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Submitted via www.regulations.gov

RE: Document # AMS-NOP-17-0024

NOSB Crops Subcommittee Proposal: Hydroponics and Container-Growing Recommendations

Dear NOSB members:

Thank you for the opportunity to provide comments on the Hydroponics and Container-Growing Recommendations. MOSA certifies approximately 2000 organic operations throughout the United States including 349 clients certified for greenhouse production, three clients certified for aquaponic production, and three clients certified for hydroponic production.

MOSA appreciates the work of the Crops Subcommittee, however, MOSA does not support the proposal that hydroponic and aquaponic systems be added to 7 CFR 205.105 as prohibited practices.

The motion has been made *"that any container production system that does not meet the standard of a limit of 20% of the plants' nitrogen requirement being supplied by liquid feeding, and a limit of 50% of the plants' nitrogen requirements being added to the container after the crop has been planted is defined as hydroponic, and should not [be] allowed to be certified organic."* This requirement places additional record keeping requirements on container growers who would need to show whether or not the nutrients are delivered primarily through water or through soil. We have a few questions about required records as well. Will certifiers need to verify all stages of growth utilizing different containers, or just growth in the final container? Additionally, who determines the nitrogen requirements for each plant grown? On soil-based operations we do not currently verify that a limit of 20% of nitrogen come from liquid feeding, or that only half of the fertility is supplied after planting on soil-based operations and, while chilean nitrate was calculated at a rate of 20% of the total nitrogen needs for the crop in the past, since the listing and restriction are no longer applicable, we no longer do any specific calculations for fertility application. Additional guidance for certifiers would be necessary.

We note there is an important inconsistency between this recommendation and the discussion on greenhouse production. The Field and Greenhouse Container Production discussion document states, *"For container production to be certified organic, a limit of 20% of the plants' nitrogen requirement can be supplied by liquid feeding, a limit of 50% of the plants' nitrogen requirement can be added to the container after the crop has been planted,* ***and the container substrate must be at least 50% soil and/or compost by volume.*** *For perennials, the nitrogen feeding limit is calculated on an annual basis. Transplants, ornamentals, herbs, and aquatic plants are exempted from these requirements" [emphasis added].* The NOSB should discuss and resolve the inconsistency between documents and clarify whether or not the language applies to the prohibition on hydroponic production.

The proposal discussion for the prohibition on aquaponic production seems to rest prohibition on food safety concerns and the lack of an aquaculture standard. At MOSA, we're eagerly awaiting an aquaculture standard, but we do not feel it is necessary to ensure food safety concerns are resolved for aquaponic production. A requirement for pathogen testing could easily be put in place to verify that any pathogens of concern are not present and we'd support such a requirement as a means to resolving any concerns present, however we also do not feel it's necessary, given aquatic plants, cultivated or wild-crafted, are exempted from this discussion.

The minority view is based upon the belief that organic production should enforce responsible stewardship practices, address sustainability, conservation of resources, preserve native eco-systems while allowing for novel developments in organic food production systems that assist in providing greater access to organic food for consumers. We agree. We support the development of standards that are inclusive of hydroponic and aquaponic production systems and do not unfairly tax container growers.

According to former Secretary of Agriculture Tom Vilsack, *"Urban agriculture helps strengthen the health and social fabric of communities while creating economic opportunities for farmers and neighborhoods."*[1] In northern latitude climates, in desert climates, and in urban settings, hydroponic and aquaponic production provides off-season, local, organic food options produced by methods that respond to site-specific conditions, and that foster cycling of resources, promote ecological balance, and conserve biodiversity.

In 2006, an e coli outbreak in field-grown spinach caused at least 200 consumer illnesses and three deaths in 26 states. The outbreak was traced to organic bagged fresh spinach - sold as conventional produce - grown on a 50-acre farm. We have come along way in food safety since 2006 but the point remains - spinach from one field should never travel across 26 states. Statistics suggest that the average American meal travels roughly 1,500 miles before final consumption. A 2001 study looked at an Iowa local food project of three farmers, marketing directly to consumers through community supported agriculture (CSA) enterprises and farmers markets, or through institutional markets such as restaurants, hospitals, and conference centers, distributing local produce using small light trucks. The study concludes that the Weighted Average Source Distance (WASD) from this local food system was 44.6 miles and further states, *"growing 10% more of Iowa's produce from local food systems would result in an annual*

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[1] U.S. Department of Agriculture Press Release #0099.16, April 29, 2016 - USDA Unveils New 'Urban Agriculture Toolkit for Urban Farmers and Agri-business Entrepreneurs

savings ranging from 280 to 346 thousand gallons of fuel and an annual reduction in CO emissions ranging from 6.7 to 7.9 million pounds, depending on the system and truck type."[2] Food distribution solutions can be found not only by increasing the percent of produce grown during a typical growing season, but also through alternative growing systems. The urban farming trend and other socio-economic food movements may depend on food production outside of the summer growing season and by utilizing soilless systems.

The NOSB Crops Subcommittee Proposal mentions an aquaponic system that lost power due to a natural disaster, resulting in the fish and plants dying and states, *"In terms of systems resilience, this aquaponics system with its high dependence on electricity, predisposed the system to be very brittle. A system built on a high degree of external energy use is not in keeping with the spirit of the organic label."* MOSA does agree that as an industry we have not fully addressed our use of natural resources, energy use, and other sustainability issues. Many of us have heard of ventilation systems failing in chicken barns, causing the death of thousands of birds, or have heard stories of chemical drift or GMO contamination. We know that streams and groundwater in some areas are contaminated, and native ecosystems are destroyed as we search for new soil to grow in. Let's remember that all of our systems are fragile and agriculture is often destructive. Solutions may be found in the inclusion of innovative systems like hydroponics and aquaponics. Organic production should continue to provide healthy food for all, and be able to do so in our ever changing environment.

As the Crops Subcommittee proposal points out, hydroponic proponents argue that as many bacteria and fungi are found in hydroponic production as are found in soil-based systems, but they lacked the data to indicate the ecological complexity of these soil-less systems. Research by Sarah Taber, DPM (Doctor of Plant Medicine), shows that microbe populations in hydroponic systems can be just as diverse as in soil. She further points out that *"translating knowledge to tools and practices of hydroponic and aquaponic production does lag behind research conducted on soil-based production. The establishment of the USDA organic regulations created an important marketplace and set of incentives for research, development, and the implementation of sustainable technologies in soil. Hydroponic and aquaponics are ready for the same growth."*[3] With the support from and inclusion in the organic community, aquaponic and hydroponics can achieve their full potential as sustainable technologies.

In closing, MOSA supports the growth of the organic industry and the inclusion of food produced by hydroponic and aquaponic production systems in the organic market place. We encourage further discussion and support the development of standards for hydroponic, aquaponic and other soilless production systems. We also support the development of additional mandatory labeling with the organic label for soil-less growing systems. We agree that soil is historically linked with organic production and should be as well in its future. Like the minority opinion, we are pro soil and we also do not view this as a mutually exclusive decision. Being pro-soil does not mean there isn't a home for other production methods that *"respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity."*

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[2] Leopold Center for Sustainable Agriculture, Food, Fuel and Freeways, June 2001

[3] 7 Facts That WIll Make You Rethink the "Sterility" of Hydroponics, Sarah Taber, DPM, May 13, 2016

Thank you for your work on this challenging and precedent-setting issue.

Respectfully submitted,

The MOSA Certification Team