize plantings receive the recommended fertilizer dosage.[6] The Agriculture Cluster Development project by the World Bank and Ministry of Agriculture seeks to increase productivity by 30%.[7]
- In contrast, both sorghum production and area under cultivation decreased by 49% and 34% respectively between 2015-2019. Constant pests and diseases attacks have kept yields significantly low. Smut and grain mold which are the common diseases contribute 27% and 21% respectively to yield loss while stem borers and shootfly, the common insect pests contribute 42% and 25% respectively to yield loss.[8]

**Eastern Africa region as defined by the United Nations*

Sources: 1,2,3,4) FAOSTAT; 5,6) International Growth Centre -policy Brief – Maize value chain in EA, 2017; 7) Agriculture Cluster Development Project 8) Sorghum production handbook for Uganda, 2019

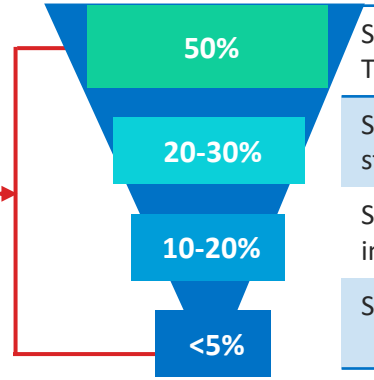
Maize and sorghum remain key for food security with a large proportion of both grains consumed by the households.

Maize use (% share of total production)* at the farm level, 2019 [1]



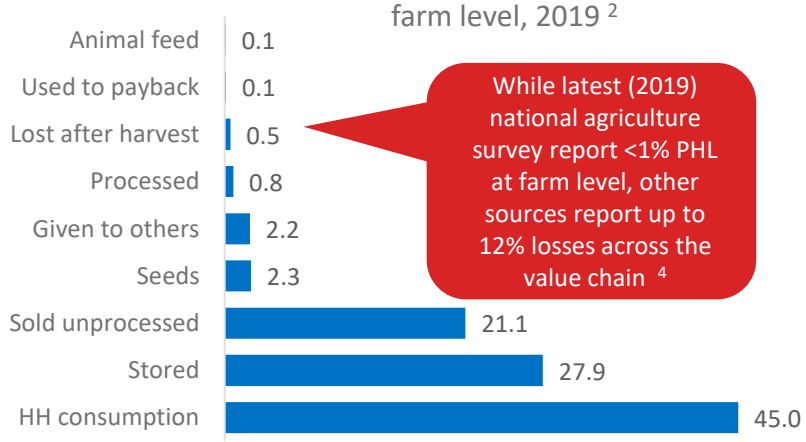
Maize buyers in Uganda can be categorized in four main tiers

% of volumes sold [5]



- Sold to major institutional food programmes dominated by WFP Uganda. These buyers pay lower margins than premium buyers in Kenya.
- Sold to largescale millers in Kenya who demand high EAC/Kenyan quality standards, some pay premiums as high as 30%.
- Sold to regional customers in Rwanda, South Sudan, or smaller mills in Kenya.
- Sold to less formal buyers with no/low quality demands.

Sorghum use (% share of total production)* at the farm level, 2019 [2]



Sorghum uses

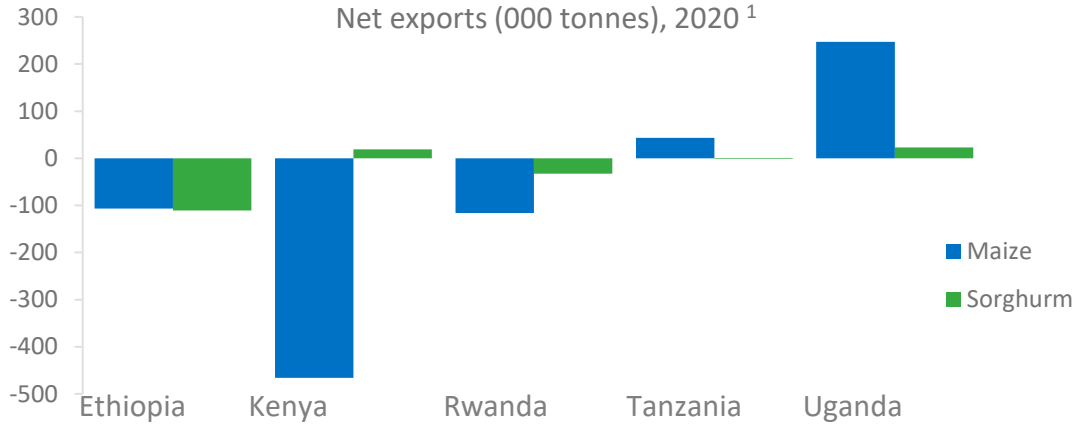
- Sorghum is the main staple food in the northern, north-eastern and south-western parts of the country mainly consumed in the form of semi leavened bread, dumplings, fermented and non- fermented porridge.
- In the manufacturing sector, it is increasingly been used in the brewing industry by players such as Nile Breweries Ltd. It is also used in production of dietary packed foods for children, used to process animal feed for pig and cattle fattening, although at a small scale.
- Sorghum is also exported to regional countries such as South Sudan, Tanzania and Burundi that accounted for 57%, 23% and 13% of sorghum export values in 2020.[6]

**Average for the two seasons*

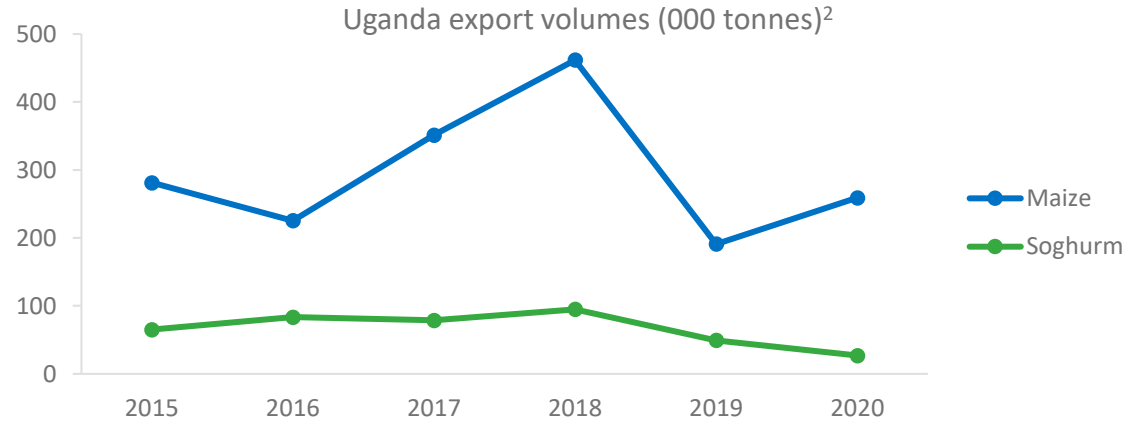
Sources: 1,2) UBOS, National Agriculture Survey 2019; 3,4) African Postharvest Losses Information System (APHLIS) 5) International Growth Centre -policy Brief – Maize value chain in EA, 2017; 6) International Trade Centre Statistics

The East Africa region presents significant trade opportunities for Uganda's surplus grains; some challenges, however, limit the potential.

Uganda is the biggest regional exporter of maize and sorghum



An average of 10% of maize and 24% of sorghum produced is exported. Export volumes have however fluctuated in recent years due to strict quality standards imposed by importing countries.

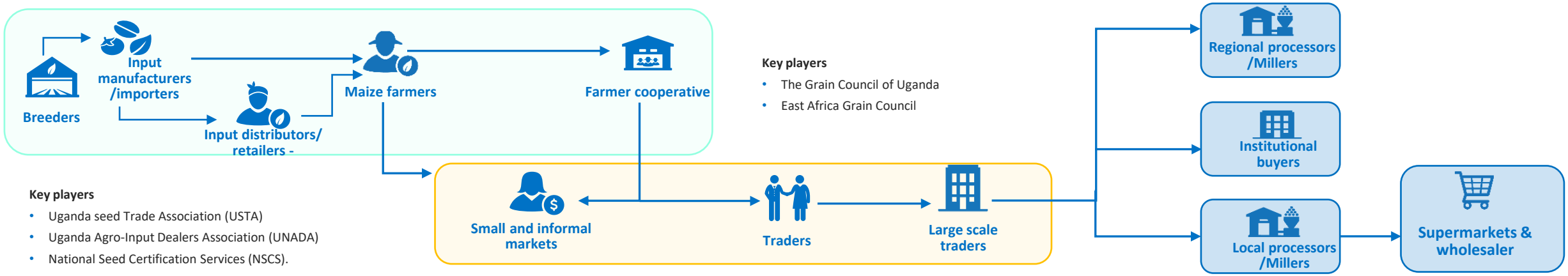


Sources: 1,2; FAOSTAT

Trade Opportunities and Challenges

- Uganda alongside Tanzania contribute to much of the region's internal grain exports - Favourable weather conditions, and surplus production enable Ugandan farmers and aggregators to take advantage of cross-border trade opportunities
- Currently, there are high export volumes and opportunities from Uganda towards Kenya, Rwanda and South Sudan. Economic expansion, population growth and changing consumer tastes will further enhance such opportunities.
- In recent times, regional governments – particularly those in East Africa – have taken significant steps to address Non-Tariff Barriers (NTBs). Among the most recent developments has been the adoption of the EAC harmonised Staple Foods Standards and the passing of the Elimination of the Non-tariff Barriers Bill
- However, implementation of the standards has been well-below expectation due to capacity constraints facing the public agencies tasked with enforcing them. Therefore, challenges persist and exporters continue to encounter sanitary and phytosanitary (SPS) constraints in trading with nearby countries.
- Such quality standards have increasingly gained attention in deficit countries such as Kenya (which accounts for more than 50% of Uganda maize exports). For instance, Kenya temporarily banned maize imports from Tanzania and Uganda due to high levels of aflatoxins in 2021. This led to reduction in prices received by farmers.
- Furthermore, inadequate or lack of good road and rail networks contributes to high logistics costs that can reduce the potential gains from trade

Limited integration in the value chain has resulted to farmers heavily relying on middlemen/informal traders to market their produce



Inputs

1. There are over 23 maize seed producing companies with the top 4 holding 56% of the market share.[1]
2. Production and consumption of certified maize seeds rose by 5% and 10% respectively between 2017-2019[2], use is however, still limited with only 15% of the land planted with improved seeds.[3]
3. Fertilizer use is also low with less than 5% of the acreage under production fertilized.[4]
4. Access to finance is a critical challenge hindering access to quality inputs. Farmers thus rely on informal source which has led to persistence of counterfeits.[5]
5. There are ~4.1mn maize producing households with average land size of 0.4ha accounting for over 90% of maize production.[6]

Aggregation

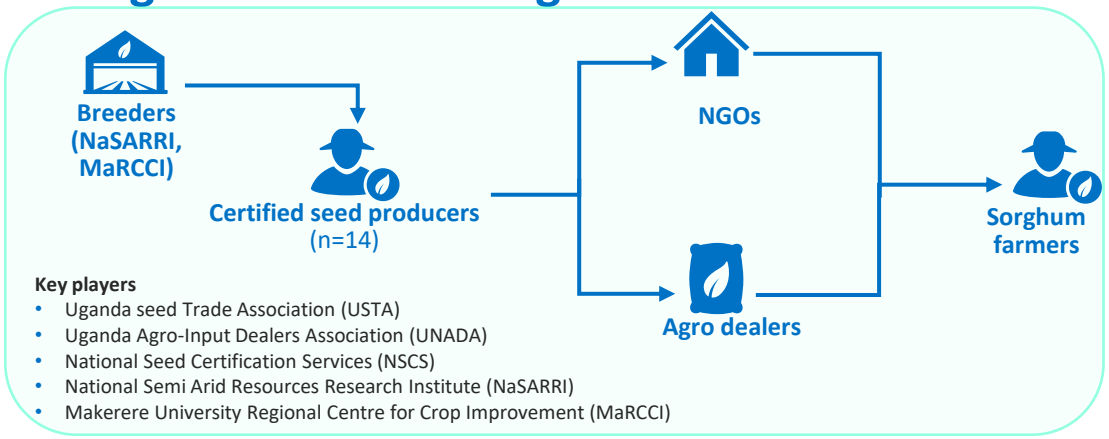
6. Most farmers do not belong to cooperatives and rely on a network of village agents, retail traders, and wholesalers who buy maize from farmers. Maize can pass through atleast 4sets of traders before reaching the processors.[7]
7. Most of the traders are however not equipped to differentiate output by quality ultimately leading to reduced prices in premium markets like Kenya.
8. Poor drying and storage makes the maize susceptible to aflatoxins. Maize is also harvested with 20-25% moisture content, much higher than the 13.5% EAC standards. [8]
9. Maize is supplied to either local processors, institutional buyers such as WFP and regional markets in Kenya, Rwanda and South Sudan.

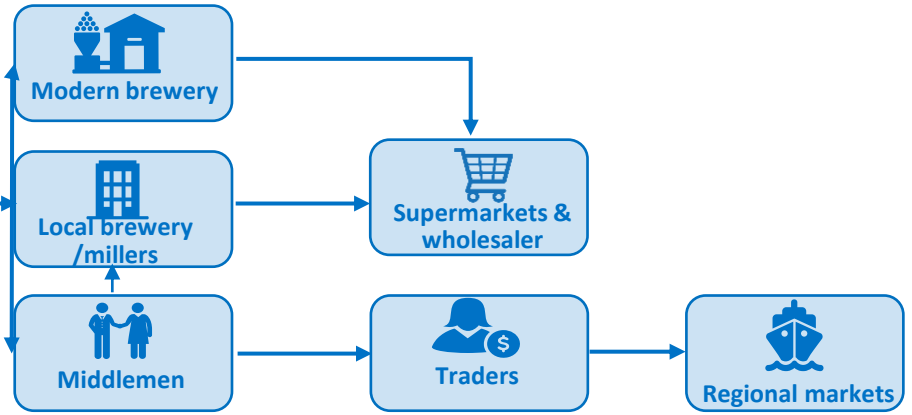
Processing

10. 60% of the maize is turned into flour, 37% to animal feed and 3% used in beer production.
11. Maize processing is dominated by dry mill technology with 3 key outputs ***a) number 1 flour*** (highest quality) produced by medium and large-scale mills and sold to regional markers and institutional buyers ***b) number 2 flour*** (2nd-highest quality) produced by over 600 small scale mills in rural areas and ***c) animal feeds*** produced by medium-sized millers.

1,2) The Africa Seed Access Index, 2020 3) UBOS, National Agriculture Survey 2019; 4) Africa Fertilizer – fertilizer consumption in Uganda,2015 ; 5) International Growth Centre -policy Brief – Maize value chain in EA, 2017; 6) UBOS, National Agriculture Survey 2019; 7,8) Duke – Maize value chains in East Africa, 2016

Establishment of modern breweries in the country is leading to more structured engagement with farmers through contract farming





Inputs

1. There are more than 14 companies specializing in the production of sorghum seed in the country.[1]
2. There are only 3 active sorghum seed breeders and thus limited capacity and delays in release of new varieties. About 40 varieties of sorghum currently exist in Uganda.[3]
3. Production and consumption of improved seed increased by more than 360% and 340% respectively between 2017-2019.[4] Use of certified/improved seeds, however, remains low (<1% of the area planted). [5]
4. Limited use of both organic and inorganic fertilisers has resulted in low yields.
5. Sorghum is grown by ~ 753,000 agricultural households with average land size of 0.4ha.[6]

Production

6. Farmer groups and cooperatives in the sorghum value chain remain small, informal and weak and thus struggle to provide substantial support to farmers.[7]
7. Sorghum is mainly sold directly to local breweries and/or local flour millers and to modern breweries (in the case of contract farming).
8. Middlemen also pick sorghum from the farmers and deliver to the local breweries and/or traders.
9. Traders export some of the sorghum to regional markets.

Marketing & distribution

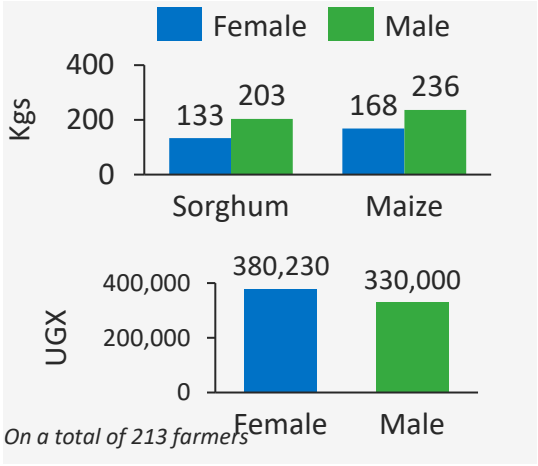
Processing

- Nile Breweries Ltd is the main modern brewery that makes commercial beer *(Eagle extra and Eagle lager).*
- Local breweries use the sorghurm to make local sorghum brew called Malwa or Ajon.
- There are also local millers that manufacture sorghum flour.

1,2) The Africa Seed Access Index, 2020; 3) Innovation opportunities in sorghum production in Uganda, 2018; 4) The Africa Seed Access Index, 2020 ; 5, 6) UBOS, National Agriculture Survey 2019 , FAOSTAT; 7) SAJAE - Assessing farmer involvement in collective action for enhancing the soghurm value chain in Soroti, Uganda, 2017

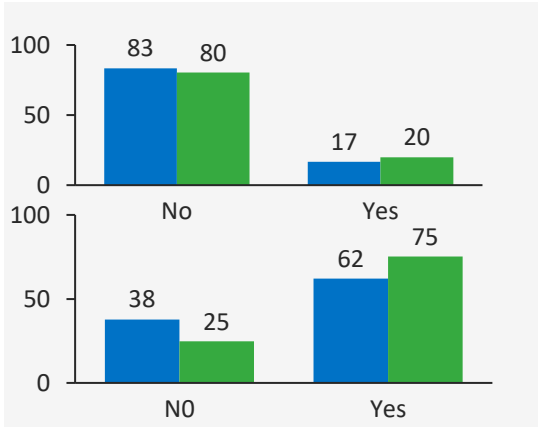
Women are more proactive in their involvement both in the household and farm activities. While mobile money penetration is high for both genders, credit access is a major bottleneck for both men and women.

Average Yield and Loan Size



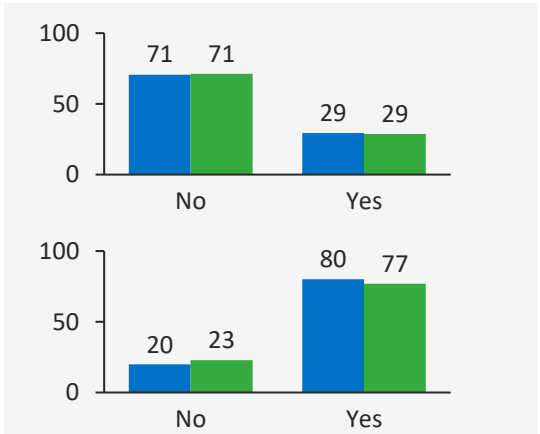
On a total of 213 farmers

Bank and Mobile Money Account



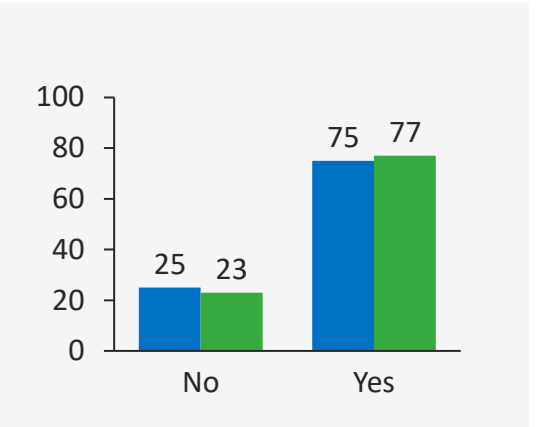
On a total of 317 farmers

Credit Access and Input Usage in the Past 12 Months



On a total of 360 farmers

Access to Training



On a total of 317 farmers

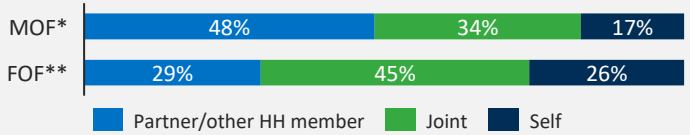
Household profile

Role division

	Female head of HH	Male head of HH
FOF*	24.87%	75.13%
*MOF***	*5.08%*	*94.92%*

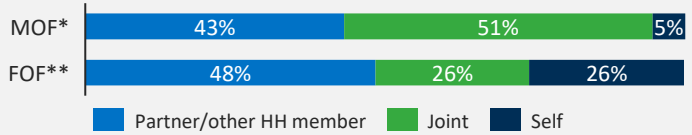
15% of the households are headed by women while 85% are headed by men. Men are less likely to be involved in farming activities where the household in headed by a woman. Women are involved in decision making both in household and farm activities[1]

Decision making in household activities



For MOF, Household activities decision making is majorly done by the partner of other HH member. For FOF, decision making is majorly joint between the partners. Notably the proportion of decision making for self is higher for FOF (26%) compared to MOF (17%)

Decision making in farm activities



Decision making for farm activities is majorly done by the partner or other HH member. This is the case for both MOF and FOF. Joint decision making is observed to be higher in MOF compared to FOF

**Male-operated farms **Female-operated farms*

Sources: All data comes from farmer PDC except specified otherwise. 1) National Survey and Segmentation of Smallholder Households in Uganda 2016

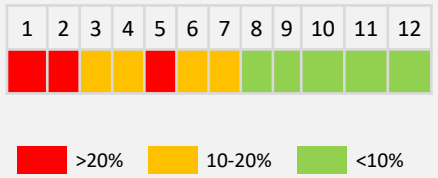
Farmers are generally food secure. Farm produce is sufficient to meet the food needs of a household. Food shortage is largely reported during the dry months of January/February but it is rarely severe.

Climate risks exposure and impact

RISK EXPOSURE

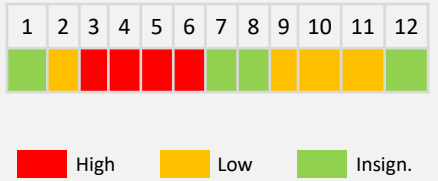
Food Access & Availability

Percent of farmers that expressed that they face food shortages during this month of the year. Farmers are most food insecure in during the first quarter of the year.



Cash flow Stability & Access

Farmers are most cash constrained between March and June. Farmers are most liquid in the Months of July/August and December/January



FARMER RESILIENCE AND IMPACT

Farmer resilience

- Small holder farmers in Uganda have limited income compromising their ability to buy food. Most of the food needs at the household level can however be met with the farm produce[2].

Impact

- FAO estimates that 21.7% of the population in Uganda is facing severe food insecurity[1].
- This has likely deteriorated in the recent years given the implication of COVID pandemic on farming households and the influx of refugees[2]
- 32% of the population has access to basic water supply while 19% have access to basic sanitation[3]

Measures taken by LMM

ADAPTATION MEASURES/POLICIES IN PLACE

Adaptation measures

- Landmark Millers is keen to implement a four product sourcing model with the farmers in the SDM. This is structured to diversify the income streams of the farmers.
- Landmark Millers is currently piloting the multiplication of sorghum seeds to provide to its farmers. This is expected to provide seed that is well suited to be grown within its geographical reach.
- Landmark Millers continuously engages it farmers providing information through its agents and training through its agronomists on sound agricultural practices that can be used to improve the productivity of the farmers.

CHALLENGES/ROOM FOR IMPROVEMENT

Challenges in implementation

- Data collection and management is a key challenge for the company limiting its capacity to implement data informed decisions in their interventions.
- Capacity constraints especially on the part of qualified agronomists with the knowledge of GAPs. There is need to develop the capacity of agents who can be used to close the gap.
- Engagement with the farmers and agents is seasonal, happening during the time of planting and harvesting. There is need to ensure that the farmer groups are proactive and meet regularly to keep the farmers engaged.

Sources: 1) FAO 2017 2) Famine Early Warning Systems Network 2022 3)Global Waters Organization

Continued climate change has resulted in severe droughts putting pressure on the maize and sorghum producing regions and posing a significant business risk for LMM

Climate risks exposure and impact

Risk exposure

Temperatures
(change in) short- and long-term averages

Medium risk

- Significant increase at a rate of 0.52°C per decade over the past 30 years, and an expected increase of 1.7°C- 1.8°C by 2050.[1),2)]

Precipitation
(change in) timeliness and availability

Medium risk

- Number of days with heavy precipitation events is expected to increase from 8 to 10 by 2080.[3]
- Future dry and wet seasons are projected to become more extreme. [3]

Climate extremes
(change in) likelihood and severity of hail, floods, locusts, etc.

High

- Increase in the frequency of droughts and floods in the focus regions.

Farmer resilience and impact

Farmer resilience

- Current farmer income levels limit them from making investment to adapt/mitigate climate change and are thus severely affected by extreme weather occurrences.

Impact

- Over 82%, 40% and 17% of agricultural households in Uganda reported loss due to droughts, pests and diseases and floods respectively in 2019.[4]
- The loss of crops and insufficient production has led to continued food shortage in the country.[5]

Measures taken by Landmark Millers

Current measures and policies in place

Strategy, measures and policies

- Severe weather events such as droughts that have been experienced in recent years lead to destruction of crop, and pose a business risk to LMM, making it hard to reach their volume and quality targets.
- Through the technical assistance (TA) support provided by IDH LMM will explore provision of irrigation kits to the farmers based in dyer areas.
- The e-prod farmer management system that they are currently implementing has an advisory module that will be used to share climate and weather information (received from the Metrological Department) with the farmers.

Challenges and room for improvement

- Limited data available on the climate and weather patterns, soil fertility etc., of the focus regions to inform zoning and advisory on crop combination based on regions.
- Limited uptake of crop insurance amongst farmers. There is an opportunity to work with insurance providers to promote uptake.
- Lack of information on existing low cost climate smart technologies that can be leveraged by the farmers.
- Other competing priorities for financial resources in the company.

Sources: 1) CGIAR (2019); 2) Dutch Ministry of Foreign Affairs (2019); 3) GIZ (2020) ; 3) 4); UBOS, National Agriculture Survey 2019

While the government has made deliberate efforts to promote sustainable agriculture production; information asymmetry, climatic risks and financial exclusion remains to be significant challenges

Risk *Neutral* *Opportunity*

Definition	Situation	Impact on SDM
TECHNOLOGY	• **Mobile penetration |** Close to 65% of the rural population own a mobile phone[1] with 46% of the population connected to 3G networks.[2] Farmers are increasingly using mobile money with 21% of farmers having access to a mobile money account.[3] About 28% of all agricultural payments are made using mobile money.[4] • **Internet penetration |** On the other hand, internet penetration in rural Uganda is with only 9% of the population having access.[5] • **Digital agricultural technologies (DATs) |**. There are close to 200 DATs in different stages of growth operating in the country focused on solving critical challenges across the value chain.[6]	• Leveraging DATs provides an opportunity to improve value chain operations, increase efficiencies and enhance access to finance and inputs for the farmers.
ENVIRONMENT	• **Production systems |** Farmers in Uganda rely largely on rain-fed agriculture (over 80% of production) which makes them highly susceptible to climate change.[7] • **Crop insurance |** Index-based weather insurance lacks adoption due to weak regulations, weather data quality and a lack of local adaptation and capacity building.[8] • **Climate vulnerability |** Uganda is the 14th most vulnerable country and the 48th least ready country – meaning that it is very vulnerable to, yet unready to address climate change effects.[9]	• Worsening and less predictable environment increase the risk of harvest losses and instable sourcing volumes. This also presents an opportunity to promote uptake of climate smart technologies.
INFRASTRUCTURE	• **Infrastructure Index |** Uganda scores 3.3, higher than Sub Saharan Africa average of 2.9 on the infrastructure index.[10] • **Road quality|** A large proportion of the roads are unpaved which makes it hard to travel during rainy days and also limits farmers direct access to urban markets.[11]	• Poor infrastructure increases the cost of value chain operations impacting the profitability of both the farmer and the SDM operator.
LABOR	• **Availability |** Sorghum and maize farming tends to be labour intensive especially during planting, weeding and harvesting. Farmers rely on family and seasonal labor from their communities, which is scarce and insufficient during peak periods.[11]	• Labor is a key factor of production. Limited access reduces the capability of the farmers to optimize production.
INPUTS AND FINANCING	• **Credit access |** Only 4% of the rural population has access to formal lenders mainly through SACCOs. [13] • **Savings |** The majority of farmers save informally through VSLAs or keep the cash at home.[13] • **Inputs use|** With limited access to finance, use of fertiliser and hybrid seed has remained limited.[14]	• Inadequate finance limits the capacity of the farmers to invest in high yielding inputs. • Working capital constraints for LMM reduces their ability to scale and achieve greater impact.

1) World Bank, 2019; 2) GSMA (2020); 3) CGAP (2016); 4) World Bank, Global Findex Database (2017); 5) Research ICT Africa (2019); 6) Uganda Communication Commission (2019) ; 7) UNDP (2022); 8) Ntukamazina (2017); 9) Dutch Ministry of Foreign Affairs (2019); 10) World Bank (2017); 11) The Borgen Project (2020); 12) LMM field visit; 13) FSD Uganda (2019); 14) International Growth Centre -policy Brief – Maize value chain in EA, 2017

While the government has made deliberate efforts to promote sustainable agriculture production; information asymmetry, climatic risks and financial exclusion remains to be significant challenges

Risk *Neutral* *Opportunity*

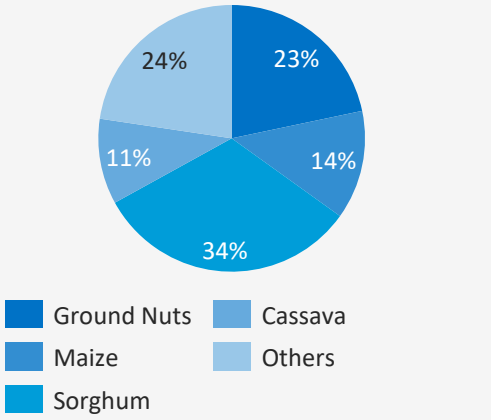
Definition	Situation	Impact on SDM
Trading Systems, Pricing and Competition	• **Institutional buyers |** Large buyers such as WFP and ICRC have a huge influence on the final prices of grain in the country. Local processors such as Nile and Uganda Breweries also influencing the quality of grain (sorghum) produced and traded.[1] • **Middlemen |** Multiple levels of formal and informal traders involved across the grain supply chain.[1] • **Farm gate price |** Generally prices paid to farmers have remained low despite increase in prices of agricultural products largely due to exploitation by middlemen.[2]	• The high fragmentation of the value chain exposes farmer to the risk of selling at low prices. • With the high number of intermediaries there is also a high risk of side selling.
Institutional Stability	• **Institutions coordination:** Multiple public institutions engaged in the sector with limited coordination. History of failure/abolishment of agricultural institutions before achieving their mandates.[3] • **Policy and regulations |** Inconsistencies around agricultural policies and regulations resulting in delays in implementation.[3]	• Institutional stability is key to creating a predictable environment that is important in incentivizing value chain investment.
Land Tenure	• **Tenure |** 80% of agricultural land is under customary tenure that is undocumented,[4] facilitating the rise in land-grabbing.[5] • **Ownership|** The largest and productive pieces of land are owned by men mostly through inheritance.[6] Only 16% of women are land owners.[7]	• Informal land tenure may disincentives long term capital investment on the land needed to enhance production. Also limits use of land as collateral for formal financing.
Social Norms	• **Literacy |** Women in Uganda are more likely to be illiterate than men and leave school earlier partly contributing to their limited access to productive assets.[8] • **Gender equality |** While women are instrumental in the provision of farm labour, their decision making is very limited. Extension systems have also majorly targeted male farmers. [9]	• Need for deliberate efforts to include women in the SDM for maximum impact.

1) International Growth Centre -policy Brief – Maize value chain in EA, 2017; 2) Uganda Journalist Resource Centre (2016); 3) National Agriculture Policy (2013); 4) *World Bank (2018); 5) USAID (2016); 6)LMM field visit 7) Gender Land and Rights Survey (2011); 8) Uganda Bureau of Statistics (2016); 9) Bjorn (2020)*

6.2 Profile of farmers (PDC data)

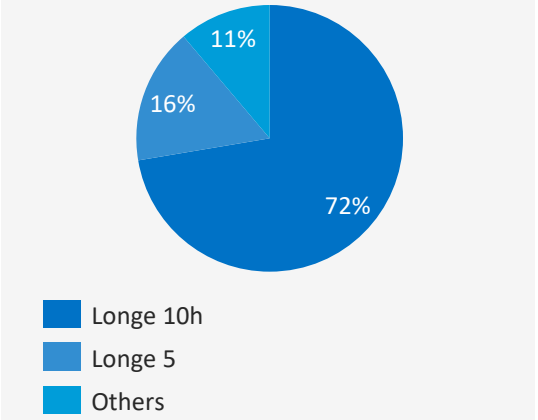
Sorghum, Maize, Cassava and Groundnuts are the main crops cultivated by the farmers. Loan uptake by the farmers is low and the spread between male and female farmers is fairly even.

Main crops cultivated



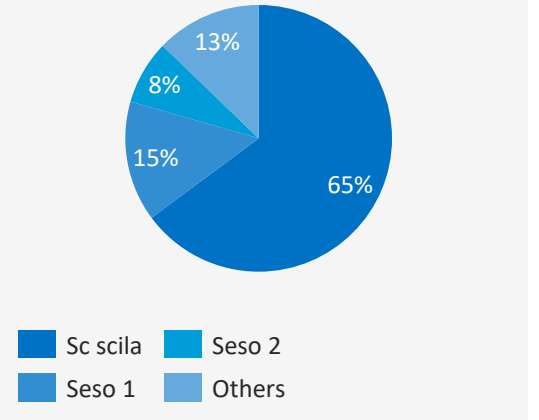
On a total of 193 farmers

Maize Varieties



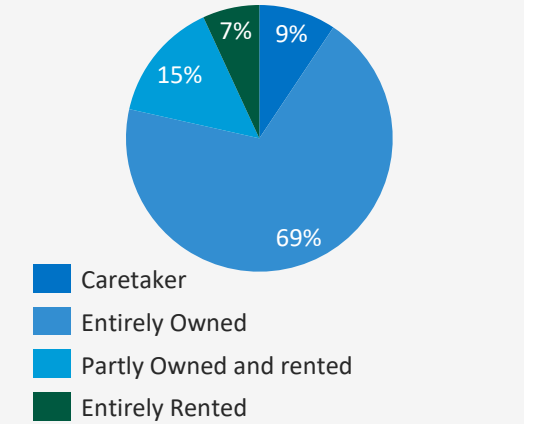
On a total of 170 farmers

Sorghum Varieties



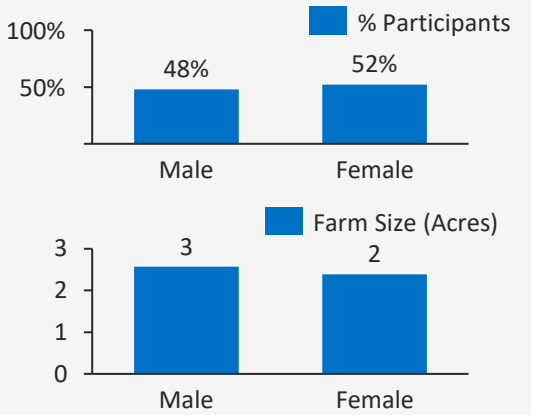
On a total of 219 farmers

Land ownership



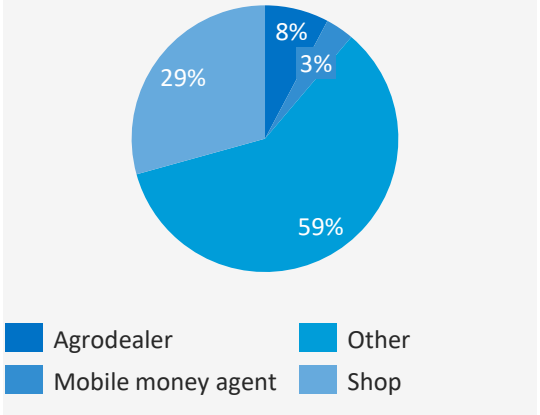
On a total of 363 farmers

Farmer Gender and Farm Size



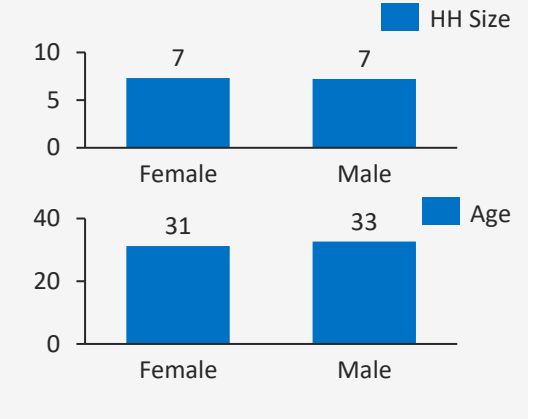
On a total of 369 farmers

Off Farm Enterprises



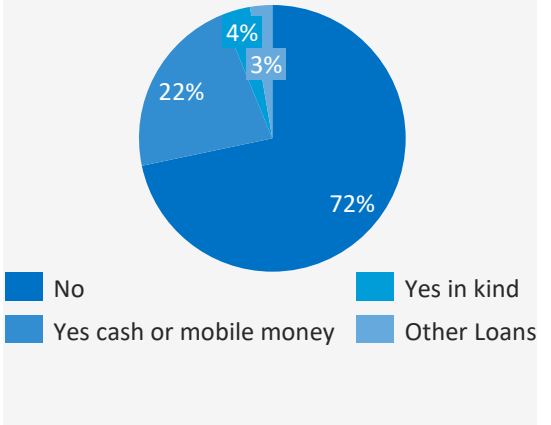
On a total of 116 farmers

HH Size and Age



On a total of 367 farmers

Loans in the past 12 months



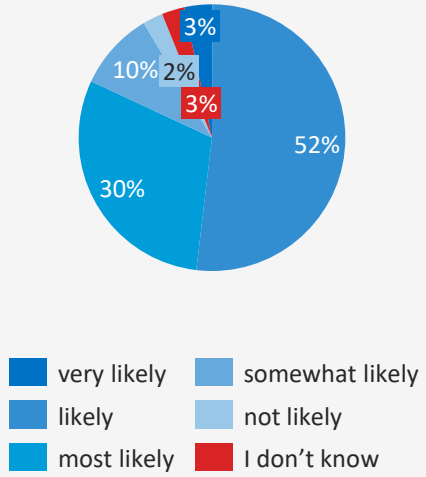
On a total of 371 farmers

Source: PDC

Farmers are generally satisfied with the services provided through the SDM and they are more likely to recommend LMM to people within their circle.

Recommendation from farmers

How likely is it that you would recommend LMM to a friend/peer?

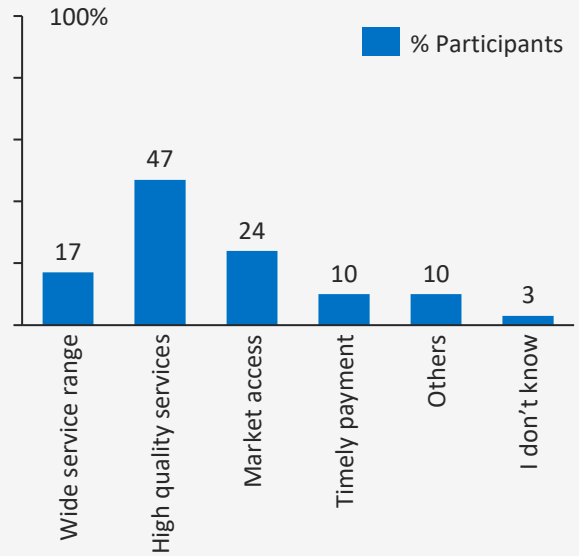


On a total of 326 farmers

- In general, farmers are likely to recommend LMM to other farmers in the community

Reason for positive feedback [1)]

Why would you recommend using the services of LMM?

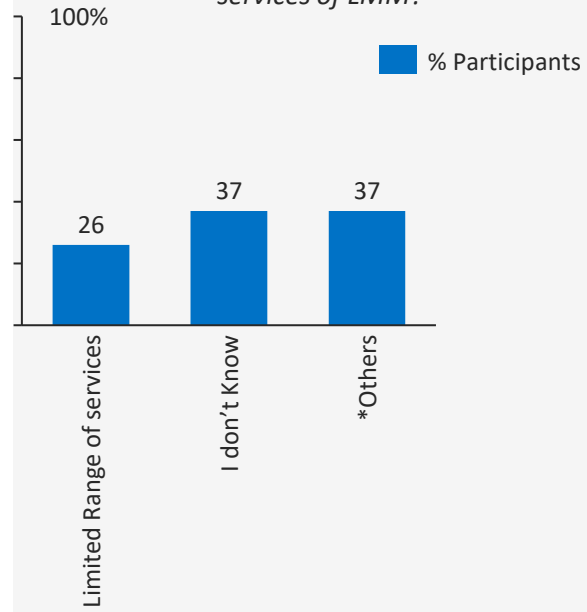


On a total of 278 farmers

- High quality services and market access are key in influencing the positive feedback provided by farmers in the SDM

Reason for negative feedback [1)]

Why would you not recommend using the services of LMM?



On a total of 38 farmers

- Few farmers who provided negative feedback are of the opinion that LMM provides a limited range of services.

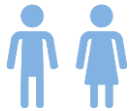
1) Participants are able to provide multiple answers. % participants of each services in an indication of how many of the surveyed selected that service.
Source: PDC
**Includes high cost of finance, bad quality of inputs, delayed delivery of seed, bad quality of services among others*

6.3 Assumptions and methodology

Farm-level assumptions

	BASELINE SMALL SCALE	SDM SMALL SCALE	BASELINE MEDIUM SCALE	SDM MEDIUM SCALE
CHARACTERISTICS	*Small scale farmer who is cultivating maize and sorghum outside the SDM*	*Small scale farmer who is cultivating maize / sorghum while receiving services from and selling to the SDM*	*Medium scale farmer who is cultivating maize and sorghum outside the SDM*	*Small scale farmer who is cultivating maize / sorghum while receiving services from and selling to the SDM*
Land size (acres)	3	3	5	5
Number of seasons	2	2	2	2
Current yield	Sorghum 706 kg/acre/season **/** Maize 588 kg/acre/season			
Feasible yield (year 5)	Sorghum 706 kg/acre/season Maize 588 kg/acre/season	Sorghum 1,529 kg/acre/season Maize 1,412 kg/acre/season	Sorghum 706 kg/acre/season Maize 588 kg/acre/season	Sorghum 1,529 kg/acre/season Maize 1,412 kg/acre/season
Current post harvest loss	Y1: 15% > Y5: 15%	Y1: 12.5% > Y5: 5%	Y1: 15% > Y5: 15%	Y1: 12.5% > Y5: 5%
Household consumption	Sorghum 50 kg/farm/year **/** Maize 200 kg/farm/year			
Farm gate price	Sorghum 1,000 UGX/kg **/** Maize 1,000 UGX/kg			
Cost of production (UGX/season/acre)	**Y1:** 265k UGX/season/acre **Y5**: 265k UGX/season/acre	**Y1:** 260k UGX/season/acre **Y5**: 290k UGX/season/acre	**Y1:** 260k UGX/season/acre **Y5**: 260k UGX/season/acre	**Y1:** 253k UGX/season/acre **Y5**: 365k UGX/season/acre
FARMER PRACTISES				
Labor	Mostly family (60%)	Mostly family (60%)	Mostly family (60%)	Mostly family (60%)
Seeds	Non-certified	Hybrid	Non-certified	Hybrid
Fertilizer	N/a	N/a	N/a	N/a
Finance	N/a	12%/year – 500,000 UGX/sorghum/acre	N/a	12%/year – 500,000 UGX/sorghum/acre

IDH has adopted the following definitions to define the extent to which a gender lens has been integrated by partners. IDH aims for all its projects to be intentional and for some to be transformative.



Gender unintentional

No steps taken to understand the different needs and preferences of men and women, or target gender gaps/barriers.

Gender intentional

Considers the different needs and constraints of women and men and takes some steps to create gender equality. Such projects adapt to the needs of women and men without seeking to change gender norms or barriers.

Gender transformative

Understands the different needs and constraints of women and men and address the root causes of gender inequality. A gender transformative approach needs to foster changes in **individual capacities (agency)**, **gendered norms and expectations (relations)**, and **institutional rules and practices (structures)**.

Why we believe investing in women can work for business

- By tailoring goods and services to the needs of women, companies can reach a large and often underserved market, potentially increasing revenues from service provision or enhancing their supply security.
- If women had similar access to and control of productive resources as men, yields of female farmers could increase by up to 30 percent. Higher farm yields and incomes create greater business opportunities for companies working with those farmers.
- Companies that are committed to gender equality outperform their peers. Improving gender diversity in the workplace can improve a company's financial performance by up to 25 percent.
- When companies are seen to invest in gender equality, this has the potential to lead to higher levels of farmer and/or worker loyalty. Conversely, unequal opportunities for women can negatively affect companies' reputations which can lose businesses customers as well as workers.

IDH developed a methodology and tool to support our clients in their digital journey, including a data base of use cases that can be leveraged to solve key business challenges

The Digital Transformation Assessment identifies and prioritizes digital opportunities (tech use-cases) that fit an agri-service provider's needs, with ROI estimates. Additionally, through a digital maturity analysis, areas of improvement are suggested for the agri-service provider. Based on the assessment, the tool allows you to match-make with relevant tech-providers.

Identify digital gaps

Identifying and prioritizing the tech uses cases that are best-fit for your business

Expert network

We match-make through a database of tech providers and agri-specialists in your country

Efficient and cost-effective

An affordable, simplified process, supported by our experienced team.

Intuitive, web-based platform

Web-based platform powered by a dynamic global database of 300+ tech providers

The DTA process

1. **Introduction with the organization |** Discuss the overall process
2. **Identification |** Performing the first step of the methodology in the online DTA on the use case database
3. **Prioritization |** Prioritize the earlier identified use cases from the database based on desirability and feasibility
4. **Digital Maturity Assessment |** Conduct the Digital Maturity Assessment to distinguish strengths and opportunities for improvement
5. **Results |** The results include identified and prioritized use cases and DMA analysis with improvement areas