

Project Update: March 2024

Activity 1: Training in mushroom cultivation.

Introduction

The training event on mushroom cultivation in the village bordering Forest Reserve of TTK took place on 15th May 2023 in the village of Toui. The event was attended by 30 participants, including 10 men and women from the village of Kilibo G are, 10 men and women from the village of Papané, and 10 men and women from the village of Toui G are. The training took place using demonstration mushroom spawn produce at MyTIPS. The sterilisation equipment needed to grow the mushrooms was purchased at the local market. The main aim of the course was to provide participants with the knowledge and skills they need to grow mushrooms efficiently and sustainably. A number of topics were covered during the course, including the different species of cultivable mushroom, the stages involved in growing mushrooms, techniques for sterilising equipment, ideal growing conditions, harvesting and preserving mushrooms, and mushroom marketing.

The participants were actively involved throughout the course, asking questions, sharing their experiences and knowledge, and carrying out practical work under the supervision of the trainers. The mushroom cultivation course involved a number of steps.

Drawing up documentation

The first step was to draw up mushroom cultivation fact sheets and leaflets. These documents were created to make it easier to understand and learn mushroom cultivation techniques. They contain detailed information on the various stages of cultivation, including substrate preparation, spore inoculation, maintenance and harvesting. Illustrations have been used to make these sheets and leaflets more attractive and easier to understand.

Spawn production

The second stage was the development of spawn. At our Laboratory (MyTIPS), we used available strains of *Pleurotus pulmonarius* to produce spawn. This strain was growing under controlled conditions to obtain high quality spawn (Fig. 1). This spawn was essential for the success of the training, as the practical activity should result in obtaining fresh *Pleurotus* mushrooms.



Figure 1. Spawn production for training in mushroom cultivation

Purchase of various equipment

The third stage was the purchase of heat treatment equipment. Sterilisation or pasteurisation of the culture substrate is a crucial step in mushroom cultivation, as it eliminates pathogens and other undesirable micro-organisms from the substrate. To ensure heat treatment, equipment such as pasteurisation barrels, forks and gloves were purchased. This equipment was used for demonstration purposes and was left with the volunteers trained in cultivation in each beneficiary village.

Training preparation

The final stage involved informing the local population and selecting 10 candidates in three villages around the TTK forest. Meetings were organised in each village to inform the population about the mushroom cultivation training and the associated economic benefits. Volunteers were selected on the basis of their motivation and suitability for the training. A total of 30 candidates (men and women) were selected, 10 from each village (Toui Gare, Papané and Kilibo Gare) to take part in the training.

Theoretical Training

This crucial foundational step involved the initial interaction with the trainees. Through posters, we presented the context and issues related to edible mushrooms, the disappearance of natural mushroom habitats, the effects of climate change, and the necessity of cultivating edible mushrooms. We also highlighted the importance of mushroom cultivation, particularly its food, ecological, and economic significance (Fig. 2). Subsequently, we provided an overview of the mushroom cultivation stages, covering basic equipment for mushroom cultivation, thermal treatment techniques for substrates (sterilisation and pasteurisation), substrate inoculation techniques, incubation (duration and monitoring), regular watering for temperature and humidity control, mushroom harvesting, and surplus production preservation techniques. We also emphasised the necessary attire for successful mushroom cultivation

among the trainees. After a 5-hour exchange, all participants became familiar with mushroom-related concepts and particularly mushroom cultivation. They could easily list the different steps involved in mushroom cultivation and were acquainted with essential materials such as substrate, spawn, mushroom cultivation facilities, and water sources. Following inquiries from participants about spawn origin, a presentation on mushroom spawn production techniques concluded the theoretical training session. To ensure comprehension and message assimilation, a local guide was present to explain concepts and topics in the local language (Nago).





Partir de la situation de départ, les participants ont pu identifier les besoins et les ressources disponibles. Ils ont pu identifier les besoins et les ressources disponibles.

Equipements nécessaires

Mais les participants ont pu identifier les besoins et les ressources disponibles.

Etapas de la méthode

Installation et utilisation

- Prendre l'habitude de porter le masque
- Il y a 4 étapes de la méthode
- Prendre l'habitude de porter le masque
- Il y a 4 étapes de la méthode

Spécialité produite

- Essuyer le masque
- Nettoyer régulièrement
- Stériliser les masques
- Vaporiser l'eau de Javel

CONCLUSION

La production de masques est une activité qui permet de protéger la santé et la sécurité des personnes. Elle est un geste simple et efficace.



Figure 2. Theoretical training

Practical demonstration on mushroom cultivation

For the practical demonstration, we used wood sawdust and corn straw collected from the farm as the substrate. During this practical phase, our team demonstrated substrate pretreatment, thermal treatment (especially pasteurization), bagging of the substrate, and inoculation following

minimal hygiene standards for successful production (Fig. 3). Subsequently, two groups of trainees were guided through the demonstration, following the presented steps. Feedback was provided throughout the process, focusing on adherence to hygiene standards, work methodology, and procedural compliance. Since incubation is a lengthy process, a monitoring group was formed, assisted by the training team.













Figure 3. Practical training in mushroom cultivation.

Conclusion

In conclusion, the preparation of the mushroom cultivation training course involved a number of stages, in particular the preparation of fact sheets and leaflets, the preparation of cultivation spawn, the purchase of sterilisation equipment and the selection of participants. These steps were successfully completed, enabling the training to get off to a good start.

At the end of the training course, each participant received technical sheets on mushroom cultivation, so that they could consult them and put them into practice in their own village. Exchanges of information were also encouraged between participants from different villages, to promote the sharing of best practices and successful experiences. This training activity on mushroom cultivation in the village of Toui was a success. The participants acquired new skills that will enable them to develop this agricultural activity in their respective villages. Their commitment and enthusiasm were very encouraging, pointing to good results in the future.

Activity 2: Reforestation Introduction.

The aim of this report is to present the reforestation activities carried out in the TTK classified forest in mid-June 2023 (16 to 18 June 2023). The activity is part of our Rufford Small Grant project (ID: 39024 -1, Title: Contribution to the restoration and conservation of degraded habitats of wild edible mushrooms of Tchaourou, Toui-Kilibo in Northeast Benin). It involved the local populations of Toui G and Kilibore G living around the forest, our team working on the RSG project and forestry officers in the reforestation zone. *Afzelia africana* seedlings from specialist nurseries were used. 3,000 plants were purchased and planted in the TTK forest reserve.

Specialist nurseries

The seedlings used were obtained from specialist nurseries run by forestry agents or private individuals working with foresters (Fig. 1). These nurseries are designed to produce quality seedlings, taking care to comply with the required reforestation standards. We announced our need for seedlings as early as February 2023, so that we could find the 3,000 plants we wanted. The plants were then purchased at the beginning of June 2023, while the forestry administration helped us to find the ideal plots for the activity.



Photo 1: *Azelia africana* plants in the specialist nursery at the Kilibo forestry post.

Description of reforestation activities

During this activity, the local populations of the villages of Toui G are and Kilibo G (in particular some producers) and members of our team undertook the planting of *Azelia africana* seedlings in the TTK forest reserve. These plants were chosen because of their adaptability to the environmental conditions of the region and their importance as ectomycorrhizal trees for the promotion of edible wild mushrooms. Plots denuded by agriculture in the open forest and fallow land were chosen and marked out to accommodate the reforestation plants. After selecting the cleared plots, we sent the seedlings from specialist nurseries to the plots, where the farmers and our team carried out the work. We followed a rigorous process when planting the *Azelia africana* seedlings. The steps included preparing the soil, staking, creating holes for the seedlings, transplanting the seedlings into the holes and covering the soil around the seedlings to ensure they take root.

The stages of the work are illustrated below:

- **Delimitation and staking (spacing 5 x 5 m)**
During this activity, stakes of around 60 to 90 cm in height are driven in to well-defined locations, respecting the 5 × 5 m spacing where the plants will be planted. This activity enabled the plants to be located correctly at the foot of the stakes.
- **Trouaison (20 x 20 cm and 15 cm deep)**
This operation consists of digging holes at the foot of the stakes intended to receive the plants. These holes are dug on the same side of the stakes.
- **Planting *Azelia africana* seedlings.**

Monitoring and assessment

Monitoring of the reforestation seedlings will be carried out by the farmers near the reforested areas and the forestry administration at various times in order to ensure the survival of the seedlings. Farmers have been instructed in the steps involved in monitoring tree growth. They have been given responsibility for monitoring the seedlings planted in their fields.

Conclusion

The reforestation of the TTK classified forest, which took place between 16 and 18 June 2023, saw the planting of *Azelia africana* seedlings from specialised nurseries belonging to forestry officers in the reforestation zone. This activity contributes to the preservation of forest resources and the promotion of biodiversity and mycodiversity in the region. It helps to reconstitute the natural habitats of mushrooms. The farmers showed great interest in the activity and contributed effectively to safeguarding the forest. They were instructed on the best way to monitor the seedlings planted in their fields. Thanks to the involvement of forestry officers and farmers, this reforestation activity was a success and represents an important step in the protection of the TTK classified forest (natural mushroom habitat).