

Mushroom Enterprise



Oyster mushrooms on display at a mushroom trade fair in Musanze, Rwanda.

Rwanda relies heavily on agriculture for its income, employment opportunities and the economic well-being of its people, the majority of whom live in rural areas. The mushroom subsector has high potential because it is well suited to smallholders in the rural household economy and because Rwanda's Virunga region naturally provides the needed climatic condition for mushroom production.

At the beginning of the EEEGL project, farmers were producing mushrooms on an individual basis, with very little support from co-operatives or associations, as the groups were very weak. There were many **problems with linkages between the different actors in mushroom production**- there was a shortage of mushroom seeds to mushroom tube producers and a shortage of mushroom tubes for mushroom producers. Mushroom producers had inadequate training or technical support in appropriate mushroom production technologies. The farmers often used production technologies that were complicated and expensive. Undertaking the production improperly often led to low levels of production. EEEGL therefore intervened to help remove some of these constraints.

Impact on Poverty

The EEEGL project has engaged 25 producer groups¹ comprised of 1,246 members as well as 39 individual farmers. Within the mushroom producer groups, there are 130 farmers who have been trained in mushroom production by a contractor mobilized by EEEGL; the 130 farmers are now providing technical leadership to the producer groups. They, in turn, have trained 729 farmers to produce mushrooms. Among those trained, 15 farmers have now been selected to become rural extension agents. These agents act as intermediaries between tube and mushroom producers and earn a commission from the tube producer for the sale of tubes.

After initial unsuccessful trials with local production technologies, **the project successfully introduced in 2010 the Juncao technology²**. Initial technologies included growing mushrooms in indoor hanging baskets which provided to be expensive (to maintain the necessary conditions for the mushroom growth) and complicated (sterilization of the biomass material where the seeds were planted had to occur) and seeds planted were often of poor quality.

In 2010, mushroom groups in Rwanda bought 3,983 tubes³ which were used to produce 5,310 kg⁴ of fresh mushrooms, equating to **an average of 6.2kg of mushrooms produced per farmer**. A

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Approach

EEEGL conducted an **Enterprise Mapping Study** in order to assess which enterprises had the most potential for intervention. The study assessed: conservation related factors, market demand and growth potential, government and development partners strategic interest, community development and social factors, opportunities for linkages, value added potential (e.g. spinoffs, diversification), economic feasibility, organization and management potentials, pre-existence of the enterprise and the enterprise in relation to the objective of EEEGL. **Mushroom production was selected as one of the interventions which presented a major opportunity for intervention.** This due to: producers facing many challenges; a high potential for making an array of mushroom products; a large domestic market that was not being met; environmental friendliness; and a small amount of land being necessary for production.

Mushroom production has many benefits including:

- increased dietary diversity and high nutritional value which translate into substantial unmet domestic market potential;
- opportunities for many small enterprise throughout the mushroom production chain (e.g. mushroom seed producers, mushroom tube producers, mushroom producers, transporters)
- potential for creating many mushroom related products (e.g. dried mushrooms, mushroom sauces) is high
- vulnerable groups like women, people living with HIV/AIDS and disabled people can engage in the enterprise.

The methods used to increase mushroom production fall under **5 categories**:

- Development of mushroom seed and tube markets (sellers and buyers) and extensions services (contracts between agents and producers)
- Capacity of mushroom grower organizations and rural extension agents strengthened (e.g. provide training programs on governance and management of producer organizations)
- Establish strong communication and interaction (e.g. through a stakeholder platform) between different actors in the mushroom value chain
- Access to affordable financial services expanded and developed (e.g. sensitize and train VSLA members in mushroom production)
- Monitor and report on different activities throughout the mushroom production value chain (e.g. build capacity of rural extension agents, platform executives and grower organizations to collect, analyse and present monitoring data on value chain activities).

The project conceived, negotiated and rolled out a strategy for the upgrading of the value chain. The mushroom groups were serviced through a network of rural extension agents. In addition, during the phase out stage, 9 village and savings loan associations (VSLAs) were also engaged in the enterprise. The project provided capacity support to mushroom farmers groups and rural extension agents in leadership, marketing and technical skills. The project brokered the establishment of a mushroom seed supplier in Musanze to better service the farmers. A Memorandum of Understanding (MOU) was signed with one of the seed suppliers. The Rwanda Agriculture Board was engaged to support a platform mechanism among value chain actors.

¹ Out of the 25 associations, there are currently two co-operatives which have been formed. One co-operative consists of 4 associations, another consists of 6 associations.

² A series of techniques, invented in China, to cultivate mushrooms with chopped grasses and fibres suitable for cultivating fungi.

³ One tube can be utilized 3 -5 times.

⁴ From the 2010 Ishimo, Yvette "Mushroom enterprise and monitoring report".

Impact, cont.

kg of mushrooms sold for an average of 1,200 RWF. Therefore, if all mushrooms were sold on the market, it is calculated that the total gross revenue of 2010 was 6.37 million RWF, or USD 10,620. However, not all mushrooms were sold, some were consumed at home, but the amounts of self-consumption are not known. Self-consumption results in more food available for farmers and in a diversification of their diet.

Field surveys show that farmers are earning enough income from mushroom production to save money after each harvest in order to be able to re-invest in tubes for the following harvest. This is significant as the farmers are earning a sufficient amount to be able to not need to use all of their revenue on day-to-day expenses.

Impact on vulnerable or marginalized groups

Of the 1,285 mushroom farmers, 723, or 56%, are women or from historically marginalized groups (HMGs). Seventy-three, or 57%, of the 130 trained farmers are women or HMGs.

The project also attempted to introduce the crop to HMGs in Kinigi sector of Musanze District in order to help alleviate poverty through an income generating activity that did not require a lot of land and that would also diversify diets with a high nutrient food. 60 individuals (28 males and 38 females) are involved in this activity. 350 tubes were planted and 129 kilograms were harvested. The HMGs sold 22 kg and kept the rest for self-consumption in order to provide food for their households. The self-consumption is important as

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Lessons Learned

Strong rural extension support needs to be provided

This is important due to the distance, which can be a significant barrier, between some of the actors of the vertical value chain. Rural extension agents can assist by acting as an intermediary between value chain actors. Additionally, rural agents can assist with improving the horizontal chain market linkages as often producers harm the market by selling mushrooms at prices completely different than other sellers. This is due to a lack of market information and the agents can assist through the provision of information about the market in the area.

Appropriate mushroom growing technology needs to be applied

The initial mushroom production technology used was unsuccessful. This technology consisted of producing mushrooms in hanging baskets but it was unsuccessful due to high costs and difficulties in implementing the technology. Biomass in the baskets had to be sterilized and this was problematic. Specific indoor climate conditions had to be maintained and this was difficult. Undertaking the sterilization and climate control, was costly. Finally, the seeds being planted by the farmers in the baskets were often of poor quality and input was low or non-existent.

Value chain members should be located in close proximity

Initially, tube providers were based in Kigali while mushroom producers were based in the Northern Province of Musanze. This made access to tubes providers challenging for producers. This was a prohibitive barrier for mushroom producers until tube providers moved to Musanze, close to the mushroom producers, and rural extension agents were put in place to further aid with linking market actors.

Market information is essential

Most mushrooms are sold close to the production area even if the mushrooms could be sold to Kigali, only 2 hours drive on a good road away, where mushrooms could be sold for double the price (e.g. RWF 1,500 – 2,000 per kilogram in Musanze and 2,500 – 3,000 per kg in Kigali). Farmers can be assisted in selling to distant buyers through the implementation of marketing committees which are able to help negotiate contracts with larger buyers located outside of the region.

In addition, there can be problems with market information within a small area, such as a cell. One producer may be selling at a price far lower or higher than others due to lack of information about the price from other producers in the cell. This can lead to a skewed market. Rural extension agents and marketing committees can be useful in helping to spread market information.

Awareness raising amongst consumers about the mushroom produced is important

Rwandese historically have eaten wild mushrooms and are not accustomed to the cultivated mushrooms (pleurotus oyster). There is a lack of trust in whether the cultivated mushrooms are edible and what the nutritional value of the cultivated mushrooms is. Awareness raising, whether through trade fairs, media or other forms of information dissemination, about the benefits of cultivated mushrooms is useful.

Each actor in the mushroom value chain is crucial

If one actor in the value chain faces a problem, the entire chain is significantly impacted. For instance, if there is contamination in the seed production, the rest of the value chain is unable to function. Additionally, if, for instance, there is an insufficient supply of tubes, mushroom producers are not able to produce to their full capacity. One way to alleviate this challenge is to have a regional platform where all value chain actors are able to meet and discuss how to solve problems, whether the problems are longer term challenges or short term, unexpected challenges.



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Looking Ahead

As the value chain still needs strengthening, it is important that the capacity and number of rural extension agents and marketing committees increases. Trained mushroom producers are expected to train other producers in skills learned from the EEEGL project so that the mushroom value chain can be improved.

Another issue for mushroom producers is a lack of access to capital required to purchase necessary inputs (e.g. tubes, proper biomass) and materials for the shelter construction. Existing village and savings loans associations (VSLAs) are being trained in mushroom production so that farmers who have access to capital are able to engage in mushroom production. VSLAs are groups of 25 – 30 people who save a small amount on a regular basis. Members are able to take 3 month loans and, at the end of the 9 – 12 month VSLA cycle, they receive back their total savings as well as profit from members paying interest. The training will hopefully demonstrate to mushroom producers the importance of VSLAs and encourage mushroom producers groups to get involved in this financial tool. In addition, many farmers have joined mushroom co-operatives so that they are able to share the capital costs of mushroom production. However, the co-operatives are still weak in governance and accountability. Through trainings in leadership and co-operative management provided by EEEGL, the co-operatives have begun to build the capacity necessary to be fully functioning entities.

Finally, the signing of contracts between mushroom buyers and producers is important. This will ensure a market for producers and will also demonstrate the importance of selling collectively.

Mushroom Trade Fair with participation from producers, suppliers and buyers in both Rwanda and Uganda. Musanze, Rwanda.



Impact, cont.

the mushrooms, which are high in nutrition, help to diversify HMG's typically basic diet and provide them with their own source of food.

HMGs have recently formed a co-operative for mushroom production and formed a local Savings and Credit Co-operative (SACCO).

Impact on capacity building

In addition to the training mentioned previously and the resulting rural extension agents, certain farmers were selected to be part of marketing committees. 68 farmers comprise the committees. Awareness raising activities about the importance of market linkages were conducted with the committee members. The committee members were also trained in marketing skills. These members will then be able to assist producers with finding buyers and packaging and processing the mushrooms for sale.

Economic impact on the mushroom value chain

A trade fair was held in Musanze in October 2010. This trade fair linked over 135 participants ranging from mushroom seed producers, farmers, processors as well as buyers and consumers. Resulting from the trade fair, negotiations of Memorandums of Understandings (MOUs) between mushroom producers and buyers are underway.

A major weakness of the value chain was a lack of connection between tube producers and mushroom farmers. This has now been alleviated in two ways: tube suppliers are now operating in Musanze, close to the mushroom producers and rural extension agents act as intermediaries between the tube suppliers and producers.

