

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

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Author:

CTICH -Mushroom Technological Research
Center of La Rioja, Spain (Project Coordinator)

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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. © 2023

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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 %.