



From left to right: Jen Berkebile, Emily Newman, Marissa Pyle of PCO and Tom Chapman, Hy-Tech Mushroom Compost.



JEN BERKEBILE

Pennsylvania
Certified Organic



EMILY NEWMAN

Pennsylvania
Certified Organic

USDA Organic Regulations: Guidance for Mushroom Production

Editor's Note: This article details US Department of Agriculture requirements, and is written by a Pennsylvania-specific certifying agency. Other certifying agencies in other states may have different interpretations and should be contacted to assure compliance.

The organic industry has been one of the fastest growing sectors in agriculture for decades. In 2017, organic sales in the US were nearly \$50 billion, and organic food products grew by 6.4% versus 1.1% growth for nonorganic food products. Organic mushroom production is no exception. The National Organic Program (NOP) Organic Integrity Database currently shows 624 operations certified to USDA standards for mushroom production and/or processing, and more operations are becoming certified

every day. Pennsylvania Certified Organic (PCO) offers USDA-accredited third-party organic certification services for crops, livestock and handling scopes. Mushrooms are eligible for organic certification under the USDA NOP regulations for crop production, found at 7 CFR § 205. Although taxonomically mushrooms are considered fungi, not plants, the crops standards are the most applicable, since currently there aren't specific standards regarding mushroom production in the USDA organic regulations.

Starting the certification process is simple. Your farm receives an application that consists of an Organic System Plan (OSP). This OSP gives the certifying body insight into your unique operation, including your spawn source, substrate used, and general production practices and processing policies, if applicable. A certification specialist will review this application to the USDA organic regulations prior to having an inspector complete an inspection to verify compliance with these standards. After certification is issued, pending no outstanding compliance issues, you will be required to submit intent for certification, report any changes to your organic system plan, pay any applicable fees and be inspected annually.

As previously stated, since the USDA organic regulations do not include specific “mushroom standards,” PCO has created their own policies on spawn and substrate in collaboration with other certification bodies and with industry input. Below are some of the requirements for organic production.

- Indoor production is the most common method of commercial mushroom production. Operators must ensure that treated wood is not used in direct contact with the mushrooms or substrate. Mushrooms grown outdoors in contact with soil must be on land that has been managed organically for 36 months.
- Operators must use organically produced spawn, except when organic spawn is not commercially available. Organic spawn searches must occur yearly and be documented. If your operation uses nonorganic produced spawn, you will be required to have documentation showing that the spawn has been produced without genetic modification, sewage sludge and ionization.
- All materials used during production and handling of organic mushrooms, including for fertility, pest or disease control, and facility sanitation, must be reviewed and approved by PCO prior to use.
- Using compliant input materials is an important part of organic certification. In general, materials that are allowed in organic crop production are also allowed in mushroom production. Non-synthetic materials are generally permitted unless prohibited or restricted at §205.602 of the USDA's National List of Allowed and Prohibited Substances. Synthetic materials are generally prohibited unless specifically listed at §205.601 for the intended use. PCO-certified members

**“YOU’VE GOT TO GO OUT
ON A LIMB SOMETIMES
BECAUSE THAT’S WHERE
THE FRUIT IS.”**

Will Rogers,
American performer & humorist

ASSET PROTECTION • BANKING NEGOTIATIONS • ESTATE PLANNING • LEASE VS. PURCHASE ANALYSIS • COST STRUCTURE OPTIMIZATION



INNOVATIVE FINANCIAL RESULTS, LLC

Serving the Mushroom Industry Since 1987

Call for a no cost consultation: 484 680 0745

Robert E. Williams, CPA

Bob@InnovativeFinancialResults.com

www.InnovativeFinancialResults.com

CONTINUED FROM PAGE 6

processing activities. This includes the following active ingredients: acidified sodium chlorite, chlorine materials, hydrogen peroxide, potassium carbonate, sodium carbonate, sodium bicarbonate, sodium hydroxide, ozone, and peracetic acid. If chlorine is used in direct contact with mushrooms (including in wash water) at levels greater than allowed by the Safe Drinking Water Act (4ppm), a clean water rinse must immediately follow the use of chlorine. The use of antimicrobials or processing aids may cause the status of the mushrooms to only be certified to the "organic" standard, not the "100% organic" standard.

- Materials used to clean or sanitize equipment, tools, and other surfaces within the facility are also subject to review. Cleaners and sanitizers fall into two categories for approved use: without a rinse and with a rinse. Those that are allowed without a rinse include phosphoric acid and chlorine solutions that are allowed to drain and dry before organic food contact. Those that are allowed with a rinse include alkali cleaners, acidic cleaners, and others. Quaternary ammonium

compounds are prohibited for use due to known persistence and possible contamination. If quats are used in your facility, they can be used in accordance to a PCO-approved residue testing protocol.

- Boots may be disinfected with any material suitable for use, provided precautions are taken to prevent contamination of organic production areas. Quaternary ammonium compounds may be used for crop operations when crops are grown in raised beds and no potential contact between boots and crops or growing media occurs.
- All certified organic operations are required to keep records concerning the production, harvesting, and handling of mushrooms and mushroom products. This includes, but is not limited to, spawn supplier documentation, labels, and invoices for all materials used, production records, and sales records.

If you are considering transitioning into organic production and have questions, visit USDA's NOP website at <https://bit.ly/1XeLoJa> for additional information and a list of certifiers. 🍄



DMP DUTCH MUSHROOM PROJECTS

COMPLETE MUSHROOM PROJECTS

Engineering, equipment and turn key projects for:

- Composting phase I
- Tunnels phase II-III
- Growing rooms
- Climate installations
- Computer controls
- Machinery & equipment

Dutch Mushroom Projects B.V. 5961 GL Horst The Netherlands info@dutchmushroom.nl www.dutchmushroom.nl

can contact PCO to have their input materials reviewed for compliance.

- Substrate material must be reviewed and approved by PCO and must not contain any prohibited synthetic fertilizers or pesticides.
- Compost feedstocks must be reviewed and approved 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.
- If your operation is inoculating logs and other wood products with spawn, the logs must not have been treated with prohibited substances. 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.
- On February 14, 2019, NOP released a notice to all USDA-accredited certifying agencies clarifying that “pre-inoculated shiitake logs” used for organic mushroom production must be certified organic as of May 1, 2019.
- Non-synthetic materials such as soybean meal, alfalfa meal, feather meal, and mined minerals (e.g. limestone and gypsum) are allowed for fertility.

- Operators must use management practices to prevent pests and diseases in accordance with the crop pest, weed, and disease 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, growers may use approved synthetic substances provided that documentation of pest and disease control methods are outlined in your organic system plan. For example, products based on sucrose octanoate esters are allowed for insect control, and hydrogen peroxide is allowed for disease control. Hydrated lime is allowed as a pH adjuster for disease control in mushroom production. Calcium chloride is prohibited for use in mushroom production except to treat physiological disorder associated with calcium uptake. At this time, PCO has not determined any physiological disorders associated with calcium uptake specific to mushroom production.
- Only approved materials may be used in direct contact with the mushrooms for drying, sanitizing, and other

CONTINUED ON PAGE 28

**Here for all your sales, service,
parts and rental needs.**

Andrew Chin
215.244.3838
achin@foleyinc.com



FOLEY CAT

www.foleyinc.com