

March 30, 2017

Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independent Ave., SW
Washington, D.C. 20250-0268
Re: FR Doc. # 2016-28383

Docket # AMS-NOP-16-0100

Dear National Organic Standards Board Members:

The following comments are submitted to you on behalf of The Cornucopia Institute, whose mission is to support economic justice for family scale farming.

CROPS SUBCOMMITTEE

Aeroponic/Hydroponic/Aquaponic Discussion Document

SUMMARY

The Cornucopia Institute **supports the clear definitions** in the Crops Subcommittee (CS) discussion document on aeroponics, hydroponics, and aquaponics. We agree with the CS's recommendation to add these terms to 7 CFR §205.105 as practices prohibited in organic production. These definitions are consistent with the scientific literature.

The NOP should adopt the European standard that requires that organic crops be grown in the soil in the ground, except for edible sprouts, aquatic plants growing outdoors in their native ecosystems, and transplants sold in their containers.

Attempts by some certifiers, the OTA, and the hydroponic container lobby to distinguish soilless container systems from other hydroponic systems based on "biology" in the system are arbitrary. "Pure," liquid-only hydroponic systems also have "biology" in the system, so much so that ozone is used to reduce biological activity. Whether or not fertilizers are added in a soluble form, or solubilized by bacteria, is irrelevant. Soilless systems are *not* organic systems, because they are removed from the regenerative organic practices that capture carbon and nitrogen from the atmosphere into the soil.

Cornucopia disagrees with the concept put forth in the discussion document that hydroponic systems could be labeled organic, provided they also indicate "grown without soil" on the label. It is impossible for these systems to comply with organic

regulations that require regenerative soil fertility practices. It is our contention that, in reading both the regulations and the enabling legislation (OFPA), this work-around to appease corporate agribusiness would be illegal.

Since its released last July, Cornucopia has strongly supported the Hydroponic Task Force 2010 NOSB Recommendation Subcommittee Report and comments submitted by Task Force member Dave Chapman, veteran soil-based farmer Eliot Coleman, and the hundreds of other pioneering organic farmers that understand that organics and soil go hand in hand.

We also support the ‘Keep the Soil in Organic’ international movement, including millions of farmers and eaters that want to keep the organic standards in line with its origins—not doing so seriously jeopardizes the reputation of the organic label in the marketplace.

Soilless, hydroponic/container growing is not necessarily “bad,” it simply isn’t organic by law. **Allowing year-round imports from countries where hydroponic/container growing is illegal, then be labeling and selling them as organic in this country, undercuts legitimate US organic farmers.** It is dead wrong—and patently illegal under the Organic Foods Production Act and the current regulations.

Rationale:

- The NOSB/NOP does not have the authority to modify the elements of the Organic Foods Production Act (OFPA) that specifically reference soil-based production as an integral requirement in organic production, including the Organic Plan, which requires farmers to “foster soil fertility.” When management of the soil is not the “primary” source of fertility, that operation is violating a mandatory part of OFPA.
- We support the discussion document’s discontinued use of the term “bioponics,” a term invented by corporate organic interests that is not found in the scientific literature. The question of the legality of hydroponic/container growing has nothing to do with biological activity, but whether or not regenerative soil-based production practices are in place.
- Both OFPA and the NOP Final Rule describe organic agricultural production as much more than substituting approved inputs for those not approved. Hydroponic container growers take what organic farmers call “amendments” and use them to provide the majority of the fertility for the crop.
- Hydroponic/container growing is neither legal nor “sustainable.” Containers dry out much faster than properly managed soil, high in organic matter, especially when drip irrigation is used. Currently, much of the hydroponic container growing comes from low humidity, desert-like regions. Utilizing peat to fill

containers involves the destruction of wetland bogs, which are the result of thousands of years of captured atmospheric carbon. Peat and coco coir contain no nutrients, so crops depend exclusively on added liquid nutrients.

In contrast, organic farmers work with natural nutrient cycles, challenging the prevalent industrial, input-based model of agriculture. Organic certification standards require on-farm practices that foster soil health by means of managing crop residue, manures, composting, and cover cropping. Regenerative agriculture, which includes carbon soil sequestration, is not being practiced in hydroponic/container systems.

- Many hydroponic container systems primarily depend on conventionally grown hydrolyzed soybeans, undoubtedly Roundup®-ready/GMO, prohibited in organics. These systems depend on unsustainable soybean farming for their fertility. Any claims that hydrolyzed soybeans are non-GMO cannot be confirmed through testing, because DNA is denatured under the high temperatures and strong acid incurred during soybean hydrolysis.
- Most hydroponic operations routinely use ozone to reduce the biological contamination in the irrigation system.
- Contrary to information in the Task Force Hydroponic and Aquaponic Subcommittee's report, the scientific literature does not support the claim that compost tea is a significant source of plant nutrition. The primary source of nutrients provided in hydroponic/container systems comes from continuously added liquid nutrients that are highly processed and should be considered synthetic (i.e., the process of producing hydrolyzed soybeans requires boiling for hours in acid).
- Prior to this debate, most container growers referred to their own systems as "hydroponic." In scientific literature, and trade publications not focused on this debate within the organic industry, it still is. We agree with the CS discussion document that any container system where highly soluble liquid nutrients are applied routinely should be considered hydroponic, including a recalcitrant substrate, like peat or coconut coir.
- The purpose of the Hydroponic Task Force was, supposedly, to clarify the NOSB's 2010 recommendations; however, task force members were initially limited to individuals with economic interests in hydroponic or aquaponic production. Though this restriction was later corrected, after public outcry, in the end, only one commercial soil-based grower was added to the 16-member panel.
- Allowing soilless, hydroponic/container growing to be labeled "organic" would conflict with international standards.

- **The NOSB/NOP does not have the legal authority to create regulations that conflict with the enabling legislation (OFPA).**

DISCUSSION

A few years ago, the organic community was shocked to find out that hydroponic operations were being quietly certified “organic,” despite the law!

The violations of law and regulations are clearly conceded in the documents you are now reviewing, due to the recognized need for modifying the existing regulations (the NOSB does not have the authority to modify the elements of the Organic Foods Production Act that specifically references soil-based production as an integral requirement in organic production).

Somehow, a small section of the USDA has been redefining “organic,” resulting in pressure from hydroponic growers in other countries to redefine organic as well.

The formal NOSB Recommendations on the “Production Standard for Terrestrial Plants in Containers and Enclosures (Greenhouses)” was passed on January 23, 2010 by a majority vote (twelve to one), after six years of NOSB work and public hearings.

We regret the additional delay caused by the NOP, convening a task force, and subsequent delay in NOSB voting on the legality of hydroponic certification.

The 2010 NOSB recommendations unequivocally state that hydroponic production should not be permitted in organic certification and that organic production of terrestrial plants must be soil-based. It is incumbent upon the current NOSB and the USDA to accept the past recommendations and to be consistent with international rules that prohibit soilless hydroponic vegetable production as certified “organic.”

The NOP’s decision to allow organic certification of hydroponic systems, in direct opposition to the 2010 NOSB recommendations, and without formal proposed standards, violates the program’s legal responsibility to follow the established due process in setting organic standards.

Unlawful and extreme variations in certification requirements create consumer confusion and undermine the integrity of the organic label, ultimately weakening organic markets. One of the central tenants of the Organic Foods Production Act (OFPA) of 1990 is to “*assure consumers that organically produced products meet a consistent standard*” (7 U.S.C. § 6501(2)). This lack of a consistent standard that the NOP has created with respect to hydroponic systems is exactly the type of problem that OFPA and the NOP were designed to avoid.

A stated primary objective of the USDA/NOP-created Hydroponics Task Force was to clarify the NOSB’s 2010 Recommendations (80 Fed Reg. 12,422, Mar. 9, 2015).

Yet, the majority of task force members chosen had a vested interest in the organic certification of hydroponics, rather than in furthering the 2010 NOSB recommendations. Therefore, the make up of the task force caused widespread concern that their actual purpose appeared to be to rewrite, rather than to clarify, the recommendations.

In the end, only one commercial soil-based grower was chosen for the task force. **Several highly qualified task force applicants (known to support the exclusion of hydroponic production from organics) were not chosen** and the result was an unfairly biased taskforce.

The pro-hydroponics members of the task force stated in their report, and at the last NOSB meeting, that compost tea is used to provide nutrients in these “bioponic” systems. However, the scientific literature does not support that statement.

Compost tea is not a significant source of nutrients, so other nutrient sources must be relied upon for fertility. Compost tea is irrelevant to the production of a crop; in other words, a healthy crop can be produced without it. **The claim that compost tea is used to provide the required nutrients is a ruse, intended to make it seem like these systems might have something in common with soil-based production.**

In fact, most operations with cycling irrigation water routinely use ozone to reduce the biology in the irrigation system. The “bioponic” claim is an attempted work-around for §6513 of the Organic Plan: *"An organic plan shall contain provisions designed to foster soil fertility, primarily through the management of the organic content of the soil through proper tillage, crop rotation, and manuring."*¹

Organic agriculture is rooted in the management of soils, not the simple presence, or absence, of bioactivity. Therefore, hydroponic and aquaponic growers are mistaken when they argue that hydroponics are “organic,” even with the presence of microbes.

The fact is that these hydroponic/container systems would fail without the routine (several-times-a-day) use of highly soluble, highly processed fertilizers like micronized fish and hydrolyzed soy protein. Whether or not compost tea is added to the system is irrelevant to the production of a container crop with minimal, or no, soil in the system.

The Hydroponic and Aquaponic Subcommittee Report describes an organically certified hydroponic blueberry and raspberry “container” operation owned by Driscoll’s. Once these systems are examined, they are nowhere near sustainable, despite their claims.

¹ <https://www.gpo.gov/fdsys/granule/USCODE-2011-title7/USCODE-2011-title7-chap94-sec6513/content-detail.html>

Claims of less water use are questionable in these container systems, especially considering production for the entire country need not come from desert regions. And the focus on comparable water use is an intentional distraction from the question of whether hydroponic growing is legal under the organic law.

Containers dry out much faster than mulched soil with high organic matter. The process of mining peat to fill these containers involves draining increasingly rare wetland bogs, removing surface vegetation, and driving over these ecosystems with heavy vacuum harvesters. Scientists have described wetland peat bogs as important and fragile as rainforests, harboring many highly specialized, rare native plants. Much like fossil fuels, they are the result of thousands of years of captured atmospheric carbon. Driscoll's, Wholesome Harvest, and industries that grow in peat moss, in fact, do not represent a "Coalition for Sustainable Organics," despite the self-serving title given to the Astroturf group they founded and fund.

In addition, many of these container systems depend on conventionally grown, hydrolyzed soybeans to achieve the fertility needed to produce a crop, because peat moss and coco coir are devoid of nutrients. This, too, is not sustainable and, in fact, illegal, since the soybeans used to produce the liquid fertilizer are conventionally produced and, therefore, most likely to be Roundup®-ready/GMO, also prohibited in organics. **Any claims that hydrolyzed soybeans are non-GMO cannot be tested, because DNA is denatured under the high temperatures and strong acid incurred during soybean hydrolysis.** Some manufacturers of these products know this and tout "non-GMO," (although not labeled Non-GMO Project Verified or Organic) knowing it is difficult to prove otherwise from the final product.

From the 2010 NOSB Recommendation Subcommittee Task Force Report: *"There has been a frustrating shortage of specific information on the fertility programs being used in the currently certified hydroponic operations.... We have been unable to find organic producers who would allow us to use photos of their production.... As with all of the certified hydroponic production systems we have approached, getting clear information about current fertilization practices has been difficult, as the growers we have asked, including those on the task force, are unwilling to publically share these details. However, this has really not affected our ability to assess alignment with OFPA because **these systems derive their fertility primarily from soluble fertilizers delivered through water and not primarily from organic content of soil as required by OFPA.**"*² [Emphasis added]

Soil fertility and soil management are prerequisites for organic certification of crop production. Hydroponic systems do not meet this mandate. Also from the 2010 NOSB Recommendation Subcommittee Task Force Report: *"When management of*

²<https://www.ams.usda.gov/sites/default/files/media/2016%20Hydroponic%20Task%20Force%20Report.PDF>

the soil is not the primary source of fertility, then that operation is violating a mandatory part of OFPA.”³

Both OFPA and the NOP Final Rule describe organic agricultural production as much more than substituting approved inputs for those not approved. The task force report also states: ***“It would be difficult to say that growing in a container is maintaining or improving the soil. It is our concern that if NOSB accepts growing a crop to maturity in containers, an amendment to the USDA organic regulation may be required.”*** [Emphasis added]

The 2010 NOSB Recommendation strongly reinforces foundational principles, and descriptions of “organic,” practiced on U.S. organic farms. The 1980 USDA Report and Recommendation on Organic Farming clearly states: ***“Soil is the Source of Life”***—Soil quality and balance (that is, soil with proper levels of organic matter, bacterial and biological activity, trace elements, and other nutrients) are essential to the long-term future of agriculture. Human and animal health are directly related to the health of the soil. From the Task Force Report: ***“It is our opinion that this [soil] web cannot be replicated by simply ‘adding biology,’ because we are not smart enough to know which biology to add, nor how much... We can participate in and influence this system but we cannot control it.”***⁴ [Emphasis added]

The key to nutritious produce is healthy soil. A mantra for the organic community is: “Feed the soil, not the plant.” Organic farming methods return organic matter into the soil, feeding billions of species in the soil, which then provide plants with nutrients from the mineral fractions of the soil. OFPA also makes clear that managing soil health is central to organic agricultural systems, as evidenced by the inclusion of details about what is expected by organic farmers as they design their annual crop and animal production system plans.

The rule also outlines a practice standard for soil fertility and crop management that is impossible to meet in a hydroponic system. In the Soil fertility and Crop Nutrient Management Practice Standard (§ 205.203): US Department of Agriculture Study Team on Organic Farming. (1980) USDA Report and Recommendation on Organic Farming, section 2.4, “Organic Agriculture, Some Basic Tenets”:

- *“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.”*
- *“The producer **must** manage crop nutrients and soil fertility through rotations, cover crops, and the application of plant and animal materials.”*
- *“The producer **must** manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to*

³<https://www.ams.usda.gov/sites/default/files/media/2016%20Hydroponic%20Task%20Force%20Report.PDF>

⁴ <https://pubs.nal.usda.gov/report-and-recommendations-organic-farming-usda-1980>

contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.” [Emphasis added]

No language exists in OFPA outlining requirements for soilless hydroponic systems. In contrast, clear language exists to justify the prohibition of hydroponics in organics, given the fact that they cannot meet the minimum standards described above. This conflict with OFPA makes it impossible to allow the organic certification of hydroponic production.

The NOSB/NOP does not have the legal authority to create regulations that conflict with the enabling legislation (OFPA).

In addition, U.S. organic rules must be consistent with international standards. The 2010 NOSB Recommendation is consistent with the vast majority of world organic standards, including those in twenty-four countries in the European Union (EU), Mexico, Japan, and Canada. This situation has forced the U.S to create a specific hydroponics exception in its trade agreement with Canada.

The 2013 position papers of both the International Federation of Organic Agriculture Movements European Union (IFOAM EU) and the Expert Group for Technical Advice on Organic Production (EGTOP) offer well-researched recommendations on organic hydroponics that concur with the organic standards of EU countries. **IFOAM EU has produced a position paper calling for the USDA to regulate organic hydroponics based on the NOSB’s 2010 recommendations.**

NOP’s rationale for allowing hydroponic certification is based on a single sentence taken from the 1995 NOSB Recommendation for Specialized Standards for Hydroponic Production in Soilless Media. It states: *“Hydroponic production in soilless media to be labeled organically produced shall be allowed if all provisions of the OFPA have been met.”* This recommendation was not included in the final rule and, therefore, has no legal basis in current organic certification.

No provision in OFPA or the NOP regulations justifies the certification of hydroponics. In fact, in its written response to the NOSB recommendation in 2005, the NOP implies that standards need to be developed before hydroponic operations can be certified. The NOP states: ***“NOP concurs with the NOSB and agrees to proceed with additional rulemaking for mushrooms, apiculture and honey, and greenhouse operations and their products, and not to propose hydroponic standards until the NOSB has submitted a final recommendation.”***⁵ [Emphasis added]

⁵<https://www.ams.usda.gov/sites/default/files/media/Final%20Scope%20Guidance.pdf>

The currently applicable regulatory and statutory language clearly indicates that the USDA has erroneously allowed the certification of hydroponic operations currently operating.

BY QUIETLY ALLOWING THE CERTIFICATION OF HYDROPONIC OPERATIONS, THE USDA IS IN VIOLATION OF THEIR OWN GUIDANCE TO THE INDUSTRY.

The USDA's allowance of hydroponic certification, in the absence of clear and consistent regulations, has created discontent with the NOP by the wider organic community. A demonstration of the strength of the opposition to organic hydroponics was the Moratorium Letter presented to Secretary Vilsack in April, 2016, formally requesting the USDA to institute an immediate moratorium on the organic certification of all new hydroponic and aquaponic operations. It was signed by 65 organic leaders, 15 former NOSB members, and 40 organizations, whose total membership exceeds 2.2 million people.

Consumers have a right to know how their organic food is grown. Currently, there is no way for customers to identify which food is grown hydroponically and which is not. Most consumers have no idea that soilless hydroponic growing is permitted under existing USDA organic standards. **With increasing publications on “nutrient-dense foods” and the release of the human microbiome project, consumers are more and more aware of the connections between production practices and nutritious, healthy food.**

From the Moratorium Letter: *“We must not take trust in organic for granted, either from the organic community as a whole, or from organic agriculture producers. It took decades to build trust in the organic label, and we must not squander it by ignoring due process. Yet, disturbing signs of eroding public trust in organic are evident.”*⁶

Soil farmer David Miskell summarized it well, *“My work on many of the most successful organic farms in the U.S. and Europe leads me to the conclusion that soil based organics blends soil life, non-synthetic minerals, organic residues and physical care of the soil and surrounding lands to create an innovative balanced environment. Do we know all the mysteries of this process? NO, but we are learning.”*

To allow the entire organic industry to suffer public mistrust, due to unnecessary confusion regarding basic greenhouse standards, is short-sighted public policy.

We must not compromise the organic standards in an effort to increase sales and open new markets at the expense of the public confidence and organic integrity.

⁶ <http://www.keepthesoilinorganic.org/>