

**National Organic Standards Board  
Crops Subcommittee  
Petitioned Material Checklist - Soy Wax  
January 19, 2016**

**Summary of Proposed Action:**

Soy wax has been petitioned as a synthetic substance for use in organic mushroom production to seal plugs and ends of logs inoculated with mushroom spawn. Soy wax is intended to be used for the same purpose as microcrystalline cheesewax, which is currently listed at §205.601(o) as a production aid in the production of mushrooms grown on logs.

Soy wax is produced from oil extracted from soybeans. The oil is hydrogenated, making it a solid at room temperature. Crystalline cheesewax, which is currently listed for the use, is made from petroleum. Soy wax, which is now available from non-GMO, domestically-produced soybeans, was petitioned for use because it has fewer environmental and health impacts than products made from petroleum.

Soy wax is considered synthetic because it undergoes a chemical change that does not happen naturally when it is hydrogenated. Hydrogenation is the process whereby the poly- and mono-unsaturated oils are solidified in order to increase the viscosity. As the petition describes it, this process involves the reaction of hydrogen with soybean oil at elevated temperature (140-225°C) in the presence of a nickel catalyst. Therefore, even if soy wax were made from organic soybeans by this process, it would be synthetic.

The Crops Subcommittee supports the addition of soy wax made from non-GMO plant material to the National List as an alternative to microcrystalline cheesewax, which is made from petroleum.

**Evaluation Criteria (see attached checklist for criteria in each category)**

1. Impact on Humans and Environment
2. Essential & Availability Criteria
3. Compatibility & Consistency

**Criteria Satisfied?**

- |                                         |                             |                              |
|-----------------------------------------|-----------------------------|------------------------------|
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |

**Subcommittee Action & Vote:**

**Classification Motion:** Move to classify soy wax as synthetic.

Motion by: Francis Thicke

Seconded by: Colehour Bondera

Yes: 4 No: 0 Absent: 1 Abstain: 0 Recuse: 0

**Listing Motion:** Move to list soy wax at §205.601 of the National List (o) - As production aids. Soy wax (CAS # 8016-70-4) - for use in log grown mushroom production. Must be made from non-GMO soybeans.

Motion by: Francis Thicke

Seconded by: Colehour Bondera

Yes: 4 No: 0 Abstain: 0 Absent: 1 Recuse: 0

**Proposed Annotation:** Must be made from non-GMO soybean oil.

**Basis for annotation:**  To meet criteria above  Other regulatory criteria  Citation

NOSB Evaluation Criteria for Substances Added To the National List - Crops

Category 1. Adverse impacts on humans or the environment? Soy Wax

Question	Yes	No	N/A	Comments/Documentation (TAP; petition; regulatory agency; other)
1. Is there a probability of environmental contamination during use or misuse? [§6518(m)(3)]		X		
2. Is there a probability of environmental contamination during, manufacture or disposal? [§6518(m)(3)]		X		
3. Are there any adverse impacts on biodiversity? (§205.200)		X		Soy wax (hydrogenated soy oil) is biodegradable and non-toxic
4. Does the substance contain inerts classified by EPA as ‘inerts of toxicological concern’? [§6517 (c)(1)(B)(ii)]		X		
5. Is there potential for detrimental chemical interaction with other materials used in organic farming systems? [§6518(m)(1)]		X		
6. Is there a toxic or other adverse action of the material or its breakdown products? [§6518(m)(2)]		X		Soy wax breaks down into carbon dioxide and water.
7. Is there persistence or concentration of the material or breakdown products in the environment? [§6518(m)(2)]		X		Soy wax is hydrogenated soybean oil and non-toxic and biodegradable in soil.
8. Would the use of the substance be harmful to human health or the environment? [§6517 (c)(1)(A)(i); §6517 (c)(2)(A)(i); §6518(m)(4)]		X		Soy wax for mushroom production is not intended to be ingested, but would not be harmful if it were.
9. Are there adverse biological and chemical interactions in the agro-ecosystem? [§6518(m)(5)]		X		
10. Are there detrimental physiological effects on soil organisms, crops, or livestock? [§6518(m)(5)]		X		

## NOSB Evaluation Criteria for Substances Added To the National List - Crops

### Category 2. Is the Substance Essential for Organic Production? Soy Wax

Question	Yes	No	N/A	Comments/Documentation (TAP; petition; regulatory agency; other)
1. Is the substance agricultural? [§6502(1)]	X			
2. Is the substance formulated or manufactured by a chemical process? [§6502(21)]	X			Hydrogenation of soybean oil
3. Is the substance formulated or manufactured by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources? [§6502(21)]	X			The chemical change is hydrogenation, which alters carbon bonding with hydrogen.
4. Is the substance created by naturally occurring biological processes? [§6502(21)]		X		
5. Is there a natural source of the substance? [§ 205.600(b)(1)]		X		
6. Is there an organic substitute? [§205.600(b)(1)]		X		Soy wax could be made with organic soybean oil, but would still be considered synthetic.
7. Is there a wholly natural substitute product? [§6517(c)(1)(A)(ii)]		X		
8. Are there any alternative substances? [§6518(m)(6)]	X			Microcrystalline cheesewax, which is currently on the National List.
9. Are there other practices that would make the substance unnecessary? [§6518(m)(6)]		X		The sealing of log ends and plug holes is considered necessary in mushroom production.

### Category 3. Is the substance compatible with organic production practices? Soy Wax

Question	Yes	No	N/A	Comments/Documentation (TAP; petition; regulatory agency; other)
1. Is the substance consistent with organic farming and handling? [§6517(c)(1)(A)(iii); 6517(c)(2)(A)(ii)]	X			Soy wax is more consistent and compatible with organic farming and sustainable agriculture than the petroleum-based microcrystalline cheesewax currently in use.
2. Is the substance compatible with a system of sustainable agriculture? [§6518(m)(7)]	X			See #1 above.
3. If used in livestock feed or pet food, is the nutritional quality of the food maintained with the substance? [§205.600(b)(3)]			X	
4. If used in livestock feed or pet food, is the primary use as a preservative? [§205.600(b)(4)]			X	

5. If used in livestock feed or pet food, is the primary use to recreate or improve flavors, colors, textures, or nutritive value lost in processing (except when required by law)? [§205.600(b)(4)]			X	
6. Is the substance used in production, and does it contain an active synthetic ingredient in the following categories: [§6517(c)(1)(B)(i);		X		
copper and sulfur compounds		X		
toxins derived from bacteria		X		
pheromones, soaps, horticultural oils, fish emulsions, treated seed, vitamins and minerals		X		
livestock parasiticides and medicines		X		
production aids including netting, tree wraps and seals, insect traps, sticky barriers, row covers, and equipment cleansers	X			