

Annex 9 - SWOT analysis of some CVs in the national context and some crucial technical recommendations for increasing agricultural productivity

1.1.1. Fruit and vegetables from a national perspective;

This sector is very important for generating family income and for the nutrition of rural families. In particular, it is attractive to women, who, like vegetables, also grow crops such as common beans in some regions (higher ground) which are produced twice a year, poultry and aquaculture, allowing farmers to have work and income in the dry season.

Improving the weak points that inhibit an increase in very low productivity across the board and promoting the availability of seeds adapted to produce in the rainy season is also a great opportunity, given the high volumes and lower prices in August-October for the crops with the highest volumes traded, such as tomatoes, potatoes, onions, cabbage and potatoes, and the lower volumes and better prices all the others, namely garlic, aromatic herbs and niche vegetables (e. g. broccoli, aubergines, etc.).g.: broccoli, cauliflower, eggplant, etc.). The latter have enormous potential in all provinces, in places with access to water for irrigation.

Tomato, Onion

1. **Location: Maputo, Gaza, Sofala, Manica, Nampula**
2. **SWOT (summary/complement to SWOT of Vegetables globally):**
 - Very low income
 - Large deficit in the local market, especially outside the dry season
 - Great lack of adoption of GAPs
 - access to irrigation is a major challenge, due to access to reliable water, CAPEX and OPEX costs
 - Seeds not available locally adapted for the rainy season
 - Marketing dominated by informal traders with a price advantage of more than 50% (e.g. 20% IRPS on purchase and 32% IRPC) over formal traders
 - High competition from SA, Zimbabwe, Malawi in SCN, through informal traders and smugglers (Mukeiristas)
 - There are some cold storage rooms, but they are not used (CEPHOL in Xai-Xai, SEMOC-hortícolas in Chimoio);
 - Need for investment in processing/industrial transformation to absorb commercial surpluses in the August-December harvest periods and the 2nd and 3rd qualities that the fresh market doesn't absorb, thus increasing the producer's profitability and giving them greater security to invest in improving the technologies adopted (seeds, fertilizers, irrigation) and produce all year round;

- The need for working capital financing for all the players in the value chain.
3. **Potential for intervention**
- Developing varieties that are resilient to pests and diseases and adapted each agro-ecological zone and the hot season;
 - Promotion of plant production and certification;
 - Improving integrated pest and disease management through continuous testing (establishing and operating mobile and fixed phytosanitary clinics);
 - Development and operation of an agro-processing unit;
 - Gradually reduce informality in marketing;
 - Need to promote rural MSMEs as fixed Agricultural Service Centers and Aggregators (not just temporary informal traders, like Luteari, Agridev, in the Border Corridor)
 - Strong TA improvement needed to improve GAPS
 - Expansion of production through promotion (extension, credit, secure market), especially for small and medium-sized producers;
 - Improve the management capacity through PPPs of horticultural processing units in fresh public ownership and then increase the installed capacity/number of units;
 - Investing in industrial processing for vegetables and possibly also for fruit;
 - Designing financial products tailored to the needs of all the players in the value chain, accessible to all and with subsidized interest , implementing them through partnerships with public collateralization mechanisms, Banco de Moçambique, Banca Comercial and Microbanks;
 - Improved control and inspection mechanisms for market rules and behavior;
 - Introduction of packages of customs measures to encourage local production the purposes of import substitution (introduction of degressive raw material import quotas, progressive increase in the 7.5% tariff for all rice, not just second-grain rice, progressive elimination of the VAT exemption on rice imports).

Reindeer potatoes and garlic

4. **Location: Maputo, Gaza, Sofala, Manica, Nampula, Tete, Niassa**

5. **SWOT:**

- Very low income
- Great local market, especially during the dry season
- Great lack of adoption of GAP
- access to irrigation is a major challenge

- Seeds not available locally adapted for the rainy season
- Dominated by informal traders and contraband
- High competition from SA, Zimbabwe, Malawi in SCN, through informal traders (Mukeiristas)
- There are some cold storage rooms, but they are not used (CEPHOL in Xai-Xai, SEMOC-hortícolas in Chimoio)
- The need for working capital financing for all the players in the value chain.

6. **Potential for intervention**

- Development of varieties resilient to pests and diseases and adapted to each agro-ecological zone;
- Promotion of seed production and certification;
- Improving integrated pest and disease management through continuous testing (establishing and operating mobile and fixed phytosanitary clinics);
- Development and operation of agro-processing units;
- Gradually reduce informality in marketing;
- Need to promote rural MSMEs as fixed Agricultural Service Centers and Aggregators (not just temporary informal traders, like Luteari, Agridev, in the Border Corridor)
- Strong TA improvement needed to improve GAPS
- Expansion of production through promotion (extension, credit, secure market), especially for small and medium-sized producers;
- Improve the management capacity through PPPs of horticultural processing units in fresh public ownership and then increase the installed capacity/number of units;
- Investing in industrial processing for vegetables;
- Designing financial products tailored to the needs of all the players in the value chain, accessible to all and with subsidized interest, implementing them through partnerships with public collateralization mechanisms, Banco de Moçambique, Banca Comercial and Microbanks;
- Improved control and inspection mechanisms for market rules and behavior;
- Introduction of packages of customs measures to encourage local production the purposes of import substitution (introduction of degressive raw material import quotas, progressive increase in the 7.5% tariff for all rice, not just second-grain rice, progressive elimination of the VAT exemption on rice imports).

Bananas from a national perspective:

7. **Location: Nampula, Manica, Maputo and Gaza**

8. **SWOT - Some highlights:**

- Panama disease in the North

- A large number of SHFs produce in Manica and Gaza province and can sell to the local market and to Sofala and Maputo
- Very large and medium-sized farmers in Maputo province, essentially exporters, with the second quality sold to the local market, but not enough to supply needs
- Market available in Maputo
- CEPHOL in Xai-Xai buys and processes bananas from small and medium-sized producers, processes them and places them on the Maputo market.
- High potential in the "Machongos - 3.00ha" irrigation scheme and still 70 /80.000ha of irrigation
- The need for working capital financing for all the players in the value chain.

9. **Potential for intervention**

- Gradually reduce informality in marketing;
- Need to promote rural MSMEs as fixed Agricultural Service Centers and Aggregators (not just temporary informal traders, like Luteari, Agridev, in the Border Corridor)
- Strong TA improvement needed to improve GAPS
- Expansion of production through promotion, especially for small and medium-sized producers;
- Promotion of plant production and certification;
- Improving post-harvest practices
- Investing in industrial processing for fruit;
- For MSMEs, designing financial products tailored to the needs of all the players the value chain, accessible to all and with subsidized interest, implemented through partnerships with public collateralization mechanisms, Banco de Moçambique, Banca Comercial and Microbanks.

Mango

10. **Location: Manica, Maputo and Gaza**

11. **SWOT - Some highlights:**

- Predominance of varieties unsuitable for pulp processing
- Processing plants are starting to open in Maputo, Inhambane and Manica, which will help to organize and guarantee a market beyond fresh produce.
- The need for working capital financing for all the players in the value chain.

12. **Potential for intervention**

- Research is needed to develop suitable varieties
- Needs mango plantations (there are only a few in Manica)
- Need for fruit fly control with TA for farmers, etc.
- Investing in industrial processing for fruit;

- Designing financial products tailored to the needs of all the players in the value chain, accessible to all and with subsidized interest, implementing them through partnerships with public collateralization mechanisms, Banco de Moçambique, Banca Comercial and Microbanks.

1.1.2. National Poultry Outlook

High opportunities throughout the country allow farmers to have regular access to income throughout the year and improve nutrition. More effort in egg production because as the country's deficit is much greater than the one hit, hens are easy to produce, eggs are proteins that are more accessible to poor families.

Connection to new medium-sized feed mills.

Promote the Free Range by improving the GAP with village chickens and hybrid chickens.

Chicken

13. **Location: Cabo Delgado, Niassa, Nampula, Zambézia, Tete, Manica, Sofala, Gaza and Maputo**

14. **SWOT - Some highlights:**

- the market is supplied ~60-70% by local production
- Poor rural and urban families can't afford to buy
- cycle of 5 to 6 weeks is important for HH's cash flow
- They require high efficiency in order to compete with imported frozen products
- The trend is to increase the size of breeding warehouses to min 10,000 DoC
- High cost of factory chicken feed. Possible production of feed using local raw materials (cassava chips, bôer beans, nhemba beans, moringa)
- Imports of frozen chicken are only allowed once local slaughterhouses have sold all their production. Import quotes managed by AMIA. But there are high levels of illegal imports.

15. **Potential for intervention**

- Expansion of production capacity for day-old chicks, feed and medicines (vaccines);
- Local production of feed (dividing and mixing the appropriate quantities) for rural or hybrid laying hens
- Expansion of the construction of slaughterhouses and processing capacity, especially for small and medium-sized producers;
- Expansion of veterinary assistance for small and medium-sized producers;
- Involving women and young entrepreneurs to produce
- Need to promote rural MSMEs as fixed Agricultural Service Centers and Aggregators (not just temporary informal traders, like Luteari, Agridev, in the Edge Corridor)
- Strong TA improvement needed to improve GAPS
- Expansion of production through promotion, especially for small and medium-sized producers.

Eggs

16. **Location: Cabo Delgado, Niassa, Nampula, Zambézia, Tete, Manica, Sofala, Gaza and Maputo**

17. **SWOT - Some highlights:**

- Cheapest animal protein that families can access (apart from local dried fish)
- 80-90% of locally consumed eggs are imported (with an average consumption of 4 eggs/year)
- Good for diversification and regeneration in improved agricultural systems and family economy
- Great for daily cash flow, for emergencies, for buying agricultural inputs / labor
- Tougher than growing chickens
- High cost of factory chicken feed. Possible production of feed using local raw materials (cassava chips, bôer beans, nhemba beans, moringa)

18. **Potential for intervention**

- Genetic improvement of layer breeds; Hybrid breeders making a big splash in Tanzania, Ethiopia, Indica, others (e.g. SASSO)
- Local production of feed (dividing and mixing the appropriate quantities) for rural or hybrid laying hens
- Expansion of veterinary assistance for small and medium-sized producers;
- Need to promote rural MSMEs as fixed Agricultural Service Centers and Aggregators (not just temporary informal traders, like Luteari , Agridev , in the Border Corridor). Support for "Mother Units" is also important - co-investment
- Strong TA improvement needed to improve GAPS
- Expansion of production through promotion, especially for small and medium-sized producers;
- Involving women and young entrepreneurs to produce
- TA for SDAEs to have nutrition officers explain how eggs can be cooked and that they are good for health to increase consumption
- Implementation of management, health, conservation and packaging production infrastructures.

1.1.3. Beef from a national perspective:

19. **Location: Sofala, Manica, Inhambane, Gaza and Maputo**

20. **SWOT - Some highlights:**

- Unaffordable for more than 80% of the population
- It is important for the balance of families to keep livestock as savings and status, not for income
- City markets prefer imported meat
- Recent large investments in slaughterhouses (Tete, Manica) with adoption of InBMs (Tete; Manica?)

21. Potential for intervention

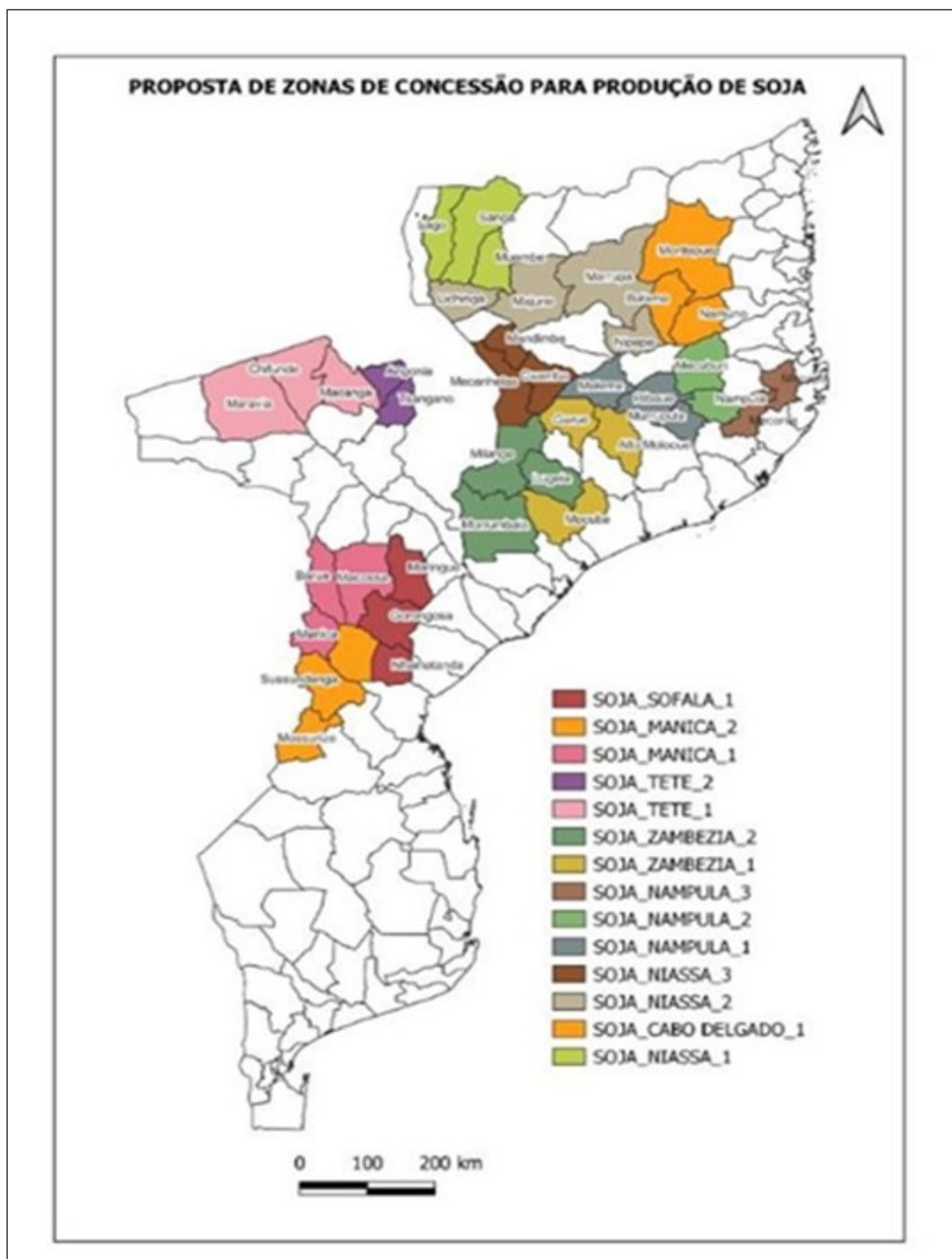
- Genetic improvement of local breeds (landim);
- Stimulating domestic production of vaccines and medicines;
- Expansion of livestock extension services;
- Rehabilitation and/or construction of management infrastructure (improved corrals, fattening systems), health (treatment corridors) and processing (slaughterhouses, slaughter and packaging houses, etc.);
- Increased mortality rate, through the availability of improved technologies;
- Livestock distribution fairs;
- Development of a livestock information system (production and markets);
- Reinforcement of measures to control cattle theft;
- Inspection and monitoring of production and slaughter units

1.1.4. National outlook for soybeans

1. Location: Cabo Delgado, Niassa, Zambézia, Tete and Manica

Everywhere in the Central and Northern Provinces, but with a focus on the regions selected for concessions by the IAOM under the new oilseeds regulation approved in December 2023 (Decree No. 75/2022).

Particularly to supply new medium-sized feed mills and local poultry feed products that are being promoted by programs such as "BAD com IPEME" (in the district of Gurué, Zambézia province), "AgriVale - ADZ", "FCDI II - ADZ-MCT -WB" and "FNDS-Projetos Âncora - BM".



2. **SWOT - Some highlights:**

- Low incomes
- Lack of quality seed
- There is no contract farming
- Need to improve the GAPs
- Local market on the rise for cake and high potential for oil
- Soybeans have been incorporated into the IAOM and a new oilseeds regulation was recently approved December 2020, initiating concessions to attract investment, promote production monitor flows and trade relations,
- 80-90% exported to India by traders who use it for profit and drug laundering in the Beira and Nacala Corridors. Impossible to compete with local factories
- The need for working capital financing for all the players in the value chain.

3. **Potential Interventions:**

- Research and innovation in the production of basic seeds adapted to each agro-ecological zone;
- Application of the new Oilseeds Regulation approved in Dec22, which provides for optional contract farming in geographical concession areas;
- Expansion of production through incentives for purchase prices, acquisition of inputs, especially for small and medium-sized producers
- Introduce mechanical threshing services (post-harvest)
- Strong TA improvement needed to improve GAPs
- Reducing informality in marketing, which is dominated by informal traders with a price advantage on purchase of more than 50% (e.g. 20% IRPS on purchase and 32% IRPC);
- Need to promote rural MSMEs as fixed Agricultural Service Centers and Aggregators (not just temporary informal traders)
- The IAOM is receiving support for Studies and Policies from the FAO, but needs additional support to promote new policies to all actors, including in SHF organizations.
- Increase/introduce the adoption of regenerative agriculture practices, such as consortia, fruit trees, etc.
- Promote processing produce by-products, especially poultry and fish feed, oil and milk;
- Local manufacture of feed (milling and mixing in the right quantities) for rural, hybrid and commercial laying hens;
- Need to apply the approved policy charging VC development fees for exported volumes (such as cashew nuts)

- Need for price reference / minimum price system approved (in progress with FAO support) and applied;
- Introduction of packages of customs measures to encourage local production the purposes of import substitution (introduction of degressive import quotas, progressive customs duties on the export of raw materials and progressive customs duties on the import of raw materials and crude oil, progressive elimination of the VAT exemption on the import of all oils and bagasse).

1.1.5. Sunflower

Note: No analysis was carried out Manica Province level due to the underdeveloped state of the VC, as noted in the matrix assessing the relevance of the VC to CAAM's purpose.

SWOT Analysis of the Sunflower Value Chain National Perspective

4. **Location: Cabo Delgado, Nampula, Zambézia and Manica**

5. **SWOT - Some highlights:**

- Very low level of production
- Very low income
- Lack of oil extraction and/or pressing plants
- There is no contract farming
- No SCFs or CFs
- Need to improve the GAPs
- The need for working capital financing for all the players in the value chain.

6. **Potential Interventions:**

- Revitalization of the adapted sunflower research system;
- Research and innovation in the production of basic seeds adapted to each agro-ecological zone;
- Application of the new Oilseeds Regulation approved in Dec22, which provides for optional contract farming in geographical concession areas;
- Expansion of production through incentives for purchase prices, acquisition of inputs, especially for small and medium-sized producers
- Expansion and modernization of sunflower processing
- Introduce mechanical threshing services (post-harvest)
- Strong TA improvement needed to improve GAPs;
- Reducing informality in marketing, which is dominated by informal traders with a price advantage on purchase of more than 50% (e.g. 20% IRPS on purchase and 32% IRPC);
- Need to promote rural MSMEs as fixed Agricultural Service Centers and Aggregators (not just temporary informal traders)

- Need to apply the approved decree charging value chain development fees for exported volumes (as is done with cashew nuts)
- Need for an approved price system / reference / minimum price system (in progress with FAO support) and applied
- The IAOM is receiving support for Studies and Policies from the FAO, but needs additional support to promote new policies to all actors, including SHF organizations.
- Introduction of packages of customs measures to encourage local production the purposes of import substitution (introduction of degressive import quotas, progressive customs duties on the export of raw materials and progressive customs duties on the import of raw materials and crude oil, progressive elimination of the VAT exemption on the import of all oils and bagasse);
- Increase/introduce the adoption of regenerative agriculture practices, such as consortia, fruit trees, etc.

1.1.6. Some crucial technical recommendations for increasing agricultural productivity

The seed sector was also analyzed, but not as a value chain (its final product is not intended for the consumer, but is an input for agricultural production).

1.1.7. SEEDS

SWOT of the seed sector in Manica Province

Strengths	Weak points
<p>Strong market and demand for improved and certified seeds</p> <p>69 companies registered (2020) in the seed sector in Mozambique</p> <p>A local company that has been growing seed for several years certified potatoes (C3, C4, C5)</p>	<p>▪ Farmers who breach supply through side-selling</p> <p>Weak coordination of seed players</p>
Opportunities	Threats
<p>Seed processing and conditioning opportunities</p> <p>Investment in seed research and the development of high quality varieties</p> <p>yield with local attributes and consumer preferences suited to Mozambique's palate</p> <p>Supporting the certified potato seed company</p> <p>Harmonization of seed policy with key stakeholders and research institutions.</p>	<p>Continuation of government and donor seed supply programs that almost eliminate commercial demand</p> <p>Fake seeds that undermine farmers' confidence in seed systems.</p> <p>Climate change, cyclones, risks.</p> <p>Pests and diseases that contribute to farmers' losses and high post-harvest losses.</p>

<p>Farmer training, awareness creation and farmer exchanges</p> <p>seed knowledge acquisition programs.</p> <p>Investments in</p> <p>seed storage and marketing</p>	
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Source: Newtech Consultant 2020

1.1.8. RECOMMENDATIONS FOR INVESTMENTS IN THE SEED SECTOR IN MANICA:

- The seed value chain in Manica is underdeveloped, with most seeds imported from neighboring countries, including South Africa and Zimbabwe. Only 5% of farmers use improved seeds in their production processes, contributing to low crop yields.
- study identified the following constraints in the seed value chain, weak links between stakeholders, including research institutions, seed companies, policy makers and agribusinesses, seed distributors therefore recommend interventions in the following nodes of the seed value chain, Research & Development, Seed Production, Seed Processing, and marketing operations, including branding, market lingo, training and awareness programs for family sector seed producers.
- Seed development programs should consider micro-environmental attributes such as those of traditional varieties, with the potential for higher yields, and contribution to local income, taste, food security and farmers' income.
- Improving rural road infrastructure, energy, water, market intelligence and information systems

1.1.9. PROPOSED RECOMMENDATIONS and AGRONOMIC CHALLENGES AFFECTING AGRICULTURAL VALUE CHAINS IN THE PROVINCE OF MANICA

General recommendations:

- Improved fertilizers: through Mozambican fertilizer companies, farmers could access more efficient blended fertilizers, specific to crops and locations. Most , coated and blended fertilizers are tolerant excessive leaching and loss through volatilization, so could improve water and nutrient uptake in crops. Some foliar fertilizers blended with micronutrients (Boron, Zinc and Iron) should be promoted to encourage small-scale farmers in Manica province to use them.
- Sustainable agricultural practices: small-scale farmers should be trained in sustainable agricultural practices that can improve plant nutrients in the soil. The challenge of the high cost of fertilizers could be reduced by introducing efficient and sustainable agricultural production.

Farmers could be trained in making compost and using animal manure that could be applied to cabbage, tomatoes, fruit trees such as bananas, mangoes, citrus fruits, lychees and avocados. Maize crop rotations with legumes such as soybeans, pigeonpea (*Mucuna pruriens*) and sunn hemp could improve maize productivity at low fertilizer production costs.

- The sustainable agricultural system improves the plant's water retention and absorption capacity, nutrient containment capacity and absorption.
- Improved seed varieties: Mozambique's national research systems should develop crop seed varieties that are tolerant to low nutrients and have high nutrient and water efficiency.

Pest and Disease Control Recommendations:

- Agrochemicals: the use of improved and more efficient agrochemicals to control weeds, pests, diseases and pests from crops and animals could improve crop productivity among farmers. Farmers, cooperatives and associations involved in the processing value chain should therefore consider the use of improved agrochemical chemicals in crop and livestock production.
- Certified seeds and planting materials: Access to improved certified seeds and planting materials other than home-grown seeds would significantly increase crop production in Manica province. Improved certified seeds and planting materials would improve good germination, emergence and crop tolerance of adverse conditions such as drought, insufficient nutrients, pests and diseases.
- Development of improved varieties: farmers should be encouraged to use improved varieties that are resistant or tolerant to economic diseases, such as leaf spot on tomatoes and potatoes.
- Training farmers and extension officers: Extension and farmers should be trained in sustainable integrated pest and disease management practices. These can include knowledge on handling pesticides, fungicides and biological control systems.
- Modern technologies: For example, the use of hydroponics and green houses would limit pest and disease infestation, while increasing efficiency of use.

Irrigation

Recommendations for Deficient Irrigation Systems

- **Irrigation schemes:** It is recommended that the Government of Mozambique introduces irrigation schemes farmers who will be involved in the production and supply of raw materials. Building water reservoirs such as dams, pumping water from rivers and lakes, using efficient and modern irrigation systems such as drip irrigation on vegetables, micro-jet irrigation on bananas or surface irrigation on citrus fruits, mangoes and avocados could improve yields.
- **Water harvesting technologies:** Farmers should be trained and encouraged to use rainwater harvesting technologies to irrigate vegetables and fruit crops.
- **Improved varieties:** Improved varieties with high water-use efficiency should be developed and promoted among farmers. Improved varieties would require less water and survive under conditions of water stress than unimproved varieties.
- **Sustainable agricultural systems:** Sustainable agricultural systems that involve cover crops, especially on vegetables and fruit trees, would reduce the water needs of crops during growing periods. Sustainable agricultural systems that improve the organic matter content in the soil can increase the high water storage capacity of the soil for crop absorption.
- **Hydroponics:** Improved modern technologies such as hydroponics could be explored and encouraged among farmers. The systems are more efficient for the use of water and nutrients on a very small piece of land.

Soil management

Recommendations for poor soil quality and its management:

- **Soil testing:** Farmers should be trained and encouraged to take samples and analyze the soil every planting season. Soil testing would make it easier to apply the right amounts of plant nutrients or correct the effects of soil acidity.
- **Localized and specialized production of value chains:** A specific group of farmers should be assisted to specialize the production of a value chain. For example, banana and avocado production is prominent in the districts of Báruè, Macate and Gondola in Manica province, mainly due to the good environmental conditions and good soils favorable to bananas and avocados. Farmers in these areas should therefore be encouraged to concentrate solely on avocado and banana production. The process would increase farmers' productivity to produce more high-quality products.

Climate change

Recommendations for bad weather conditions:

- **Climate Smart Agriculture Technologies:** There are several agricultural technologies that can be classified as climate smart. Some of these technologies involving conservation agriculture, hydroponics, green houses, mechanization, agroforestry, planting short maturing varieties, drought and disease tolerant varieties, timely planting, pasture and grazing management, crop rotations and intercropping and livestock integration would augment farmers to mitigate and adapt to climate change.
- **Crop and livestock insurance:** The Mozambican government should encourage the development of insurance schemes for farmers to make them resilient to climate shocks and disease outbreaks. Inclusive farm insurance schemes have several benefits, including:
 - Reduce vulnerability among farmers. Provide financial support to farmers suffering from crop or livestock losses
 - Increase access to credit. Enable financial institutions to offer credit and increase loan programs to the agricultural sector.
 - Improve social protection. Create more jobs in the agricultural industry.
 - High productivity and yields, because farmers are encouraged to use modern agricultural technologies.

Mechanization

Low levels of mechanization:

The most reported form of mechanization was animal traction. Animal traction has limitations in terms of the area of production that can be cultivated. Typically, production with animals limits production to around 20 ha. Animals are also prone to disease outbreaks. The cumulative number of tractors in the province was 36 with the capacity to cultivate 4,320 ha.

Recommendations:

- **Access to credit:** The Government Mozambique should develop a policy that allows farmers in the project to access agricultural loans from banks with fewer restrictions.
- **Proper linkage to loans** would enable farmers to acquire modern mechanized agricultural technologies for lacquer, disease and pest control, planting, fertilizer application, harvesting to ensure increased economies of scale.
- **Agricultural service providers:** Providers of mechanized agriculture must be encouraged to support cooperatives and associations with mechanized agricultural machinery in rental condition.

Variety

Unimproved crop varieties:

The study showed that only around 40-50% of farmers use improved crop varieties. Most farmers use saved and uncertified seeds. Farmers generally think that

seeds are expensive. According to the survey, there are a small number of companies producing and selling improved seeds in the province.

Recommendations:

- Encourage researchers to develop new varieties with high yields, early maturity and adaptability to local environmental conditions.
- Encourage the production of seeds such as soybeans, potatoes and pastures at cooperative levels, in order to guarantee a high availability of seeds in the province at a reduced cost. Through seed regulatory institutions, farmer groups or associations could be identified and supported in the production of seeds and seeds in the value chains of the province.
project. The supply of seeds and planting materials must always be suitable for the production of the target value chains.
- Shattering tolerance: For crops such as soya beans, varieties that delay chattering after maturity would significantly improve crop yields.

Diseases and breeds

Diseases and livestock breeds:

The study revealed that animal productivity among small farmers is affected by diseases that lead to interruptions in supply. Cattle farmers in Manica face challenges of not supplying enough animals to slaughterhouses. Some of the reasons cited were diseases and the use of local breeds associated with poor cattle management practices. They have limited use of vaccines and supplements which compromise productivity levels. However, the reduction in the number of cattle in the province gives strong indications of the need for urgent and serious intervention on the part of different livestock stakeholders. Measures must therefore be implemented to reduce disease infestation and increase animal productivity.

Recommendations:

- Vaccination and other animal disease control: Dairy cows should be prevented from disease infestation through vaccinations, tick control and treatments. Some of the common diseases in dairy production are pasteurellosis, Black Quarter, Anthrax, Brucellosis and Lumpy Skin Disease. Some of these interventions include:
- Strengthen the human resource capacity of the ministry's veterinary department under agriculture to regularly monitor and train livestock farmers in disease prevention measures. (b) Encourage the development of livestock cooperatives that facilitate the supply of medicines, the construction of dip tanks and organized disease control training. (c) Support the establishment of ethno-veterinary gardens that allow livestock farmers to have plant species.

indigenous medicinal plants planted in their fields. Some of the well-known species are Aloe vera, Moringa oleifera, chorizo, Gliricidia sepium, Euphorbia spp and lemon grass.

- Training: Training farmers in good cattle and dairy management practices
- could improve productivity and supply. Therefore, the Government of Mozambique should consider training farmers in the management of better fodder crops and animal disease control methods. Through the Ministry of Agriculture, farmers could be exposed to improved breeds such as cross breeds (Boran x Frisian) or some pure breeds, such as Jersey, which are tolerant of the local African environment.

Pastures

Lack of improved pastures and fodder:

The study showed low and varying milk yields over the years, which could be attributed to various factors including insufficient pasture and fodder.

Recommendations

- Supplementary animal feed: In order to ensure greater productivity in cattle, dairy cows and poultry, animal feed must always be appropriate.
- Supplementary feed, such as Dicalcium phosphate, vitamins, feed concentrates, soy and sunflower cakes could be obtained from agro-veterinary dealers. The
- Improved pasture legumes and grass crops that could be used as supplementary feed should be introduced into livestock communities to ensure increased yields of beef, milk and poultry in the province of
- Manica. Improved pasture legume and grass crops that could be promoted in the province include: Dolichos lablab L., Velvet beans (Mucuna spp),
- Centrocema spp, Siratro (Macropitilium antropurpurem), Silverleaf desmodium (Desmodium uncinatum), Stylo (Stylosanthes guianensis) Archer dolichos, Rhodes grass (Chloris gayana), Panicum maximum, Buffelo grass (Cenchrus ciliaris), Bracheria spp and Bana grass (Penntus spp).
- Training: Farmers should be trained in pasture management, in the preservation of the
- hay and silage production at local level.
- Agro-veterinary stores: Encourage the establishment of agro-veterinary stores run at community level by trained community crop/livestock workers through access to loan facilities.
- Milk collection centers: Milk collection centers should be introduced and expanded in districts that would be involved in the dairy value chain. Small dairy farmers should be organized and supported with milk centers to clean up lost milk from milk containers.

affordable and viable milk storage for delivery to large-scale processing units. Make milk collection centers and livestock service centers stock veterinary inputs accessible to farmers at affordable costs. Medicines could be accessed on credit with the cost deducted from the payment for the product sold.