



ORGANIC FARMERS ASSOCIATION

May 10, 2024

Erin Healy, Director, Standards Division
National Organic Program
USDA–AMS–NOP
1400 Independence Ave. SW
Room 2642–So., Ag Stop 0268
Washington, DC 20250–0268

Re: National Organic Program; Market Development for Mushrooms and Pet Food Proposed Rule
Doc. No.: AMS-NOP-22-0063

Dear Director Healy,

The Organic Farmers Association (OFA) is a membership organization that represents U.S. certified organic farmers. Our organization was founded by and is controlled by certified organic farmers, and only domestic certified organic farmers vote on OFA's policies and leadership. We appreciate the opportunity to comment on "National Organic Program; Market Development for Mushrooms and Pet Food Proposed Rule" (Docket # AMS-NOP-22-0063). The minimal changes proposed to the Pet Food portion of the proposed rule are not of concern to our members, and we appreciate the NOP moving forward on rulemaking in this area to expand organic markets for domestic farmers. Our comments, in response to the docket, focus on the proposed rule for Mushrooms.

Requested Action: Second Proposed Rule

Organic Farmers Association strongly recommends that AMS review comments from this proposed rule and then quickly release a second proposed rule that centers the National Organic Standards Board's 2001 recommendation on mushrooms and positions mushroom standards under a new scope: Fungi.

Scope: Organic Mushroom Standard that Embodies Mushroom Biology and Production

Mushrooms are Fungi

Organic standards must follow scientific rules and established understanding of the living world. Fungi are classified in their own kingdom, which include mushrooms, molds, yeasts, rusts, smuts, and mildews.¹

¹ Alexopoulos, C. John, Moore, David and Ahmadjian, Vernon (2024, March 26). "Fungus," *Encyclopedia Britannica*. Retrieved on 5/9/2024 from <https://www.britannica.com/science/fungus>.

Mushrooms are not plants nor are mushrooms animals. The American Society for Microbiology outlines that “**molecular evidence demonstrates fungi are more closely related to animals than to plants.**”² The Society distances fungi from plants noting that fungi lack chloroplasts, the unifying feature of plants. In addition, the method of acquiring nutrients is scientifically distinct. Fungi secrete digestive enzymes, then absorb nutrients from their environment. In contrast, plants use their chloroplasts to make their own food.

Mushrooms are not composed of cellulose, like all plants, but are comprised of chitin, found in fungi and the exoskeletons of arthropods. Furthermore, mushrooms absorb nutrients from their substrate very differently from both crops and livestock: they rely solely on carbon obtained from other organisms for their metabolism and nutrition. Fungi absorb organic compounds directly from the environment. There is not a biological or chemical interaction like what occurs in plants or livestock that facilitates the ingestion of nutrients. Mushrooms are not plants and thus, certifying mushrooms under the crops standard is misaligned with their scientific classification, specific structure, and living expression. Fungi biology, specifically their nutrient absorption and reproduction, create direct conflicts with the organic standards designed for plant-life under the crops scope, and OFA does not recommend certifying them under this scope.

Mushrooms are also not livestock. OFA does not recommend certifying them under the livestock scope because this scope includes requirements for outdoor access and animal welfare, which are irrelevant to mushroom production.

For these reasons, Fungi (mushrooms, yeasts, molds, etc.) need their own scope of certification with dedicated production standards and their own section of National List materials. Substances currently allowed for organic crops necessary for fungi production, such as sanitizers or pest control materials, should be petitioned for fungi production under the new Fungi Scope,. Microcrystalline cheese wax for mushroom production should be moved to a new section 205.608, Synthetic substances allowed for use in organic fungi production.

Throughout the current proposed rule, AMS outlines numerous instances and explanations why current crop standards do not work for mushroom production because mushrooms are not plants. Instead of trying to fit a round peg into a square hole, AMS should establish organic standards that align with appropriate science.

Including mushrooms under the Crop Production standards and then explicitly exempting mushrooms from many sections of those standards opens the door to the idea that operations and certifiers can pick and choose among the standards based on production type. This slippery slope of thinking that only “applicable” standards need to be followed is a big part of why we now have hugely inconsistent

² Lovett, Brian (2021, January 6). “Three Reasons Fungi Are Not Plants,” *American Society for Microbiology*. Retrieved on 5/6/2024 from <https://asm.org/articles/2021/january/three-reasons-fungi-are-not-plants>.

application of crop standards to terrestrial plants - because some certifiers decided that hydroponic operations we excluded from the full crops standards and did not need to comply with soil requirements at 205.202, .203, or .205. Organic Farmers Association feels strongly that new production systems require new standards to ensure consistent certification and application. Certifying systems within inadequate standards for those systems creates too much room for interpretation and certification inconsistency, which undermines organic integrity and consumer confidence in the national organic seal. There are numerous new areas where fungi are being consumed as a food source, both for culinary and medicinal use. Providing a new scope for fungi, will aid in providing a useful framework for certification to grow this sector in the organic supply chain.

2001 Recommendations

We are concerned that more than twenty years of organic mushroom production in the absence of national standards has created accommodations for inadequate standards that do not meet the integrity of the label. For example, mushroom substrate presents many integrity challenges because mushrooms (and other fungi) behave differently than plants and animals. Currently the rule does not prohibit certifiers from allowing substrate that contains non-organic agricultural materials, wood products produced from lumber that was treated with prohibited substances within the last 3 years, and compost that does not meet the time, temperature, and turning requirements for organic approved compost. These allowances contradict the 2001 NOSB recommendation. This watering-down of standards drives a race to the bottom which may make USDA organic a “big tent” but only by removing integrity from the label.

[The 2001 NOSB recommendation on mushroom production](#) provided a clear, considered, and usable structure for mushroom standards that were developed from stakeholder input and robust discussion under the NOSB process. That work should be centered as AMS finally works toward rulemaking.

When AMS does not implement NOSB recommendations in a timely manner, it undermines confidence throughout the industry. Both certifiers and producers administer NOSB recommendations to guide and determine what practices will be compliant once the recommendations are implemented. Significant departures from NOSB recommendations in rulemaking create information disparities and increase the likelihood that the best-intentioned operations will invest in activities that wind up either being out of compliance OR undercut by cheaper production methods that would not have been permitted had the NOSB recommendations been moved to rulemaking in a timely manner. Organic Farmers Association commends the current NOP for prioritizing rulemaking and reducing the backlog, and we strongly encourage the NOP to adhere to the NOSB recommendations or call for more public input when the span between the recommendation and current date is significant.

The 2001 Mushroom Practice Standards NOSB recommendations were developed when NOP had a much smaller staff, and adding a new scope would have been logistically challenging. However, the National Organic Program is now working at a different level of capacity and USDA recognition and support, and oversees a much more complex and mature organic market. The earlier concerns about

creating a new scope should be re-evaluated in today's market and NOP capacity. It is important that the NOP continue to mature to allow for appropriate classification of production types that center science.

Current certification of mushrooms & inconsistencies

In the absence of a mushroom standard, organic producers continued to produce mushrooms and to seek certification. Organic certifiers, in turn, chose one of the available, albeit maladaptive, paths in order to certify mushrooms for the producers they served. Some chose to certify organic mushrooms under the crop scope and others chose to certify organic mushrooms under the livestock scope, noting they fell under the "other non-plant life" component of the livestock definition. The fact that certifiers certify the same product under both crops and livestock scopes demonstrates neither are adequate nor correct. Both paths are maladaptive because mushrooms are, in fact, fungi, and must be certified under a new scope suited to their particular biology and production requirements.

In the absence of fungi standards, certifier interpretation of where to place mushrooms in the regulations has caused rampant inconsistency among certifiers and how mushrooms are certified. While it may seem somewhat strange culturally, mushrooms are more closely related to livestock than they are to plants, as we explained above. If we were to be forced to place them in either of the existing scopes, biologically they fit more truly under the livestock scope. Yet, this is problematic, which leads to a strong argument that they deserve their own Fungi scope..

Recommended NOP Action

Organic Farmers Association recommends that the NOP analyze comments from this proposed rule filing and resubmit a second proposed rule that creates a new scope for Fungi, presenting standards for mushrooms, mold, yeast, and other fungi. It is necessary that NOP rulemaking embodies scientific understanding and classification.

Fungi Scope Will Support Future Market Growth

As existing organic mushroom producers have demonstrated, the market and production practices of mushrooms and other fungi will continue to grow. We will need to use appropriate, established scientific categories to write scientifically cogent rules that apply to the certified products and allow for market growth and innovation within the appropriate scope.

It is common and accepted for certified organic mushroom production to take place both indoors and outdoors, and standards must be written for both types of production under the Fungi Scope. Indoor mushroom production serves an important niche in farm viability, enabling income from indoor production during cold months in some regions, and outdoor production allows for farmers to utilize woodlands for cash production of new products in farm areas that may limit crop or livestock production. Furthermore, wild harvesting of fungi needs to be under the same scope as other fungi, not under the same classification as wild crops because wild harvesting of fungi significantly differs from that of crops due to the specific biology of fungi.

In drafting our comments on the proposed rule for mushrooms, we have considered feedback from our members and consulted with organic certifiers committed to soil as the foundation of organic agriculture. Organic Farmers Association is in agreement with these certification, education, and advocacy organizations who strive to achieve consistency in organizational policies and certification decisions that mushrooms belong under their own scope encompassing the proper production needs of Fungi.

AMS failed to solicit comments on the appropriate scope for mushrooms and other fungi in this set of comments, which ignores the divergent perspective certifiers have taken on this fundamental classification within the current regulations. Thus, the recent AMS feedback solicitation from “mushroom experts, producers, and trade associations about organic mushroom production,” was done under inadequate classification of fungi within the existing standards. While these are relevant stakeholder groups to consider when proposing a rule, consulting with an industry that has developed inconsistent practices over more than two decades without standards (putting the cart before the horse throughout its development) has effectively watered down the proposed standards from the original intent of the NOSB to accommodate the least-strict interpretation that exists in the marketplace. This approach reduces organic integrity and should be reassessed through a new lens using a Fungi Scope to reframe how we certify this production system.

Recommended Updates to 2001 NOSB Recommendation

In addition to creating a separate scope for fungi, there is another area where OFA feels the proposed mushroom standards from 2001 must be updated. In 2001, the NOSB recommended the use of organic substrate in mushroom production “when commercially available.”

Substrate

OFA recommends that all fungi substrate be from organic sources only, and if the substrate is wood, the forests or sources cannot have been sprayed with prohibited materials for at least three years prior to harvest and there should be no post-harvest treatment of wood. Indeed, these stricter standards were discussed in 2001, but at that time the NOSB was split with a vote of 7 to 6 and 2 absent to allow the “when commercially available” provision.

There are plenty of organic plant and animal materials available to serve as mushroom substrate. Unlike plants, the fruiting bodies of fungi are composed entirely of nutrients from the substrate. Substrate is, in that sense, much more similar to livestock feed than to soil for plant crops. Allowing mushrooms to feed on nonorganic agricultural materials would make certified organic mushrooms essentially and substantially indistinguishable from conventional mushrooms. Contaminants (chemical residues, antibiotics, etc.) would much more directly be absorbed by mushrooms than by plants. In addition to undermining the integrity of organic standards overall, this permission would counteract the intent of this rule to improve markets for organic mushrooms because it would be very difficult to explain to a consumer why they should pay a premium for an organic mushroom produced through the same methods as a conventional mushroom.

Compost

Most organic mushroom producers make their own substrates, and have on-site steaming facilities to kill off all other fungi and bacteria, so once they inoculate their substrate and put it in an environment that facilitates fungal growth, they have a better chance of only growing the fungi and mycelium they want, and not others. Since they are not seeking out mushroom substrate, but making it themselves, the commercial availability clause is somewhat clunky and unnecessary. If this remains as recommended, clearer wording must be included in the rule to require producers to seek out organic substrate materials such as organic grain, hay, straw, leaves or manures, and that tree products (logs, chips, sawdust) be from unsprayed and untreated wood. Soil amendments such as gypsum or calcium are also used, but are not considered agricultural and would need to be in an acceptable form for use in organic mushroom production.

The proposed rule has a definition of compost coming from plant and animal materials and OFA supports this concept. Yet, the current 2024 compost discussion in NOSB removes plant and animal materials from the definition of feedstocks and changes it to basically anything considered biodegradable. If the compost definition changes to include biodegradable plastics, any PFAS, nano or micro plastics could be readily absorbed by the mushrooms. We believe compost standards must maintain high integrity for use as a soil amendment in the crops scope and as a substrate in the proposed fungi scope.

We also are concerned with the proposal to lower the compost bar for time, temperature, and turning. The NOSB recommended using the same compost production standards at 205.203 for mushroom production as for plant crop production. This is for good reason, as the time, temperature, and turning requirements were aimed at producing a consistently pathogen-free compost. Since the time from inoculation to harvest is even shorter for many mushrooms than for most plant crops, it is especially important to ensure that no pathogens remain in compost. For example, varieties of *Agaricus bisporus* (which AMS notes comprise 82% of all mushrooms sold as organic) such as Cremini and Portabella typically take only 2-3 weeks, faster than even the speediest field crops like lettuce and radishes. We note that each certifier we consulted certifies operations whose mushroom compost meets the standards at 205.203.

Additionally, the removal of the composting process from the definition of “compost” at 205.2 makes the definition far too broad and supports our recommendation to leave the crops scope alone and define compost under a fungi scope as it relates to the use of compost as a substrate. Many processes completely unrelated to compost could meet the definition of “a managed process through which microorganisms break down plant and animal materials into more available forms suitable for application to the soil or as a component of mushroom substrate.” While no one would argue that the most “suitable” use of sauerkraut, yogurt, or beer is soil application or mushroom substrate, those materials would meet the definition because they are products of a managed process through which microorganisms break down plant and animal materials into more nutritionally available forms. More relevantly, manure digesters would also meet this definition, but digestate and biogas are not compost.

We disagree with changing the crops standard compost definition by removing the composting process of compost. We also believe the composting process already described at 205.2 is appropriate for mushroom substrate in the proposed Fungi scope. Yet, in the context of mushroom substrate in a Fungi Scope, we suggest an alternative compost definition that does not have the same level of detail as the current definition but avoids being too broad. For example, the American Association of Plant and Food Control Officials (AAPFCO) has the following definitions:

“Compost is a biologically stable material derived from the composting process. [AAPFCO Rules and Regulations–Bulk Compost 1(d)]”

“Composting is the biological decomposition of organic matter by mixing and piling in such a way to promote aerobic and/or anaerobic decay. The process inhibits pathogens, viable weed seeds and odors. [AAPFCO Rules and Regulations–Bulk Compost 1(e)]”

These definitions are simple and broad enough to encompass multiple compost production methods while being specific to what compost really is.

Terms Defines (Section 205.2)

OFA recommends adding a definition for Fungus that places it in the Kingdom Fungi with mushrooms, molds, yeasts, etc..

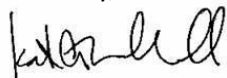
Implementation Timeline

We recommend that NOP redistribute a second proposed rule with mushroom production standards under the scope: Fungi. With this new scope, we recommend an implementation timeline of 5 years. The requirement for organic mushroom substrate under a 5-year implementation timeframe would allow mushroom growers to develop and work with organic sources of substrate materials. While many organic substrate materials are sufficiently available now, sourcing wood that has not been sprayed for three years prior to harvest may take some time for producers to secure. The 5-year implementation timeline would also allow for mushroom growers to petition for materials to be allowed for use in mushroom production.

OFA urges AMS to revise the proposed mushroom standards to place Mushroom Production under a new scope: Fungi and match the NOSB recommendations **with the removal of the provision that organic substrate only be required “when commercially available”**, and to take seriously the implications of lowering any bars for organic mushroom production.

We appreciate the opportunity to comment on these critical issues. If you have questions or need more information, please contact OFA Policy Director, Lily Hawkins, lily@organicfarmersassociation.org.

Sincerely,



Kate Mendenhall

Executive Director

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