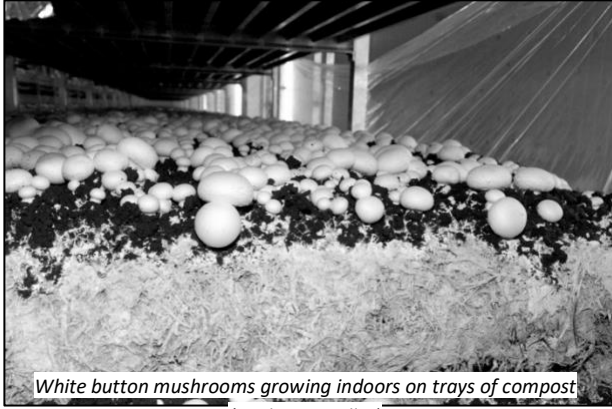




Organic Mushroom Production

Guidance



Mushrooms are eligible for organic certification under the USDA National Organic Program regulations for crop production. Although taxonomically mushrooms are considered *fungi*, not plants, the crops standards are the most applicable.

Mushrooms are cultivated in a variety of different production systems, depending on the needs of the particular mushroom species. White button mushrooms and portabellas are typically grown in soil or compost, whereas shiitake and oyster mushrooms are grown on wood, sawdust, straw, or other byproduct of forestry and agriculture.

Indoor production is the most common method of commercial mushroom production. Operators must ensure that treated wood is not used in direct contact with mushrooms or substrate. Mushrooms that are grown outdoors in contact with soil must be on land that has been managed organically for 36 months.

DEFINITIONS

- Spawn- The propagation material for mushrooms
- Substrate- The material on which the spawn grows and provides the nutrient source for the spawn to grow into mature mushrooms

NOP REGULATIONS AND PCO POLICY

Operators must use organically produced mushroom spawn, except that non-organically produced spawn that has not been treated with a prohibited substance and has not been produced through genetic engineering may be used when organic spawn is not commercially available.

There are many options for mushroom substrate material, depending on the type of mushroom being grown. Substrate must be reviewed and approved by PCO and must not contain any prohibited synthetic fertilizers or pesticides.

- Compost feedstocks must be reviewed by PCO. If the compost contains manure, the compost production records must also be submitted for review. Agricultural feedstocks such as straw or soy hulls are allowed and are not required to be organic. Minerals such as gypsum or chalk must be mined and not chemically processed or contain synthetic additives. Newspapers or other recycled paper without glossy or colored inks are also allowed as feedstocks.
- Logs and other wood products must not have been treated with prohibited substances. Sawdust blocks must not contain synthetic glues or additives. Microcrystalline cheesewax made without ethylene-propylene co-polymer or synthetic colors may be used as a production aid in log grown mushroom production. Beeswax would also be allowed.

APPROVED INPUTS

All inputs must be reviewed and approved by PCO prior to use, so be sure to check with us or consult a current PCO Approved Materials List, OMRI, or WSDA list prior to purchasing or using a product. PCO does not endorse any of the products listed in this guidance document. This is not an all-inclusive list and other inputs may be allowed. Please contact PCO if you have any questions on materials or restrictions.

- **Fertility**– Non-synthetic materials such as soybean meal, alfalfa meal, feather meal, and mined minerals (e.g. limestone and gypsum) are allowed. Synthetic materials such as stabilized humic acid, trace minerals, and fish products are also allowed, but are not typically used in mushroom production.
- **Pest and Disease Control** – Operators must use management practices to prevent pests and diseases in accordance with the management practices at §205.206. Pests may be managed by introducing predators or parasites of the pest species, such as parasitic nematodes for fly control. Pests and diseases may also be controlled through the application of non-synthetic biological, botanic, or mineral inputs, such as *Bacillus thuringiensis* (Bt) for gnat control, salt to control mold, or natural oils for other pests.

If natural substances are ineffective to control pests and diseases, operators may use approved synthetic substances. For example, products based on sucrose octanoate esters are allowed for insect control, and hydrogen peroxide and hydrated lime are both allowed for disease control.

- **Post-Harvest Handling** – Only approved materials may be used in direct contact with the mushrooms for drying, sanitizing, and other processing activities. If chlorine is used in direct contact with mushrooms (including in wash water) at levels greater than Safe Drinking Water Act (4ppm), a clean water rinse must immediately follow the use of chlorine. Approved peracetic acid and hydrogen peroxide products may also be used in direct contact with mushrooms.
- **Facility Sanitation** – Materials used to clean or sanitize equipment, tools, and other surfaces within the facility are subject to review and must be approved for these uses.



Mushroom house in production (credit: Tina Ellor)

RESOURCES

- Penn State Extension: <http://extension.psu.edu/plants/vegetable-fruit/mushrooms>
- ATTRA: <https://attra.ncat.org>