Formal Recommendation
From: National Organic Standards Board (NOSB)
To: the National Organic Program (NOP)

Date: April 2015
Subject: Petition to add 3-decene-2-one at §205.601
NOSB Chair: Jean Richardson

The NOSB hereby recommends to the NOP the following:

Rulemaking Action:

Guidance Statement:

Other: X

Statement of the Recommendation (Motion #1):
Motion to classify 3-decene-2-one as synthetic, passed.

Statement of the Recommendation (Motion #2):
Motion to list 3-decene-2-one at §205.601, as a synthetic substance allowed for use in organic crop production, failed.

Rationale Supporting Recommendation (including consistency with OFPA and Organic Regulations):

Although not as effective as 3-decen-2-one, clove oil is listed as an alternative to the use of this synthetic. In addition, proper harvest, handling and cold storage techniques (to maintain optimal temperature, humidity, and ventilation) can also be used to help delay dormancy break. Therefore the NOSB found that this material does not meet the essentiality or compatibility criteria in OFPA.

Committee Vote:

Motion to classify 3-decene-2-one as synthetic
Moved: Carmela Beck
Second: Colehour Bondera
Yes: 14 No: 0 Abstain: 0 Absent: 1 Recusal: 0

Motion passed

Motion to list 3-decene-2-one at §205.601, as a synthetic substance allowed for use in organic crop production
Moved: Carmela Beck
Second: Harold Austin
Yes: 0 No: 14 Abstain: 0 Absent: 1 Recusal: 0

Motion failed

National Organic Standards Board
Crops Subcommittee
Petitioned Material Checklist – 3-decen-2-one
January 27, 2015

Summary of Proposed Action:
The National Organic Standards Board's (NOSB) Crops Subcommittee received a petition from AMVAC Chemical Corporation to add 3-decen-2-one to the National List of Approved Substances at §205.601 for use as a plant growth regulator. Specifically, the petition requests approval for the use of the substance on potatoes as a sprout inhibitor. 3-decen-2-one is a synthetic substance used in post-harvest handling of raw agricultural products. The material is manufactured using n-heptaldehyde (produced from castor oil) and acetone and is applied through thermal fogging in a post-harvest closed system storage facility.

Background:
The NOSB Crops Subcommittee found the petition submitted by AMVAC Chemical Company to be complete and did not request a technical report (TR). In the petition, the primary argument for listing the material under §205.601 is that it extends the potato shelf life, which is particularly advantageous for the export market. The use of 3-decen-2-one does not negatively impact the potato or the potato processing quality, nor does it reduce sugar levels.

Although not as effective as 3-decen-2-one, clove oil is listed as an alternative to the use of this synthetic. In addition, proper harvest, handling and cold storage techniques (to maintain optimal temperature, humidity, and ventilation) can also be used to help delay dormancy break.

Due to the availability of non-synthetic alternatives on the market, the Crops Subcommittee is in agreement that the material fails the *essentiality, compatibility and consistency* criteria and should not be allowed for use in organic production.

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

	Criteria Satisfied?		
1. Impact on Humans and Environment	☒ Yes	☐ No	☐ N/A
2. Essential & Availability Criteria	☐ Yes	☒ No	☐ N/A
3. Compatibility & Consistency	☐ Yes	☒ No	☐ N/A

Substance Fails Criteria Category: 2, 3

Subcommittee Action & Vote

Classification Motion: Move to classify 3-decene-2-one (CAS # 10519-33-2) as petitioned as synthetic
Motion by: Carmela Beck
Seconded by: Colehour Bondera
Yes: 5 No: 0 Abstain: 0 Absent: 1 Recuse: 0

Listing Motion: Move to list 3-decen-2-one on section §205.601 of the National List
Motion by: Carmela Beck
Seconded by: Harold Austin
Yes: No: 5 Abstain: 0 Absent: 1 Recuse: 0

Proposed Annotation (if any): none

Approved by, Zea Sonnabend, Subcommittee Chair, to transmit to NOSB January 27, 2015

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

Category 1. Adverse impacts on humans or the environment? Substance: 3-decen-2-one

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			Proposed indoor use only on potatoes in post-harvest storage. Applied by fogging, so environmental contamination is likely when fumigation chamber is opened.
2. Is there a probability of environmental contamination during, manufacture or disposal? [§6518(m)(3)]	X			Use according to label instructions. Raw material acetone: extremely flammable and explosive. Toxic through inhalation, ingestion, dermal exposure to eye, skin, respiratory system, central nervous system.[1] Raw material heptaldehyde: volatile, flammable, causes serious eye damage, and is irritating to skin and respiratory system. Must be treated as hazardous waste. Very toxic to aquatic system, with long term effects.[2]
3. Does the substance contain inerts classified by EPA as 'inerts of toxicological concern'? [§6517 (c)(1)(B)(ii)]		X		
4. Is there potential for detrimental chemical interaction with other materials used in organic farming systems? [§6518(m)(1)]		X		Material will be used for post-harvest storage of potatoes; the material is not expected to be utilized alongside other materials (Petition; page 9).
5. Is there a toxic or other adverse action of the material or its breakdown products? [§6518(m)(2)]		X		No data available about most impacts. Toxic to aquatic life.[3] May be irritating to skin and eyes.[4]
6. Is there persistence or concentration of the material or breakdown products in the environment? [§6518(m)(2)]		X		According to petition, it volatilizes.

[1] http://mfc.engr.arizona.edu/safety/MSDS%20FOLDER/Acetone.pdf
[2] http://img1.guidechem.com/msdspdf/111-71-7.pdf
[3] http://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=W353205&brand=ALDRICH&PageToGoToURL=http%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Faldrich%2FW353205%3Flang%3Den
[4] http://www.bedoukian.com/product_images/mxts/613.txt

7. 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		3-decen-2-one is found in many common foods such as yogurt & tuna; the chemically synthesized form is approved as a direct food additive by the FDA & has been determined to be GRAS by FEMA (Petition; page 11) Label: Causes skin irritation and substantial but temporary eye injury. Harmful if inhaled.
8. Are there adverse biological and chemical interactions in the agro-ecosystem, including biodiversity? [§6518(m)(5)]		X		EPA did not evaluate impacts on non-target organisms because of the use pattern. Toxic to aquatic life with long lasting effects.[5]
9. Are there detrimental physiological effects on soil organisms, crops, or livestock? [§6518(m)(5)]		X		Data not available. Exhibit I (Petition; page 78) pertains to human toxicology.

Category 2. Is the Substance Essential for Organic Production? Substance: 3-decen-2-one

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			
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			Acetone and heptaldehyde are reactants.
4. Is the substance created by naturally occurring biological processes? [§6502(21)]		X		It occurs in small quantities in some fruits and yogurt.
5. Is there a natural source of the substance? [§ 205.600(b)(1)]		X		Not a practical one.
6. Is there an organic substitute? [§205.600(b)(1)]		X		
7. Is there a wholly natural substitute product? [§6517(c)(1)(A)(ii)]	X			Essential oils including: clove, mint and caraway seed; Shortcomings include: residual activity of oils is very short (2-3 weeks); does not control sprouts longer

5 http://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=W353205&brand=ALDRICH&PageToGoToURL=http%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Faldrich%2FW353205%3Flang%3Den

				than .5 cm; clove oil supply recently erratic; potato taste can be compromised; multiple applications required (Petition; page 12); sugars spike with multiple applications and can turn the potato chip an undesirable color (Petition; page 209).
8. Are there any alternative substances? [§6518(m)(6)]	X			Herbs, essential oils.
9. Are there other practices that would make the substance unnecessary? [§6518(m)(6)]	X			Proper harvest, handling, and storage.

Category 3. Is the substance compatible with organic production practices? Substance: 3-decen-2-one

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		Synthetic preservative. Organic emphasizes "management practices in preference to the use of off-farm inputs;" uses "cultural, biological, and mechanical methods, as opposed to using synthetic materials."[6]
2. Is the substance compatible with a system of sustainable agriculture? [§6518(m)(7)]		X		Prevents use of potatoes for seed.
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); copper and sulfur compounds		X		
toxins derived from bacteria		X		

[6] NOSB Principles of Organic Production and Handling. October 17, 2001.

	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		