

# Mushroom cultivation: an opportunity to close the loop for the circular economy

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## Authors:

Jaime Carrasco - Innovation Manager at CTICH

& Pablo Martínez - Project Manager at CTICH

Contact: j.carrasco@ctich.com

Country/region: Spain, La Rioja

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## The problem

The current production system is based on a **linear model**. A "disposable" one-way system where natural resources are transformed into materials & products. This model does not have into account the limitations of the Earth to regenerate resources & absorb waste.

## The solution

The **Circular economy** rises as the alternative option. Circular systems put the generation of sustainable value first: it favors the recovery of materials & prevents the perpetuation of resource losses, all the while generating profit. **Mushroom cultivation** is a perfect example.

Mushroom cultivation uses residues from livestock activities (chicken & horse manure), agriculture (wheat straw) or forestry (wood chips or sawdust) to generate selective nutritional substrates. That is, the process in itself is circular in nature. It is a singular horticultural activity carried out indoors under conditions of high humidity ( $\geq 70\%$ ) and mild temperatures (approx. 18-24°C).

Moreover, the potential of mushrooms make them even more interesting as an agricultural practice. For example, mushrooms are a great nutritional addition for vegans & vegetarians: they contain high-quality proteins similar to eggs or milk; bioactive compounds (antioxidants); and different micronutrients usually deficient in Western diets (like selenium or vit D).

## Benefits

1. Mushroom cultivation minimizes the carbon footprint of the agricultural industry.
2. Mushroom cultivation supports circular production systems & the agri-food sector.
3. Mushroom cultivation brings job opportunities in rural areas at risk of depopulation.



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## Practical recommendations

Some key aspects to have into account when taking the first steps into mushroom cultivation to make the most of circularity:

- Review internal practices: maximize the recovery of by-products or residues from already existing agricultural and livestock activities.
- Review opportunities: it is also possible to reuse locally available resources.
- Review the process and how to better integrate it with your current practices. Make the most of short transformation and valorisation value chains.
- Introduce new alternative bio-based materials to the current peat-based ones to cover the compost colonised by the mushroom mycelium.
- Use biostimulant in cultivation to reduce chemical agents used for disease control.



### About BIOSCHAMP and this practice abstract

This practice abstract was elaborated in the **BIOSCHAMP** project, based on the EIP AGRI practice abstract format. © 2022

**Project duration:** from October 2020 to March 2024.

**Goal:** develop an integrated approach to tackle the mushroom cultivation challenges, improving the mushroom sector industrial profitability while reducing the agronomical need for pesticides by 90 %.