2525 SE 3rd Street | Corvallis, OR 97333 | www.tilth.org | PH 503.378.0690 | FX 541.753.4924 | organic@tilth.org

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Ms. Michelle Arsenault, Advisory Committee Specialist
National Organic Standards Board
USDA-AMS-NOP
1400 Independence Ave. SW.
Room 2642-S, Mail Stop 0268
Washington, DC 20250-0268

RE: Docket: AMS-NOP-17-0024
Crops Subcommittee – Hydroponic and Container-Growing Proposal; Field and Greenhouse Container Production Discussion Document

Dear Ms. Arsenault:

Oregon Tilth Certified Organic (OTCO) appreciates the Crops Subcommittee's work to develop the Proposal and Discussion documents. The future of these systems is a pressing and fractious issue; greater clarity is sorely needed for the organic community, and in particular, for certifiers, to ensure a transparent and consistent approach in determining what types of systems can be certified.

We agree with the Subcommittee's findings that hydroponic and aeroponic systems, as defined in this proposal, do not comply with the National Organic Standards (NOS). These systems are input-dependent, relying on large volumes of soluble fertilizers with little nutrient cycling. Prohibition of hydroponic and aeroponic production methods clarifies how and why certain systems are consistent with NOS. In addition, it ends inconsistency between certifiers, while increasing consumer confidence in products adhering to organic production standards.

However, we urge the Subcommittee to reconsider their proposed prohibition of aquaponic plant production. Aquaponics offers environmental and socio-economic benefits, and Oregon Tilth believes that these systems can be managed in compliance with the organic standard and should be eligible for certification.

Socio-Economic Impact
Oregon Tilth's mission is to promote biologically sound and socially equitable agriculture. Aquaponic production is a valuable tool for organic operations. We certify producers that supplement in-soil vegetable production with aquaponic lettuce and leafy greens during the off-season to increase economic resilience of their farms.

From rising concerns about increased reliance on international imports of organic produce to food miles to barriers for access, aquaponics offers opportunities to grow domestic organic production that can provide agricultural services for communities. Additionally, in arid, highly erodible, and urban environments, aquaponic production offers an entry point for interested participants in organic agriculture. It provides communities with access to locally produced organic food, while creating jobs and business ownership opportunities associated with a thriving foodshed. Fresh organic produce is consistently portrayed as a privileged expenditure, economically inaccessible to many; we have an imperative to support NOS-compliant innovative practices that can deliver food and economic sustainability to communities across the United

States without access to fertile soil or farmable rural environments, all the while significantly reducing the environmental resource footprint of food production.

Ability to Comply with NOS

Oregon Tilth currently certifies about 25 aquaponic operations, all of which comply with the organic regulations[1]. Aquaponics utilizes recirculating closed-loop systems, with fish waste and microbial activity creating available nutrients for the plants, and plants in turn preventing toxic nutrient accumulation for the fish[2]. The majority of our aquaponic producers do not use inputs in their production systems, with the exception of fish feed. Fish feed is consumed and broken down by fish and aqueous microbial activity in a cycle that is analogous to an integrated farm using livestock waste to provide crop fertility.

Oregon Tilth evaluates the biological activity of a system in several ways. One approach is to analyze the solubility of any inputs into the system. Another is to assess the fertility of the growing media. The NOS are very restrictive towards soluble fertilizers, instead encouraging the use of plant- and animal-based materials for fertility.

Both fertilizer solubility and fertility of growth media can be envisioned on a spectrum:

Graphic I: Solubility of Applied Fertility Inputs and Fertilizer Decomposition

Very soluble *Stable/insoluble*

Graphic II: Fertility and Stability of Root Media

Inert *Highly Decomposable*

A hydroponic operation would fall on the far left of this spectrum, commonly utilizing inert media and highly soluble fertilizers with minimal biological activity. As systems move to the right on the spectrum, they require more biological activity to provide fertility and function, as required by the NOS. For instance, an aquaponic operation that uses a relatively inert media, like coco coir, depends entirely on a biologically active system to transform a singular input of fish feed into biologically available forms of plant fertility. Alternatively, a container operation using a media of compost and perlite, and applying blood meal and fish emulsion as fertilizers, is also reliant on biological activity to provide plant available nutrients. It is OTCO's position that operations using active biological-based systems meet the organic standards and should be allowed to be certified.

The proposal for prohibiting aquaponic systems cites the need for additional research on the safety of plants produced with fish waste, and implies that a pre-harvest interval—as is required for field applications of livestock manure—may be necessary. However, NOS definitions specifically exclude fish from the definition of "livestock" that can produce "manure." Currently, NOS do not require any pre-harvest interval for plants produced in an aquaponic system. Sanitation, harvest practices, and water sourcing undoubtedly play a critical role in food safety practices for aquaponic production systems as fish can be passive carriers of microorganisms in their environment[3]. Yet, as fish are cold-blooded, their waste products do not pose the same equivalent risks to human health as waste from warm-blooded mammals[4].

Additionally, the proposal references the lack of published standards on aquaculture as a barrier to allowing aquaponics. OTCO disagrees that this is an issue. Aquaponic operations are certified for crop production only. The fish, while part of the system, are not certified organic and cannot be sold as organic; this is analogous to

an in-ground crop operation using non-organic livestock as part of their fertility cycle. The issues are separate and there is no need for the fish to be organic in order for the rest of the system to be compliant.

Finally, in response to the Field and Greenhouse Container Production document, we do not see the need for further rulemaking with regard to lighting and synthetic mulches. The current Rules are sufficient for proper evaluation of synthetic mulch. As a certifier, OTCO ensures all our certified operations remove these mulches prior to any degradation that might contaminate soil. However, we do agree that additional Guidance would be useful on the requirements for the re-use of organic media, as well as the recycling of plastic materials.

Oregon Tilth thanks the National Organic Standards Board for the opportunity to comment, and for your commitment to furthering the growth and integrity of organic food and agriculture.

Respectfully submitted,
Oregon Tilth

Oregon Tilth is a leading certifier, educator and advocate for organic agriculture and products since 1974. Our mission to make our food system and agriculture biologically sound and socially equitable requires us to find practical ways to tackle big challenges. We advance this mission to balance the needs of people and planet through focus on core areas of certification, conservation, public health, policy and the marketplace.

References

1. Costello, Ryan. "Organic Policy: Aquaponic Certification." *In Good Tilth*. Summer 2015, volume 26. Pgs 32-37; 48.

2. Tyson, Richard V., Danielle D. Treadwell, and Eric H. Simonne. "Opportunities and challenges to sustainability in aquaponic systems." *HortTechnology* 21.1 (2011): 6-13.

3. Hansen, Dennis L., et al. "Sources and sinks of Escherichia coli in benthic and pelagic fish." *Journal of Great Lakes Research* 34.2 (2008): 228-234.

4. Denev, Stefan, et al. "Microbial ecology of the gastrointestinal tract of fish and the potential application of probiotics and prebiotics in finfish aquaculture." *International aquatic research* 1.1 (2009): 1-29.