ITHub 4 – Non-Wood Forest Products

FOREST4EU

FOREST4EU partner: CNPF
OG: BIJOU
OG's country: France
Type of Innovation: Product

The Burgundy truffle, a quality product with high added value

Introduction

The Burgundy truffle (Tuber uncinatum) is an important player in the regional economic market and is illustrated by the exponential planting of new truffle orchards. To promote an excellent quality product, markets have been set up over the past ten years to offer quality-controlled truffles. If the quality of the Burgundy truffle depends on its maturity, other factors can have an influence on the development of its aromas: local climatic variations, nature of the soil, microbiota of the truffle (bacteria, yeasts, viruses, etc.), its specific genetic characteristics or its method of conservation after harvest. The sector must also anticipate climate change and adapt truffle farming to more difficult and water-poor environments. The challenge is to increase and regularize quality agricultural and forestry production.

Methodology and results

In order to develop competitive and sustainable truffle farming, the project was structured around three objectives:

- Develop quality control tools for Burgundy truffles. Develop molecular tools for identifying the provenance of Burgundy truffles as well as sensory and physicochemical analyzes to better understand the origin and diversity of Burgundy truffle aromas.

- Acquire references to cultivation techniques that anticipate climate change to optimize production in truffle orchards (temporarily floodable valley or on dry limestone plateau).

- Develop sustainable silvicultural management to produce both wood and truffles. Develop a tool for predicting the distribution of truffles in forest environments; characterize the stations favorable to Burgundy truffles; evaluate the effects of silviculture (thinning experiments) on truffle production.

Researchers from INRAE in Dijon (Center for Taste and Food Sciences and UMR Agroecology) carried out analyzes to characterize the aromatic complexity of Burgundy truffles. Sensory analysis sessions were also carried out by researchers from the ChemoSens platform. The results highlighted three "typical profiles" of Burgundy truffles: truffles characterized by more intense forest odors (button mushroom, undergrowth), more spicy odors (vanilla, smoked, pepper) and truffles presenting more negative odors (animal, earth, etc.). At the

same time, researchers have developed methods and tools for the analysis of the chemical compounds responsible for the odor of Tuber uncinatum, as well as molecular tools making it possible to determine the geographical origin of the truffles.

Two pilot truffle farms have been set up. The first in Leuglay, in a flood zone, and the second in La Cras, in a dry environment. On the La Cras site, analyzes of the roots of truffle trees and estimates of the mycorrhization rate were carried out. The results show good maintenance of the mycorrhization of 3 out of 4 species in conditions of major water deficit.

Finally, a prediction model for areas favorable to Burgundy truffles based on LIDAR data was established. Its extension to the scale of a forest massif will be possible based on adequate digging data.

Different methods of thinning coppices under high forests have been implemented. Their monitoring over time will make it possible to study the effects of forestry on truffle harvests.

Lessons learned

The project made it possible to develop a partnership approach rich in exchanges between the different stakeholders interested in recognizing the value of the Burgundy truffle among institutions and the general public. The IGP (controlled geographical indication) approach was not successful because research is still necessary to successfully differentiate the aetivum truffle from the autumnal uncinatum variety. The project made it possible to improve the recognition of the Burgundy truffle with the French Federation of Trufficulteurs.

BIJOU has also encouraged better consideration of this truffle in management plans in private and public forests in order to promote forest heritage and produce added value to wood. The partners also recommend integrating the Burgundy Truffle into agroforestry projects.

It is necessary to adapt regulations and require traceability of truffles to avoid the parallel market. Likewise, technical routes should also be shared to guarantee the development of the production of national truffles while the French market is flooded by Burgundy truffles from Eastern countries.

Figure 1. Image of a Burgundi truffle
Eric Hell © CNPF

The information presented in this factsheet was developed by the FOREST4EU partner, drawing on the innovations and knowledge generated by the indicated operational group with their explicit authorization.

Further information

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