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April 1, 2019

Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independence Ave. SW
Room 2648-S, Mail Stop 0268
Washington, DC 20250-0268

Docket ID # AMS-NOP-18-0071-0001

Re. MS: Marine Materials

These comments to the National Organic Standards Board (NOSB) on its Spring 2019 agenda are submitted on behalf of Beyond Pesticides. Founded in 1981 as a national, grassroots, membership organization that represents community-based organizations and a range of people seeking to bridge the interests of consumers, farmers, and farmworkers, Beyond Pesticides advances improved protections from pesticides and alternative pest management strategies that reduce or eliminate a reliance on pesticides. Our membership and network span the 50 states and the world.

We are glad to see that there has been near unanimous support for addressing the environmental impacts of the use of marine algae in organic production. The protection of marine ecosystems is urgently important, and since marine plants are crucial to those ecosystems, it is important for all of us, as organic producers, consumers, certifiers, and regulators, to find a way to move this process forward. We thank the Materials Subcommittee for their efforts so far.

Necessary Elements of Marine Ecosystem Protection

The crucial elements that we seek—and that the Materials Subcommittee (MS) seeks—are enforceable, protective rules for the use of marine algae in organic production. Enforceability implies rules that are verified by on-site inspection and that will stand up to legal challenge. Protective rules must address not only the sustainability of the target marine algae, but also the marine ecosystem and biological communities in which they live.

Regulatory backing is required for enforceability.

Certification based on guidelines is not appropriately codified and does not provide the NOSB with adequate authority and oversight through the sunset review process to enable the

board to carry out its statutory duty. Enforceability can be gained through reference to regulations—either aquaculture regulations that spell out acceptable organic practices or annotation that requires on-site inspection for specific requirements. We address problems with certification in the absence of practice regulations in more detail below.

Protective rules must spell out requirements for maintaining habitats and ecosystems.

The wildcrafting standards of §205.207 require that wild crops “must be harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the wild crop.” “Not destructive to the environment” in the case of a marine environment is not obvious to people whose experience is with a terrestrial environment and must therefore be defined in a way that can be applied and enforced—in regulations.

We suggest that annotation is the most effective way to introduce enforceable protective rules for marine algae. Annotation is not subject to discretionary alteration without a decisive vote of the NOSB. On the other hand, because the listings are reviewed on a five-year cycle, they can be modernized when needed. We address annotation in detail, including specific language, below.

Goals

It is apparent from the summary of comments that there is not unanimity concerning the goals of protecting marine plants used in organic production. Goals range from “limited or no harvest of marine algae for organic crop inputs” to the belief by harvesters and input manufacturers that no particular goals are needed because current regulations are sufficient.

The discussion of certification as a mechanism raised a number of potential goals of a protection mechanism:

- Materials should not be harmful to the environment (from manufacture through use and disposal).
 - Harvesting should not be harmful.
 - Contamination (of both organic products and the environment) should be avoided.
- The NOP should be able to account for the damage caused by use of marine materials as inputs.
- Harvest of materials should conform to wild harvest standards of §205.207:
 - They “must be harvested from a designated area that has had no prohibited substance, as set forth in §205.105, applied to it for a period of 3 years immediately preceding the harvest of the wild crop.” (MOFGA applies this as “Harvesting shall be from designated areas that have had no prohibited substances, as set forth in NOP 205.105, applied for one growing cycle immediately preceding the harvest of the sea vegetables.”)

- They “must be harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the wild crop.”
- Production of the input (if produced as a “crop”) “must maintain or improve the natural resources of the operation, including soil and water quality.”
- Maintaining “sustainable harvest” or “ecosystem function and structure.”

Thus, goals may emphasize protection of the marine environment or they may emphasize production of marine materials as listed inputs.

Annotation of the National List.

The National List includes synthetic aquatic plant extracts on §205.601, synthetic and nonsynthetic ingredients on §205.605, and nonorganically produced agricultural products on §205.606. In addition, marine algae that do not undergo chemical change can be used as crop inputs without limitation. Finally, certified organic marine algae that are cultivated or harvested under the wild harvest standard can be used in livestock feed and as ingredients in food without limitation.

Marine algae and their products on the National List should be annotated with the wildcrafting standard language, which is supplemented in a way that specifies concerns that must be addressed.

The wildcrafting standards at §205.207 require:

- (a) A wild crop that is intended to be sold, labeled, or represented as organic must be harvested from a designated area that has had no prohibited substance, as set forth in §205.105, applied to it for a period of 3 years immediately preceding the harvest of the wild crop.
- (b) A wild crop must be harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the wild crop.

Requiring that marine materials be organically produced, as proposed by the MS, would also apply the wildcrafting requirements in most cases. We stress the necessity of the language, “must be harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment” because “sustainable harvest” is not sufficient to protect the ecosystem. Because of the many roles that marine algae play in the ecosystem, standards should not be based on the level of disturbance that can sustain a harvest (recovery of biomass), but on recovery of ecosystem function and structure. The rockweed industry, as described above, serves as an example. As stated by Seeley and Schlesinger,

The measure of sustainability used by the rockweed (*Ascophyllum nodosum* L.) industry, maximum sustainable yield, accounts for neither rockweed’s role as habitat for 150+ species, including species of commercial or conservation significance, nor its role in coastal and estuarine ecosystems. To determine whether rockweed cutting is “sustainable” will require data on the long-term and ecosystem-wide impacts of cutting

rockweed. ...Until sustainable levels of cutting and appropriate regulations are identified, commercial-scale rockweed cutting presents a risk to coastal ecosystems and the human communities that depend on those ecosystems.¹

Marine algae should be listed on §205.602, prohibited nonsynthetic crop inputs, and §205.604, prohibited nonsynthetic livestock inputs, with the annotation, “unless harvested from a designated area that has had no prohibited substance, as set forth in §205.105, applied to it for a period of 3 years immediately preceding harvest and harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the population of the species. ‘Not destructive to the environment’ means that (i) no harm be caused to the target marine alga’s habitat structure and function; structure and function of other commonly encountered habitats; the structure and function of vulnerable marine ecosystems; key elements of the underlying ecosystem structure and function; populations of endangered, threatened, or protected species; populations of species in the community; (ii) pollutants will not be introduced, and (iii) there is a strategy to prevent pest outbreaks and the movement of non-native species. These conditions must be verified by on-site inspection.”

This listing should be broadly stated as “marine algae,” rather than specific species. *Ascophyllum nodosum* (rockweed) should be specifically listed as a prohibited natural. *Ascophyllum nodosum* is singled out not because it is uniquely at risk, but because the risk to rockweed, as well as its ecological importance, has been so well documented. As we have seen, rockweed grows and is harvested in the intertidal zone, where impacts are readily visible to many people. The absence of similar comments about other marine algae should not be taken as an indication that their populations and ecosystems are thriving. Rather, the NOSB should strictly apply the wild harvesting criteria in the case of all marine algae used in organic production—as food ingredients, processing aids, livestock feed, and crop inputs.

Similarly, synthetic crop and livestock inputs made from marine algae that are allowed on §205.601 and §205.603 should be annotated with “only if harvested from a designated area that has had no prohibited substance, as set forth in §205.105, applied to it for a period of 3 years immediately preceding harvest and harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the population of the species. ‘Not destructive to the environment’ means that (i) no harm be caused to the target marine alga’s habitat structure and function; structure and function of other commonly encountered habitats; the structure and function of vulnerable marine ecosystems; key elements of the underlying ecosystem structure and function; populations of endangered, threatened, or protected species; populations of species in the community; (ii) pollutants will not be introduced, and (iii) there is a strategy to prevent pest outbreaks and the movement of non-native species. These conditions must be verified by on-site inspection.”

¹ Seeley, R.H. and Schlesinger, W.H., 2012. Sustainable seaweed cutting? The rockweed (*Ascophyllum nodosum*) industry of Maine and the Maritime Provinces. *Annals of the New York Academy of Sciences*, 1249(1), pp.84-103.

Guidance is needed as supplementary.

Regardless of what mechanism is used, guidance is needed to clarify the requirements because most certifiers are not familiar with marine ecosystems, so the requirement that marine algae “must be harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the wild crop” needs to be spelled out in more detail. The Aquaculture Stewardship Council/Marine Stewardship Council standards² offer details that might be useful. A task force of experts should be employed to assist in writing guidance.

Marine animals must also be protected.

It is important to protect marine algae –species at the foundation of marine ecosystems. However, fish (and soon squid) may also be used in crop production. Like marine algae, they should be allowed only when obtained by sustainable methods that are not destructive to the environment. We encourage the NOSB to also consider restrictions on the use of fish and squid products that meet those criteria.

Discussion Questions Posed by the MS

1. If you are not in support of requiring organic certification, what approach do you support? Please describe the method for defining, measuring, and most importantly, enforcing, that the harvest would not be destructive to the environment under an alternative approach.

We support the approach we have outlined above, of annotating listing on §§601 and 603 for synthetics and listing nonsynthetics on §§602 and 604, with an annotation limiting uses. Specific means of defining and measuring impacts on wild-harvested marine algae and the surrounding environment should be developed by a task force of experts. Details should be put into guidance. To the extent possible, the meaning of “will not be destructive to the environment” should be spelled out in regulations.

The annotation should also spell out whatever measures are needed to enforce the restrictions. The existing annotation for micronutrients requires, for example, “Micronutrient deficiency must be documented by soil or tissue testing or other documented and verifiable method as approved by the certifying agent.”

2. Some existing wild harvest marine algae standards from other certifiers and third-party entities are listed in the Appendix. Please comment on strengths in these standards that could be adapted for NOP guidance. Please identify areas of weakness or areas that are not covered.

The National Organic Program, and specifically the NOSB must maintain control over USDA organic standards. Therefore, **we oppose the adoption by reference of any standards of another organization.** There are, however, aspects of other standards that could inform NOP

² <https://www.asc-aqua.org/wp-content/uploads/2017/11/ASC-MSC-Seaweed-Standard.pdf>.

regulations and guidance. Most standards are principally concerned about the sustainability of populations of the target species. While this is important, the impacts on habitats and ecosystem functioning are a larger concern.

Certification?

Certification as a mechanism has some shortcomings, some of which were addressed in the discussion document. We will emphasize two that were not addressed.

Certification is not supported by practice standards.

Production of marine algae, whether by wildcrafting or by cultivation, is a form of aquaculture and is not supported by standards for organic production in the ground. Practice standards for aquaculture crop production do not exist, except by analogy. Examples of applying NOP standard by analogy are contained in the MOFGA Guidelines for Organic Sea Vegetables cited by the discussion document.

NOP Regulations	MOFGA Guidelines
<p>§205.202 Land requirements. Any field or farm parcel from which harvested crops are intended to be sold, labeled, or represented as “organic,” must:</p> <ul style="list-style-type: none"> (a) Have been managed in accordance with the provisions of §§205.203 through 205.206; (b) Have had no prohibited substances, as listed in §205.105, applied to it for a period of 3 years immediately preceding harvest of the crop; and (c) Have distinct, defined boundaries and buffer zones such as runoff diversions to prevent the unintended application of a prohibited substance to the crop or contact with a prohibited substance applied to adjoining land that is not under organic management. 	<p>Organic sea vegetables must be cultured or wild crafted from defined ocean areas with waters of high ecological quality. Growing areas or beds must not be located near known sources of radioactive, chemical, or bacteriological contamination. [Buffer distances are given.]</p>

§205.203 Soil fertility and crop nutrient management practice standard.

(a) The producer must select and implement tillage and cultivation practices that maintain or improve the physical, chemical, and biological condition of soil and minimize soil erosion.

(b) The producer must manage crop nutrients and soil fertility through rotations, cover crops, and the application of plant and animal materials.

(c) The producer must manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances. Animal and plant materials include:

(1) Raw animal manure, which must be composted unless it is:

(i) Applied to land used for a crop not intended for human consumption;

(ii) Incorporated into the soil not less than 120 days prior to the harvest of a product whose edible portion has direct contact with the soil surface or soil particles; or

(iii) Incorporated into the soil not less than 90 days prior to the harvest of a product whose edible portion does not have direct contact with the soil surface or soil particles;

(2) Composted plant and animal materials produced through a process that:

(i) Established an initial C:N ratio of between 25:1 and 40:1; and

(ii) Maintained a temperature of between 131 °F and 170 °F for 3 days using an in-vessel or static aerated pile system; or

(iii) Maintained a temperature of between 131 °F and 170 °F for 15 days using a windrow composting system, during which period, the materials must be turned a minimum of five times.

(3) Uncomposted plant materials.

(d) A producer may manage crop nutrients and soil fertility to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances by applying:

(1) A crop nutrient or soil amendment included on the National List of synthetic substances allowed for use in organic crop production;

(2) A mined substance of low solubility;

(3) A mined substance of high solubility: *Provided*, That, the substance is used in compliance with the

Fertility and crop nutrients allowed under NOP 205.103 and NOP 205.601 may be used only during the time sporophytes are being cultured in indoor facilities and only at levels necessary for healthy plant growth. Fertility and crop nutrient applications are prohibited in outdoor sea vegetables growing areas.

<p>conditions established on the National List of nonsynthetic materials prohibited for crop production;</p> <p>(4) Ash obtained from the burning of a plant or animal material, except as prohibited in paragraph (e) of this section: <i>Provided</i>, That, the material burned has not been treated or combined with a prohibited substance or the ash is not included on the National List of nonsynthetic substances prohibited for use in organic crop production; and</p> <p>(5) A plant or animal material that has been chemically altered by a manufacturing process: <i>Provided</i>, That, the material is included on the National List of synthetic substances allowed for use in organic crop production established in §205.601.</p> <p>(e) The producer must not use:</p> <p>(1) Any fertilizer or composted plant and animal material that contains a synthetic substance not included on the National List of synthetic substances allowed for use in organic crop production;</p> <p>(2) Sewage sludge (biosolids) as defined in 40 CFR part 503; and (3) Burning as a means of disposal for crop residues produced on the operation: <i>Except</i>, That, burning may be used to suppress the spread of disease or to stimulate seed germination.</p>	
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<p>§205.205 Crop rotation practice standard. The producer must implement a crop rotation including but not limited to sod, cover crops, green manure crops, and catch crops that provide the following functions that are applicable to the operation:</p> <ul style="list-style-type: none">(a) Maintain or improve soil organic matter content;(b) Provide for pest management in annual and perennial crops;(c) Manage deficient or excess plant nutrients; and(d) Provide erosion control.	<p>Not applicable.</p>
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§205.206 Crop pest, weed, and disease management practice standard.

(a) The producer must use management practices to prevent crop pests, weeds, and diseases including but not limited to:

(1) Crop rotation and soil and crop nutrient management practices, as provided for in §§205.203 and 205.205;

(2) Sanitation measures to remove disease vectors, weed seeds, and habitat for pest organisms; and

(3) Cultural practices that enhance crop health, including selection of plant species and varieties with regard to suitability to site-specific conditions and resistance to prevalent pests, weeds, and diseases.

(b) Pest problems may be controlled through mechanical or physical methods including but not limited to:

(1) Augmentation or introduction of predators or parasites of the pest species;

(2) Development of habitat for natural enemies of pests;

(3) Nonsynthetic controls such as lures, traps, and repellents.

(c) Weed problems may be controlled through:

(1) Mulching with fully biodegradable materials;

(2) Mowing;

(3) Livestock grazing;

(4) Hand weeding and mechanical cultivation;

(5) Flame, heat, or electrical means; or

(6) Plastic or other synthetic mulches: *Provided*, That, they are removed from the field at the end of the growing or harvest season.

(d) Disease problems may be controlled through:

(1) Management practices which suppress the spread of disease organisms; or

(2) Application of nonsynthetic biological, botanical, or mineral inputs.

(e) When the practices provided for in paragraphs (a) through (d) of this section are insufficient to prevent or control crop pests, weeds, and diseases, a biological or botanical substance or a substance included on the National List of synthetic substances allowed for use in organic crop production may be applied to prevent, suppress, or control pests, weeds, or diseases:

Provided, That, the conditions for using the substance are documented in the organic system plan.

(f) The producer must not use lumber treated with arsenate or other prohibited materials for new installations or replacement purposes in contact with soil or livestock.

The producer must use management practices to prevent invasive algae, epiphytes, invertebrates and diseases. Management practices include cultural, mechanical and physical controls. If management practices fail, substances on the National List NOP 205.601 may be used. Bio-fouling shall be removed by mechanical means and disposed of appropriately or, if necessary, by substances allowed under NOP 205.605.

<p>§205.207 Wild-crop harvesting practice standard. (a) A wild crop that is intended to be sold, labeled, or represented as organic must be harvested from a designated area that has had no prohibited substance, as set forth in §205.105, applied to it for a period of 3 years immediately preceding the harvest of the wild crop. (b) A wild crop must be harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the wild crop.</p>	<p>Harvesting shall be from designated areas that have had no prohibited substances, as set forth in NOP 205.105, applied for one growing cycle immediately preceding the harvest of the sea vegetables. Sea vegetables shall be harvested in a sustainable manner that is not destructive to the environment and will sustain the growth and production of the sea vegetables. Sea vegetables harvesting should follow the “Harvester’s Field Guide to Maine Seaweeds” of the Maine Seaweed Council.</p>
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Comments on MOFGA analogy to NOP regulations

The comments below are not intended as a criticism of MOFGA’s certification program, but as an illustration of the difficulty of using certification of marine algae as a solution to this problem as long as NOP lacks regulations defining organic aquaculture practices. Without aquaculture regulations, the assumed advantage of requiring certification of marine algae used as inputs –enforceability—disappears.

1. MOFGA guidelines are guidelines, not regulations, and hence limited by a lack of enforceability.
2. **§205.202 Land requirements.** MOFGA does not require absence of prohibited substances for three years. It does not require “distinct, defined boundaries.” Although buffer zones are given for anticipated sources of contamination, MOFGA does not require means to “prevent the unintended application of a prohibited substance to the crop or contact with a prohibited substance applied to adjoining land that is not under organic management.”
3. **§205.203 Soil fertility and crop nutrient management practice standard.** The NOP regulations dictate measures to improve the soil as well as avoid contamination. MOFGA guidelines focus only on preventing contamination.
4. **§205.205 Crop rotation practice standard.** Crop rotation is defined in the regulations as: “The practice of alternating the annual crops grown on a specific field in a planned pattern or sequence in successive crop years so that crops of the same species or family are not grown repeatedly without interruption on the same field. Perennial cropping systems employ means such as alley cropping, intercropping, and hedgerows to introduce biological diversity in lieu of crop rotation.” The crop rotation requirement is deemed to be “not applicable” in MOFGA’s guidelines, although efforts to increase biodiversity should be employed in marine systems as well as terrestrial systems.
5. **§205.206 Crop pest, weed, and disease management practice standard.** NOP regulations lay out specific allowed measures that must be employed or considered before using a synthetic material on §205.601. The measures are defined more generally by MOFGA. Materials on §205.601 are allowed, although few (if any) are appropriate in a marine environment, and none is listed, as required by OFPA, “by

specific use or application”³ for use in a marine environment or aquaculture. Similarly, materials on §205.605 allowed by MOFGA for anti-fouling purposes are not listed for a use specific to a marine environment or aquaculture.

- 6. §205.207 Wild-crop harvesting practice standard.** The NOP regulation prohibits the certification of land to which a prohibited substance has been applied in the last three years. The MOFGA guidelines prohibit certification of waters to which prohibited substances have been applied during the previous growing cycle, which can be much shorter than three years.⁴ Although both NOP and MOFGA say, “A wild crop must be harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the wild crop,” MOFGA then refers to the “Harvester’s Field Guide to Maine Seaweeds” of the Maine Seaweed Council, which bases its guidelines on sustained growth of the crop, rather than protection of the environment. In addition, because of ocean circulation, there is no way to ensure that any designated area has not been exposed to a prohibited substance. Thus, the conditions for certification cannot be verified. However, such criteria provide a starting point for defining areas from which organic inputs may be harvested. Both NOP and MOFGA lack specific guidelines for environmental protection that could apply to marine algae.

Certification puts the emphasis on production of marine materials as inputs.

As stated above, NOSB goals may emphasize protection of the marine environment or they may emphasize production of marine materials as inputs. Use of certification as the mechanism for protection emphasizes the production of marine materials as inputs, since criteria are applied during the process of producing/harvesting the marine algae. However, a method that seeks to emphasize the protection of the marine environment should limit production of the inputs upfront. An annotation associated with the input enables this to occur.

Aquaculture Stewardship Council/Marine Stewardship Council

The ASC/MSC standards score operations based on a number of principles. One of those is environmental impacts. The outline of environmental impacts scored by ASC/MSC provides an outline for applying the OFPA criterion of no harm to the environment. Thus, regulations and guidance covering the use of marine algae should specify that no harm be caused to the target marine alga’s habitat structure and function; structure and function of other commonly encountered habitats; the structure and function of vulnerable marine ecosystems; key elements of the underlying ecosystem structure and function; populations of endangered, threatened, or protected species; populations of “main” species in the community. In addition, pollutants should not be introduced, and there should be a strategy to prevent pest outbreaks and the movement of non-native species.

Thank you for your consideration of these comments.

³ OFPA §6517(b).

⁴ <https://www.e-algae.org/journal/view.php?number=2819>.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Shistar". The signature is written in a cursive style with a prominent loop at the end.

Terry Shistar, Ph.D.
Board of Directors