260 SW Madison Ave. Ste 106 | Corvallis, OR 97333 | www.tilth.org | PH 503.378.0690 | FX 541.753.4924 | organic@tilth.org

April 8, 2014

Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independence Avenue, SW
Room 2648-So, Ag Stop 0268
Washington, DC 20250-0268

RE: Docket: AMS-NOP-14-0006
NOSB Livestock Sub-Committee
Micronutrients for use in aquatic plant production

Dear Ms. Michelle Arsenault,

Introduction:

Oregon Tilth supports the recommendation for the allowance of micronutrients in aquatic plant production, but do not support the annotation as proposed. The annotation, *"to allow synthetic micronutrients for non-vascular plants only,"* is both excessively broad, allowing unrestricted application of synthetic micronutrients for algae production, and narrowly restrictive, effectively prohibiting micronutrient applications for water-based vascular plant production. Oregon Tilth certifies aquaponic and hydroponic operations that will be adversely affected by this proposal.

Routine Synthetic Fertilization is Inconsistent with the Organic Standards:

The petition begins with the assumption that nutrients for aquatic plant production must be supplied synthetically (pg. 2). At the foundation of the organic standards is that nutrients and fertility must be supplied through organic management methods, including applications of plant and animal materials [§205.203(b-c)]. This principle underlies the allowance in NOP §205.601(j)(6) for the application of a particular micronutrient if it is found to be deficient after use of these organic management techniques. Organic producers are not permitted to apply "micronutrients," only a particular micronutrient. For example, if iron is found to be deficient after management of fertility through organic methods, then only iron can be applied synthetically.

The petition states that conventional algae producers currently use a synthetic nutrient mix, such as the "Guillard f/2" media (pg. 2), and recommends allowance for these types of mixes. However, in a natural aquatic ecosystem, algae are supplied macro and micronutrients through natural nutrient cycling and organic matter decomposition (Addy and Green, 1996). For algae to be certified organic, producers must also devise a system that supplies nutrients to algae through organic management methods and without synthetic means. This is essential both to maintain consistency with organic crop production and to maintain confidence in organic products in the consumer marketplace. Oregon Tilth certifies aquaponic producers who are able to supply all needed aquatic plant nutrients through management of fish excrement, with the occasional addition of synthetic iron or boron when testing verifies deficiency. While we agree that a

particular micronutrient may need to be occasionally supplemented by synthetic means in aquatic organic plant production, this must be an exception, not the rule.

Allowance for Micronutrient Forms:

The proposed annotation contains allowance for any micronutrient form, including nitrate and chloride forms, in opposition to the current terrestrial crop standards. Nitrates in particular are of great concern, both for the environment and for human health (Addiscott et al., 1991). Aquatic plants will take up and utilize these nitrates, effectually supplying them with synthetic nitrogen, which is prohibited by the organic standards. Due to the restriction on micronutrient forms [205.601(j)(6)(ii)], OTCO and OMRI do not allow synthetic chelates such as EDTA and DPTA. If all micronutrient forms, including synthetically chelated ones, are allowed then the petitioned allowance for lignon sulfonate as a synthetic chelate becomes irrelevant.

Environmental Effects of Unrestricted Application:

The petition states that micronutrient concentrations are too low to have any environmental risk (pg. 9). However, the low concentration of micronutrients needed by algae to thrive and bloom is evidence of the risk these synthetic chemicals pose to the environment. In the soil, micronutrients can be "fixed", or tied up by clay and organic matter, preventing leaching into waterways (Swift and Mclaren, 1991). However in water applications, chelated micronutrients will not be fixed, increasing the mobility and thus the risk. All micronutrients besides boron are heavy metals (copper, zinc, manganese, etc.), which recent studies have shown can accumulate throughout the aquatic food chain and end up in toxic levels at the top of the food chain in wild fish (Vinodhini and Narayaman, 2008).

Effect on Hydroponic and Aquaponic Producers:

The proposed annotation restricts all applications of micronutrients in aquatic systems to non-vascular plants (algae). This specificity to non-vascular plants will result in the prohibition of the use of micronutrients for organic hydroponic and aquaponic producers. Currently, Oregon Tilth allows certified hydroponic producers to apply a particular micronutrient if a deficiency can be documented by testing, as allowed under NOP §205.601(j)(6) (OTCO, 2013). To restrict micronutrients to non-vascular aquatic plants only arbitrarily dismisses the needs of hydroponic and aquaponic producers.

Summary:

In summary, Oregon Tilth asks that the subcommittee reconsider this annotation. Micronutrients are synthetic fertilizers. The National Organic Standards recognizes this fact and restricts their use by only allowing them as a last resort, in limited amounts, and in restricted forms. In addition, limiting micronutrient use in aquatic plant production to non-vascular plants will severely impact aquaponic and hydroponic organic producers.

Respectfully Submitted,

Oregon Tilth

Oregon Tilth is a nonprofit organization supporting and promoting biologically sound and socially equitable agriculture through education, research, advocacy, and certification. Oregon Tilth advocates sustainable approaches to agricultural production systems and processing, handling, and marketing.

References:

Addiscott, T. M., Whitmore, A. P., & Powlson, D. S. (1991). Farming, fertilizers and the nitrate problem. CAB International (CABI).

Addy, K. and Green, L. (1996). Algae in Aquatic Ecosystems. University of Rhode Island Cooperative Extension. http://www.uri.edu/ce/wq/ww/Publications/Algae.pdf

OTCO, 2013. OTCO Hydroponic FAQs. Oregon Tilth Certified Organic. http://tilth.org/farmers/otco-hydroponic-faqs

Swift, R. S., & McLaren, R. G. (1991). Micronutrient adsorption by soils and soil colloids. In: Interactions at the Soil Colloid—Soil Solution Interface (pp. 257-292). Springer Netherlands.

Vinodhini, R., & Narayanan, M. (2008). Bioaccumulation of heavy metals in organs of fresh water fish Cyprinus carpio (Common carp). International Journal of Environmental Science & Technology, 5(2).