



## Diversification of edible wild mushroom cultivation with new native species

### Introduction

The project was led by Bolet Ben Fet (TEB Verd SCCL). The operational group consists of: Bolets de Soca (Tresseras Multimèdia SL), the Catalan Mycology Society, the Wood and Furniture Guild and the Institute of Agrifood Research and Technology (IRTA). IRTA acted as a technology and research centre, and two lecturers from the University of Barcelona (UB) joined the team of researchers. A total of 120 strains belonging to 14 fungal species were isolated from the specimens collected in the field. A mixture of wheat, rye and sorghum grain in equal parts was designed with a water content adjusted to 50-60% and sterilised in the autoclave. It was tested successfully with 87 different strains of 11 fungal species for the production of the inoculum (seed). The small-scale trials were carried out using a substrate based on hardwood sawdust adapted to 60-65% humidity levels. An incubation temperature of 20-25°C was suitable for all the species. The project has made it possible to develop methods and protocols for the cultivation of eight edible fungal species from native strains. The cultivation protocols can be considered developed for: *Agrocybe aegerita*, *Fistulina hepatica*, *Lypphyllum decastes*, *Meripilus giganteus*, *Pleurotus eryngii* and *Polyporus squamosus*. They were also developed for better known species including: *Ganoderma lucidum* and *Grifola frondosa*, but using native strains. Catalonia is a country with a strong mycological presence and tradition, but the cultivation of wild forest mushrooms focuses on a few species that are mostly of Asian origin; this is a pioneering initiative in this type of cultivation. Diversification into other species with closer links to local tradition would increase the diversity and current range of edible fungi. These new products would give local producers a competitive advantage and open up new opportunities for export. The main objective of this project was to incorporate new species of fungi which are mostly lignicolous and native to Catalonia in the cultivation of edible mushrooms in order to diversify production and improve the commercial range of our country's producers.

### Lessons learned

1. A crop bank of 120 strains belonging to 14 edible fungal species native to Catalonia has been established. This collection of pure strains is available for future research and development work.
2. A viable seed production method has been established for 11 of the fungal species mentioned above.
3. The project has made it possible to develop methods and protocols for the cultivation of eight edible fungal species from native strains: *Agrocybe aegerita*, *Fistulina hepatica*, *Ganoderma lucidum*, *Grifola frondosa*,

Lyophyllum decastes, Meripilus giganteus, Pleurotus eryngii and Polyporus squamosus. Some of these species, such as: F. hepatica, L. decastes and P. squamosus have never been cultivated before.

4. Nutrient and cytotoxicity analyses for all the newly cultivated species are being developed.

5. The complete cultivation cycle has not yet been reached for Laetiporus sulphureus. No mushrooms have been obtained. Interest in the species has led to the start of a bachelor's degree final project at the University of Barcelona to continue the research.

Eight species of fungi were added to mushroom cultivation. Some of them, such as Fistulina hepatica, Lyophyllum decastes, Meripilus giganteus and Polyporus squamosus have never been cultivated before. Other more well-known strains, including: Agrocybe aegerita, Ganoderma lucidum, Grifola frondosa and Pleurotus eryngii, cultivated from native strains. The diversification of edible mushroom cultivation should continue in the long term in order to incorporate new products into the market. Cooperation between companies in the sector and research centres with support from government institutions proved to be an effective way of achieving these results.

Figure 1: "Wild mushrooms collected by workers"



Figure 2: "Wild Mushrooms"



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### Further information

<https://www.irta.cat/ca/el-cultiu-dels-bolets-de-soca-autoctons-cami-de-ser-una-realitat/>

<https://www.boletbenfet.com/es/-:~:text=La%20Granja%20de%20Bolet%20Ben%20Fet%20es%20un%20centro%20especial>



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