



GEAVET DIGI-BASED COACHING MODULE FOR WOMEN IN SUSTAINABLE AGRI-BUSINESS AND ENTREPRENEURSHIP

DELIVERABLE 4.2

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SECTION 1.3.0: Increasing Productivity and Income

Increasing productivity and income is essential for women farmers in Sub-Saharan Africa (SSA), who contribute significantly to food production yet face several structural challenges, including limited land ownership, lack of access to inputs, reduced mobility, and restricted access to technology. Improving productivity requires not only better farming practices but also the ability to reduce losses across the value chain and transform agricultural goods into market-ready products with higher value. This section provides practical, evidence-based strategies to increase productivity and income, with a focus on resource efficiency, post-harvest handling, and value addition like processing Cassava into garri or flour. These techniques form an important component of climate-smart agriculture (CSA) and have been shown to raise yields, reduce waste, and strengthen livelihoods (Affognon et al., 2015).

Reflective Question.

What challenges do women farmers in your community face when trying to increase production and what affects your farm the most?

1.3.1.1: Resource Efficiency: Best Practices for Managing Water, Land, and Seeds

Resource efficient agriculture involves making the best possible use of essential inputs like water, land, and seeds, to maximize productivity while reducing losses and preserving natural resources. In Sub-Saharan Africa (SSA), where climate variability and limited access to inputs are increasing challenges, adopting resource-efficient practices is an important strategy for strengthening women farmers' resilience. Studies confirm that even simple and low-cost solutions, when used consistently, can significantly improve yields and reduce vulnerability to climate shocks (Assefa et al., 2019).

For example, in countries such as Burkina Faso and Kenya, female farmers dig small planting pits (**20–30 cm** wide) during the dry season. Compost or manure is placed inside the pits before the rains begin. This simple and resource-efficient method allows the pits to capture and store water better, while the compost improves soil fertility. As a result, seeds planted in the pits receive more concentrated nutrients and moisture, which can improve crop growth and yields. (Kebenei et al., 2021).

Many low-cost practices can be implemented without large investments. For additional support, women farmers may access microloans, grants, or government subsidies to purchase quality seeds, tools, or simple irrigation equipment

1.3.1.2: Water-Efficient Practices

This means using available water carefully so crops grow well while minimising waste. It includes practices such as mulching, drip irrigation, rain water harvesting and soil moisture conservation.

Water is one of the most limiting factors for smallholder agriculture. Women farmers, who rely heavily on rain-fed systems, are often more affected by droughts and erratic rainfall. Efficient water-management techniques can help stabilize production, reduce risk, and improve crop performance even under changing climatic conditions. Key benefits include improved water-use efficiency, Greater resilience to drought, reduced crop failure, and more stable yields over time (Frimpong et al., 2023).

Practical Tip for Women Farmers

Because many women farmers manage both farming and household responsibilities, water-saving techniques can also reduce labor and time spent watering crops. For example, drip irrigation systems can reduce the need for daily watering and mulching helps keep moisture in the soil, reducing watering frequency. This allows farmers to **save time for other activities or income-generating work.**

Working in Groups

Women's farming groups or cooperatives can work together to adopt water-saving practices. Working together can reduce costs and improve learning. For example, groups may.

- build shared rainwater harvesting systems
- purchase irrigation materials together
- exchange knowledge about water-management techniques

Mulching

Involves covering soil with organic materials such as leaves, grass, or crop residues. This practice helps retain soil moisture, reduce soil temperature, suppress weeds, and improve soil organic matter. Research indicates that mulching can reduce evaporation by up to 35% while improving soil structure and microbial activity (FAO, 2021). Mulching is affordable, locally available, and easy to implement, making it particularly suitable for women farmers with limited resources. Farmers can apply mulch by spreading a layer of dry plant materials around crops to help keep the soil moist and protect it from direct sunlight.



Figure 1: Mulching

Low-Cost Drip Irrigation delivers water directly to plant roots slowly and steadily. These systems can be installed using inexpensive materials, such as buckets, pipes, and recycled containers - and are highly effective for vegetable production. Field experiments in SSA show that smallholder drip systems can improve water-use efficiency by **30–60%** and significantly increase yields (Assefa et al., 2019). Women using such systems often report reduced labor for watering crops, freeing time for other additional income-generating activities. However, adoption may be limited by access to start-up capital, technical knowledge for installation and maintenance, and reliable water sources. Simple drip systems can also be managed by farmer groups who share the cost of materials and installation.

Rainwater harvesting techniques—such as rooftop collection barrels, tarpaulin catchment systems, or small on-farm reservoirs—provide low-cost supplementary water for farming. They reduce dependence on seasonal rainfall and help bridge irrigation gaps during dry spells (FAO, 2021). These systems are especially valuable in regions where women bear the responsibility of fetching water. Collected rainwater can be stored and used later to water vegetables, seedlings, or small garden plots.

Water-smart Planting Techniques such as zai pits (explained above), tied ridges, and contour farming help retain soil moisture and reduce runoff. These techniques are particularly useful in semi-arid regions and have been widely promoted as part of climate adaptation strategies in Africa (Rockström et al., 2003). Encourage women to keep a simple notebook to record which water-saving techniques they use and the results they see. Small group discussions about these notes can help participants learn from each other and adapt practices that work best.

Many low-cost water-saving practices can be implemented with minimal investment. For additional support, women may access microloans, grants, or government subsidies for tools or irrigation materials.

Reflection and Discussion questions.

1. Which water-saving practices mentioned in this section are already used in your community?
2. Which practice would be easiest for you to try on your farm?
3. What challenges might you face when adopting these techniques?

1.3.1.3: Land-Efficient Practices

Because women often cultivate smaller plots than men due to cultural norms and land-access barriers, maximizing land productivity is crucial. Improved land management increases total output, enhances soil fertility, and supports the long-term sustainability of farming systems. Beyond agronomic benefits, land-efficient practices can also increase farm income by producing more crops on the same land while reducing production costs. Evidence shows that practices such as intercropping, crop rotation, and integrated soil fertility management can significantly increase returns for smallholders in Sub-Saharan Africa by improving yield stability and efficient use of inputs (Pretty et al., 2018; FAO, 2021). For women farmers in particular, higher land productivity can lead to more products available for sale, improved household income, and stronger economic resilience. The following practices show how farmers can make better use of small plots of land.

Intercropping is the practice of growing two or more crops together on the same piece of land. Common combinations include maize–beans, cassava–legumes, and sorghum–pigeon pea. Research shows that intercropping can increase overall productivity, reduce pest pressure, and improve soil fertility (FAO, 2021). Women farmers can benefit from intercropping because it produces a more diverse harvest that supports household nutrition and income stability. For example, planting beans with maize allows the beans to add nutrients to the soil while the maize provides support for the climbing plants.

Crop rotation helps reduce pest cycles, disease buildup, and soil nutrient depletion. By alternating legumes (which add nitrogen to the soil) with cereals and root crops, women farmers can reduce fertilizer costs while improving soil health. For example, a farmer may plant maize one season and beans the next season to improve soil fertility.

Vertical gardening (sack gardens, crate towers, and wall-mounted containers) can be effective for women with very limited access to land. These methods allow the production of leafy vegetables and herbs in small spaces and are especially popular in

peri-urban and refugee-settlement environments. For example, vegetables such as spinach, lettuce, or herbs can be grown in sack gardens near the home

Soil fertility Management using organic fertilizers such as compost and manure is a simple and effective way to improve soil fertility. Reduced tillage and mulching further enhance soil structure and biological activity, supporting long-term productivity. Farmers can produce compost using farm waste, crop residues, and animal manure. Women can track crop yields, planting dates, and soil fertility improvements in a simple record book. Sharing these observations in small peer groups encourages discussion and continuous learning.

Low-cost land management techniques, such as intercropping, crop rotation, and vertical gardening, can be implemented with minimal investment. Funding options like cooperative savings, microloans, or local grants may help women adopt additional tools or inputs if needed.

1.3.1.4: Seed Efficiency and Selection

Seed systems are one of the most important factors influencing crop yields, yet women in Sub-Saharan Africa often face significant challenges in accessing quality seeds. Counterfeit seeds, expired seeds, and poor storage conditions can worsen the problem. Seed quality has a strong impact on crop performance because it determines the genetic potential of a crop from the beginning. Unlike fertilizers or irrigation, improved seeds may contain traits such as drought tolerance, pest resistance, and early maturity. As a result, even under limited input conditions, high-quality seeds can significantly increase productivity and reduce risk. Studies show that improved seed varieties alone can increase yields by **20–50%**, and when combined with other inputs, their benefits can even be greater (AGRA, 2020; World Bank, 2019). Because seeds are relatively low-cost compared to irrigation systems or machinery, investing in quality seeds can provide high returns for small holder farmers, particularly women with limited resources.

High-quality Seeds improve germination, yield performance, and resilience to pests and diseases. Improved and hybrid varieties also have shorter maturity cycles, enabling multiple harvests per year in some regions (AGRA, 2020). Women's access to these seeds can improve household food security and income. Farmers should try to obtain seeds from reliable suppliers or certified seed producers

Community seed banks store and distribute quality seeds at the local level. These institutions help preserve indigenous varieties and can increase women's autonomy and bargaining power in local seed systems, particularly when managed by farmer groups or cooperatives. Farmers may contribute seeds after harvest and access them again during the next planting season

Low-cost seed preservation methods often include traditional or indigenous practices such as, storing seeds with wood ash, sand, or in airtight clay containers. Modern hermetic containers (airtight containers that protect seeds from air and moisture) also help prevent moisture damage and insect infestation.

Encourage women to record which seed varieties they plant, germination rates, and any pest or drought issues. Sharing this information in community meetings or seed bank groups helps improve future planting decisions.

Accessing high-quality seeds may require some investment. Microloans, grants, or cooperative funding schemes can help women purchase certified seeds or hermetic storage bags, supporting long-term productivity.

1.3.2.0: Post-Harvest Handling and Value Addition

Post-harvest handling determines how much of the harvest can actually be sold or consumed. In Sub-Saharan Africa, where losses are often **30–40%**, improvements in storage, drying, packaging, and processing can significantly increase women's income (Affognon et al., 2015). Reducing post-harvest losses helps farmers make better use of the land, labor, seeds, and water already invested in production. For women farmers operating with small profit margins, preserving crop quality can increase the amount of produce available for sale and improve household cash flow. Improved storage and value addition can also allow produce to be sold later at higher prices, strengthening income stability and bargaining power. Simple improvements in drying and storage can help farmers reduce losses and increase income.

1.3.2.1: Techniques for Reducing Post-Harvest Losses

Improved drying techniques: Raised racks and solar dryers help prevent contamination from dust, soil, livestock, and insects. Solar dryers produce higher temperatures that reduce drying time and improve product quality, especially for cassava, maize, vegetables, and fruits (FAO, 2019). Drying crops on raised racks also helps keep them clean and protected from animals

Hermetic storage bags (PICS bags) prevent insect damage by cutting off their oxygen supply. Hermetic means airtight; the bags are specially designed to stop air and moisture from entering or leaving the container. This sealed environment prevents insects from surviving or reproducing inside the stored grain. Hermetic storage also reduces mold and aflatoxin contamination, making it ideal for long-term storage of grains and legumes. Losses can be reduced to under **2%** without using pesticides (CGIAR, 2022). Farmers can store grains in hermetic bags for several months without needing chemicals.

Proper handling and transportation: Simple practices—using clean sacks, avoiding overfilling, careful stacking, and safe transport—can reduce mechanical damage and spoilage. For example, moving sacks carefully and stacking them neatly can prevent crushed grains and reduce losses.

Participants can keep simple logs of post-harvest losses, storage methods used, and product quality. Reviewing these records with peers allows women to identify effective methods and adjust their practices.

Small investments in storage racks, solar dryers, or PICS bags can increase income. Microloans, local grants, or cooperative funds can help women afford these improvements without financial strain

1.3.2.2: Value addition

Means transforming raw agricultural products into processed goods that have higher value. This helps women access new markets, increase profits, reduce waste, and stabilize prices. Small-scale processing can often be done at home with low-cost equipment

Cassava can be processed into flour, starch, gari, chips, crisps, or baked goods. Value-added cassava products can sell for (2–5) times more than raw cassava (Owoo & Lambon-Quayefio, 2018).

Groundnuts: Peanut butter, roasted nuts, and groundnut oil are good income opportunities.

Fruits & vegetables: Drying mango, banana, tomato, okra, and peppers reduces spoilage and opens new market options such as school snacks and packaged foods.

Encourage participants to record costs, sales, and profits for their value-added products. Reviewing these records in peer discussions helps them identify what works, find challenges, and improve future business plans.

If starting a value-added business requires small capital, women can explore microloans, grants, or cooperative savings schemes to cover equipment or inputs.

3. Activity: Business Model Exercise

This activity helps participants practice value addition and basic business planning. It encourages thinking about costs, profit margins, customer groups, and marketing strategies. The activity usually takes about two hours.

The facilitator can guide women in developing a simple business model using these steps:

1. Choose a raw product (e.g., cassava, groundnuts, tomatoes).
2. Decide on a value-added product (e.g., cassava flour, peanut butter).
3. Identify target customers (schools, households, local markets, shops).
4. List the needed inputs and production steps.

5. Estimate costs and set a competitive selling price.
6. Develop a marketing plan.
7. Identify potential risks and solutions.
8. Share the business model with peers for feedback.

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