



Food Systems Accelerator Report.

Strengthening Smallholder Sorghum Contract Farming Business Model in Mbire District.

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Introduction

The CGIAR Food Systems Accelerator (CFSA) program is a science-driven accelerator designed within the CGIAR Initiative on Agroecology and the Initiative on Diversification in East and Southern Africa, to support agribusinesses scale agroecological and climate-smart innovations that address pressing challenges in Agrifood systems. The tailored science-based technical assistance provided within the accelerator program provides the agribusinesses companies with the necessary tools and knowledge to become more commercially viable and sustainable. This approach promotes sustainable farming practices and businesses that can enhance food production while mitigating the impact of climate change. The program prioritizes agribusinesses scaling innovations designed with a user-centric approach for smallholder farmers and businesses that have a strong potential for commercial sustainability.

Through the Agroecology Initiative, the accelerator program provided small grants to agroecology businesses to help speed up the agroecological transition within the business models identified within the Initiative. The agribusiness companies selected for the implementation of agroecology grants are those that are already implementing agroecological innovations on various components of the agri-food system and the identified business models in the Mbire Agroecological Living Landscape (ALLS).

Agrowth's mandate in the Agroecology Initiative focuses on advancing sustainable agricultural practices while supporting smallholder farmers in Mbire through debt financing of sorghum production. The company provides physical inputs such as seeds, fertilizers, and chemicals on credit, along with agronomic support through a resident field officer. This officer ensures farmers receive training and guidance on best production practices to achieve high yields. Agrowth guarantees market access by offering harvested sorghum competitively, clearing farmers' credit first, and transferring the excess as profit. This model integrates financial support with technical expertise to promote farmer productivity and income growth.

The commercialization of red sorghum under this initiative is central to advancing agroecological transitions towards sustainable food systems. Key impacts include promoting resilient climate-smart crops, markets, and income streams; reducing input and biochemical usage to enhance soil health; and leveraging synergies between crop and livestock systems. Agrowth fosters knowledge co-creation, blending farmers' Indigenous sorghum expertise with participatory training for commercial production. Sorghum's resilience in dry conditions, combined with its use in food and cultural traditions, aligns well with the local context, enhancing food and nutrition security. Additionally, the company's governance introduces farmers to formalized production systems, while the shortened value chain creates a circular and solidarity economy that benefits both producers and processors.

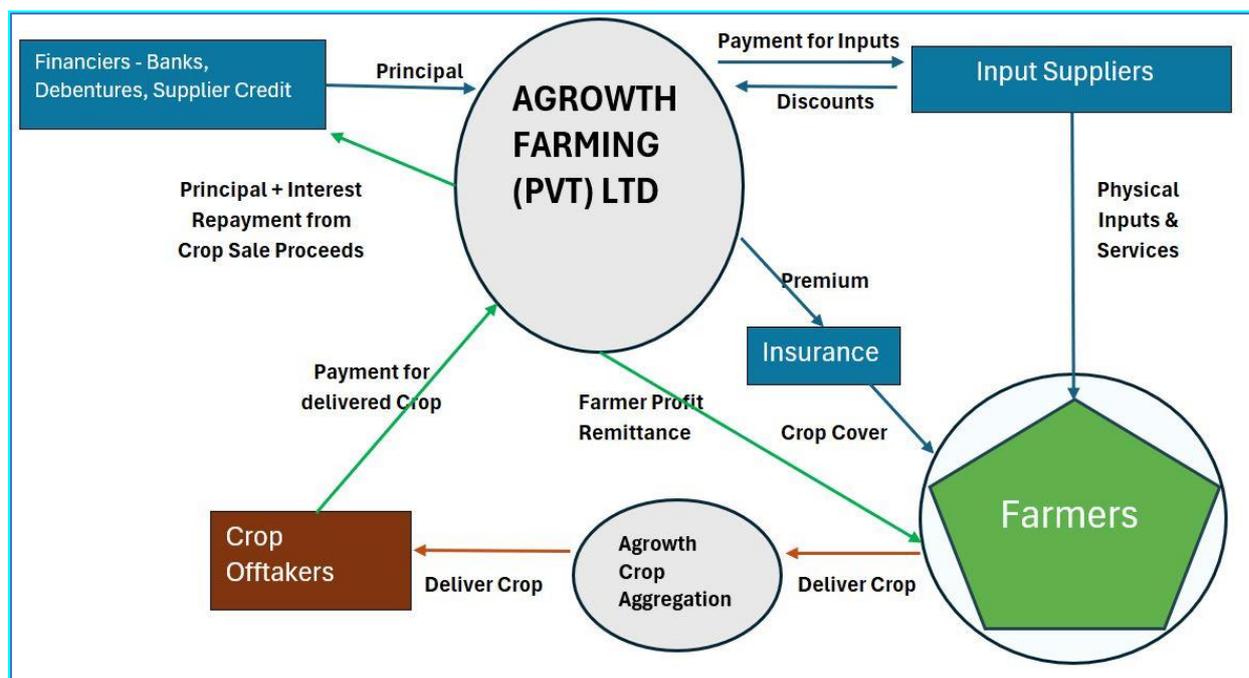


Figure 1. Agrowth governance structure.

Objectives

The Sub-Grant will contribute to scaling the agroecological innovations and speeding up the agroecological transition in the agrifood system in the Mbire District of Zimbabwe. The specific objectives are:

- Secure Sustainable Debt Financing for supporting small-scale sorghum contract farmers.
- Strengthen Resilience and Continuity Amid Climate Challenges in dry landscapes
- Expand Farmer Participation
- Enhance Scheme Growth

Key deliverables and Activities

To effectively guide the implementation of this Initiative, Agrowth was expected to deliver on key activities aimed at ensuring measurable progress toward the initiative goals. Thus, we ensured that each activity was aligned with project objectives, deliverables were produced to the highest standards, and the outcomes contributed to the sustainable transformation of the agroecological practices within the district.

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Table 1. Expected Deliverables and outputs.

| Activity | Deliverable | Target / Output |
|--|---|---|
| Farmer Sensitization | <ul style="list-style-type: none"> - Number of village sensitization meetings held - Communication materials distributed (flyers, brochures, radio) | <ul style="list-style-type: none"> - 200 farmers selected for contract farming - Increased awareness of the benefits and responsibilities of contract farming - Farmers ready to participate in the scheme |
| Farmer Selection and contract agreements | <ul style="list-style-type: none"> - Number of Screening and verification reports for selected farmers - Signed contracts with eligible farmers | <ul style="list-style-type: none"> - 100 eligible farmers selected based on clear criteria - Formal agreements between Agrowth and selected farmers signed and stored |
| Training and Capacity Building | <ul style="list-style-type: none"> - Number of training workshops conducted (topics: sorghum agronomy, contract terms, financial literacy) - Training materials developed and distributed (guides, handouts, video tutorials) | <ul style="list-style-type: none"> - 100 farmers trained in sorghum agronomy, business, and contract terms - Enhanced farmer capacity in crop management, contract compliance, and financial literacy |
| Land Preparation | <ul style="list-style-type: none"> - Demonstration plots established as model farms - Land preparation report including proper land tillage techniques demonstrated across all farms | <ul style="list-style-type: none"> - Proper land preparation for 100 farms completed - Farmers equipped with practical skills for crop management, ensuring optimal conditions for sorghum cultivation |
| Input Distribution | <ul style="list-style-type: none"> - Quantity of Inputs distributed (seeds, fertilizers, herbicides) - Distribution records maintained and verified | <ul style="list-style-type: none"> - 100 farmers receive all necessary inputs in time for planting - Adequate and equitable distribution of inputs to ensure successful crop establishment |
| Planting and Crop Establishment | <ul style="list-style-type: none"> - Number of Field supervision reports on planting activities - Photos and detailed reports documenting crop establishment | <ul style="list-style-type: none"> - Sorghum successfully planted on 100 farms - High-quality crop establishment across selected farms, with adherence to planting schedules |
| Monitoring and Support | <ul style="list-style-type: none"> - Timely field visit reports and monitoring logs - Documentation of pest and disease management actions - Farmer support hotline activated | <ul style="list-style-type: none"> - Continuous farmer support provided throughout the cropping cycle - Issues like pests, diseases, and other risks identified and addressed quickly to ensure healthy crop growth |

Results and Progress

Famer sensitization feedback meetings and budgeting.

We conducted a series of meetings with farmers to provide feedback on the previous season, discuss their contractual obligations, and collaboratively plan for the upcoming season. Farmers were reminded that their debts from last season had been written off, giving them a fresh start. We emphasized the importance of learning from past challenges, just as we have, and introduced cost-saving measures for the upcoming season. For instance, we replaced expensive fertilizers like compound and urea with more affordable alternatives such as Compound D and Ammonium Nitrate. Additionally, pesticides for controlling armyworms and armoured crickets were included to address pest concerns effectively.



Figure 1: Feedback and budget consultative meeting in Ward 3 Mbire.

We also shared updates on new initiatives, including insurance coverage for droughts and excessive rainfall, which we secured to safeguard both farmers and PHI. However, we clarified that damages caused by wildlife, fall armyworms, or crickets remain uninsurable. Budget discussions were central to the meetings, and we carefully considered farmer input to develop a balanced approach. Farmers from Ward 3, Sangojena, and Mazambara highlighted key issues, including reducing top dressing fertilizers to one bag, sourcing cheaper empty bags, and engaging local transporters to lower logistical costs. They also requested adjustments to the required delivery quantities to better align with practical realities. Their feedback was key in guiding the cashflow projections and contract terms. These concerns were consolidated in the input package and budget for the current season (Table 2). All things equal, there is a reduction in costs due to reduced quantities and prices of inputs like seeds and fertilizers. In the previous season, for example, sorghum seed was pegged at \$7.45/kg and each farmer required 13kg per hectare. The cost of seed per hectare has decreased by 57.65%, reflecting the effects of a drop in seed prices and correction in quantity required per ha. This significant reduction may positively impact the overall profitability per hectare, assuming other input costs remain unchanged.

Table 2. Inputs for the 2024/25 season under contract farming

| Description | Usd Price | Total/Ha | Cost/Ha | Planned Ha 50 |
|--------------------------------|-------------------------------|----------|----------------|-------------------|
| Sorghum Seed | US\$4.10 | 10 kgs | US\$41 | US\$2,050 |
| Basal Compound D | US\$0.549 | 100 kgs | US\$55 | US\$2,745 |
| Ammonium Nitrate | US\$0.684 | 100 kgs | US\$68 | US\$3,420 |
| Atrazine | | 2 litres | US\$12 | US\$580 |
| Glyphone 700 WDG | | 1 Kgs | US\$9 | US\$425 |
| Carbaryl 85WP | | 1 Kgs | US\$19 | US\$950 |
| Bags | US\$0.35 | 50 bags | US\$18 | US\$875 |
| Transport to Farm | US\$0.17 | 1 tons | US\$24 | US\$1,190 |
| Transport from Farm | US\$0.17 | 2.5 tons | US\$60 | US\$2,975 |
| Total before charges | | | US\$304 | US\$15,210 |
| Interest Charges | | 8% | US\$24 | US\$1,217 |
| Crop Fee | 150kgs of sorghum per hectare | | | |
| AMA Registration | | | US\$1 | US\$50 |
| Insurance | | | US\$36 | US\$1,806 |
| Total Including Charges | | | US\$366 | US\$18,283 |

Farmer selection process

The farmer selection process was conducted to ensure the successful implementation of the sorghum production initiative. Following the finalization of the input package through consultative meetings, selection criteria were applied to identify farmers best suited to achieve project objectives. Priority was given to high-performing farmers with a proven track record of agricultural productivity and reliability while underperforming farmers were replaced to maximize the program's effectiveness. This strategic approach was designed to create a foundation of capable participants who could meet the demands of the initiative.

The key objectives of the selection process were threefold: first, to identify farmers capable of cultivating sorghum under a framework that ensures loan repayment; second, to promote the commercial production of sorghum, transitioning it from a subsistence crop to a market-oriented commodity; and third, to integrate selected farmers into agroecology demonstration programs, facilitating their transition from experimental plots to full-scale field practices. By focusing on these objectives, the process aimed to build a cohort of committed farmers who can drive the success and scalability of the initiative.

Contract Discussion and Amendments

As part of our efforts to support smallholder farmers in the Mbire district, we have entered into agreements with farmers under the Mbire Sorghum Scheme for the 2024-2025 agricultural season. Through this initiative, we aim to promote the production of red sorghum while providing farmers with essential inputs, technical training, and a guaranteed market. We supply seeds, fertilizers, and chemicals on a loan basis, which we offer at an annual interest rate of 8%. Farmers repay these loans using their sorghum harvests, and we ensure that the repayment system is fair and mutually beneficial. In cases where the harvest is insufficient to cover the loan, farmers can settle the balance through alternative means, such as cash or other agreed assets.

To ensure success, we set a minimum yield expectation of 2,000 kilograms per hectare, which is crucial for the financial viability of the scheme. To help farmers achieve this, we provide comprehensive training on best agronomic practices, including crop management, pest control, and soil health techniques. Participation in our training sessions and meetings is mandatory to equip farmers with the necessary skills and knowledge. Additionally, we emphasize quality standards, requiring that harvested sorghum meets our specifications for moisture content (12.5%) and grading. Farmers are responsible for ensuring that their sorghum is free of contaminants and pests before delivering it to our designated collection points by August 31, 2025.



Figure 2. Farmers signing contract agreements after the discussion session

We are committed to paying market-related prices for the sorghum we purchase. To ensure transparency, we determine prices based on the average offered by three credible commodity buyers. These prices are reviewed and verified by the farmers' union. Additionally, we assist farmers with the transportation of sorghum to collection points, helping to ease logistical challenges.

We take compliance seriously, as it is vital to the integrity and sustainability of the scheme. Farmers are prohibited from engaging in side-marketing, and inputs provided under the contract must only be used for the intended crops. Breaches of the agreement, such as selling produce to unauthorized buyers or failing to meet obligations, result in exclusion from future programs or, in severe cases,

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legal action. To ensure fairness, we have included an arbitration process for dispute resolution, allowing cases to be referred to the Harare Arbitration Centre if necessary.

By signing these contracts, we and the farmers commit to a partnership that balances accountability, risk management, and mutual support. This initiative reflects our collective goal to improve smallholder farmers' livelihoods, enhance productivity, and secure access to markets. Together, we believe this scheme will make a meaningful contribution to the resilience and sustainability of red sorghum production in Mbire. Some of the key challenges during this stage were illiteracy among other farmers and risk aversion from farmers who had failed in previous contracts with Cotton companies.

Input distribution

We accepted 45 contract forms for the 2024/2 season with a total of 50 hectares. Inputs were distributed efficiently to support the contract farming initiative across the targeted wards. Deliveries of inputs were completed between Tuesday, the 12th, and Wednesday, the 13th. Following this, disbursements and contract signings were carried out simultaneously over two days, from Thursday, the 14th, to Friday, the 15th. A total of 45 farmers signed contracts and received their input packages, including five farmers who committed to cultivating 2 hectares each. This effort secured 50 hectares of land for sorghum contract farming across two wards, ensuring a strong foundation for achieving the program's production goals.

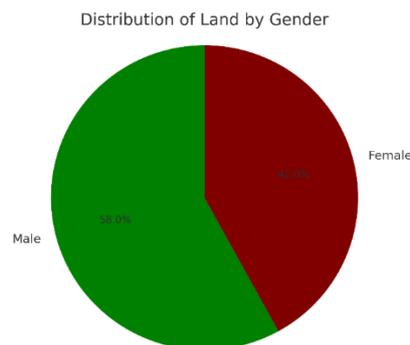


Figure 3. Representation of farmers under contract farming



Figure 4. Contracted Farmers receiving inputs in wards 2 and 3.

Crop establishment

Land preparation and Planting

The crop establishment phase commenced immediately after farmers received their input packages, with land preparation prioritized to align with best practices in sustainable agriculture. Emphasis was placed on minimum tillage techniques to promote soil conservation and optimize input use efficiency. Planting officially began on December 18th, following the receipt of effective rainfall during the night of December 17th. Currently, all 50 hectares earmarked for the initiative were successfully planted, marking a significant milestone in the program. However, the current incessant rains have caused crop damage for a few farmers. A detailed report on these incidents has been submitted to the office, and efforts are underway to promptly secure replacement seed packs to mitigate the impact and ensure that affected farmers can reestablish their crops swiftly. This rapid response underscores the program's commitment to resilience and adaptive management in the face of climatic challenges.



Figure 5. Early planting plots show signs of poor germination.

Field Monitoring and Assessments

1. Germination Overview

The 2025 agricultural season officially commenced with the first effective rains on January 3rd, 2025, marking a critical milestone for crop establishment.

Early Planting Dynamics

- Some farmers in low-lying plains utilized earlier intermittent rains to plant crops. Despite their efforts, germination was below 80%, leading to suboptimal plant populations.
- To mitigate this challenge, these farmers engaged in replanting efforts, which allowed them to achieve acceptable crop densities critical for maximizing yield potential.
- A turning point was observed with the Chido rains, which significantly boosted germination and crop vigor for these early-planted crops.

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- By now, most early planted crops have reached knee height. This stage marks the onset of rapid vegetative growth, where nutrient demand peaks. Early planters have already commenced topdressing with nitrogen fertilizers using the reduced rations of 50kg/ha, which will enhance biomass accumulation and ultimately translate to higher yields.

January-Planted Crops

- Farmers who planted after the effective January rains have recorded better germination rates, averaging 80%. This improvement can be attributed to optimal soil moisture conditions during planting.
- Thinning and Transplanting:
 - Farmers with uneven germination have employed innovative practices to optimize their plant stands. By thinning overcrowded stations and transplanting to underpopulated areas, they ensure uniform crop density, enhancing light interception and reducing competition for nutrients.
 - This practice is especially effective in smallholder settings where maximizing land productivity is vital.

In conclusion, the germination and plant population management practices indicate a high level of adaptive capacity among farmers. Replanting and transplanting strategies were vital to maintaining optimal plant populations, which influence yield potential by ensuring adequate tillering and head formation.

2. Pest Management

Pests emerged as a challenge during the early vegetative stages of crop development. Key pests identified include:

- Green semi-loopers and cornworms, which are common leaf feeders. Their feeding reduces the photosynthetic area, potentially stunting plant growth.
- Millipedes, which often attack emerging shoots, causing significant damage if left unchecked.

Farmer Interventions:

- Farmers were advised to apply Carbaryl, a broad-spectrum insecticide. This intervention is crucial for the following reasons:
 - It curbs pest populations before they reach economic thresholds, minimizing potential yield losses.
 - Protecting the photosynthetic integrity of crops during vegetative growth ensures sufficient energy for subsequent reproductive development.

Effective pest control will enhance crop health and vigor, particularly during critical growth stages. Farmers' ability to identify pests and take timely action demonstrates strong extension support and knowledge dissemination within the scheme.

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3. Challenges with Colluvial Deposits

Heavy rains resulted in colluvial deposits (soil and debris) burying fields in two isolated cases. This has rendered the affected areas unproductive, posing risks to the overall output for the impacted farmers.

Affected Farmers:

1. Christopher Munyuki (40% on average)
2. Gerald Mujeri (40% on average)

Interventions:

- The issue was escalated to the relevant office, and arrangements are underway to supply new seed packs to the affected farmers.
- Replanting efforts will commence immediately to recover potential losses.

The swift response to these cases is a testament to the resilience and responsiveness of the scheme. By providing immediate support, the program ensures that affected farmers can remain active participants in production. Additionally, this approach fosters trust and collaboration between farmers and supporting institutions.

4. Weed Control

Effective weed management has been a standout aspect of this season. Observations indicate that farmers have been proactive, with no fields currently overwhelmed by weeds.

Support Provided:

- Proper weed management using mechanical weeding was widely used by farmers as it helped suppress both annual and perennial weeds, reducing competition for resources such as nutrients, water, and sunlight. A few farmers have resorted to herbicide use in low quantities.

Weed control is a critical determinant of crop yield, especially during the early growth stages when competition can severely limit crop establishment. By providing herbicides and training on their use, the program has empowered farmers to maintain clean fields, which enhances productivity. Furthermore, reducing labour-intensive manual weeding frees up time for other farm activities, improving overall efficiency.

5. General Outlook on Crop Performance

Despite the challenges encountered, the 2025 cropping season remains promising. The combination of effective germination, pest control, and weed management has set a solid foundation for high yields.

Key Observations:

- Early planted crops in Ward 3 are ahead in growth stages, with most farmers already applying top-dressing fertilizers. This group is likely to achieve early harvests, which will strengthen food security within the community.
- January-planted crops are progressing well, with robust vegetative growth observed.

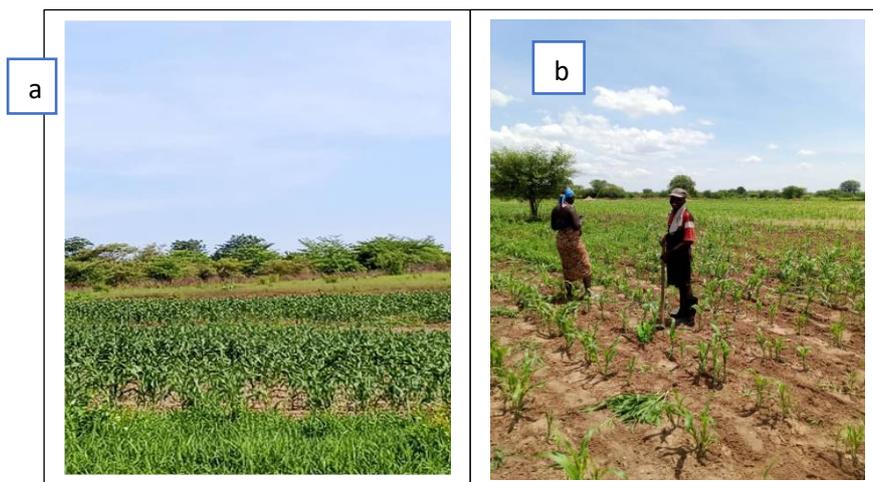


Figure 6. Crop development in Ward 3, Mbire [a] and a contracted household using mechanical weeding [b].

6. Enhancing Production: Recommendations and Next Steps

To maximize the potential of the current cropping season, the following measures are recommended:

1. Strengthen Pest Monitoring:
 - Encourage regular field inspections to identify emerging pest issues.
 - Provide additional support for Integrated Pest Management (IPM) strategies to reduce over-reliance on chemical pesticides.
2. Support for Flooded Farmers:
 - Expedite the delivery of seed packs to affected farmers to minimize downtime and ensure timely replanting.
3. Topdressing and Fertilizer Support:
 - Provide guidance on the optimal timing and application rates for topdressing fertilizers, particularly for nitrogen, to enhance tillering and head formation.
4. Weed Management Training:
 - Continue providing technical training on herbicide use and safe handling practices.
5. Capacity Building:
 - Train farmers on climate-smart practices, such as water conservation and soil health management, to build resilience against extreme weather events.

Conclusions and recommendations

The sorghum contract farming initiative in Mbire District has achieved significant progress in advancing agroecological practices and enhancing farmer livelihoods. The program successfully engaged farmers through sensitization meetings, ensured timely and equitable input distribution, and emphasized sustainable practices such as minimum tillage to conserve soil and promote resource efficiency. Planting was conducted under favorable conditions, and ongoing crop monitoring efforts highlight the program's proactive approach to risk management, including continuous pest scouting and disease surveillance. The inclusion of crop insurance coverage for drought and excessive rainfall further demonstrates the initiative's commitment to resilience and risk mitigation. These activities align with the program's agroecological goals, fostering climate-smart and sustainable farming systems.

Recommendations

1. Enhancing Access to local Certified Seed companies

To extend the program's reach, partnerships with seed companies such as SeedCo and K2 are recommended. Establishing localized seed distribution points in Mushumbi will enable uncontracted farmers to access certified seed, encouraging wider adoption of improved farming practices and increasing productivity.

2. Inclusive Market Participation

Agrowth should consider purchasing sorghum from both contracted and non-contracted farmers, provided their produce meets quality standards. This inclusive approach will strengthen the local economy, uplift rural livelihoods, and foster a more resilient supply chain.

3. Promoting Agroecological Practices

Encouraging farmers to adopt minimum tillage as a standard practice should remain a key focus of the program. This approach enhances soil health, reduces erosion, and improves water retention, aligning with the initiative's agroecological goals. Furthermore, continuous pest scouting should be paired with the promotion of local pest control measures and the use of biopesticides to minimize reliance on synthetic chemicals. Emphasizing these eco-friendly pest management strategies will support biodiversity and improve ecosystem balance. The program should also advocate for the application of organic manure to enhance soil fertility, reduce dependence on external chemical inputs, and lower production costs. These practices collectively contribute to a more sustainable and resilient farming system while reinforcing the program's commitment to agroecological principles and long-term environmental stewardship.

4. Sustainability of Business Models

Ensuring the long-term sustainability of the program requires diversifying funding sources and fostering partnerships with public and private stakeholders. Encouraging community-led initiatives, such as farmer cooperatives or microfinance schemes, can empower farmers and reduce reliance on external funding.