

**National Organic Standards Board
Livestock Subcommittee
Aquaculture Materials Review Update Report
February 2015**

Overview

This document is being prepared in order to provide some institutional memory and a frame of reference for future National Organic Standards Board (NOSB) members as it relates to Aquaculture materials review.

Background on Regulation Development

The Organic Foods Production Act of 1990 (OFPA), also known as Title XXI of the Food, Agriculture, Conservation, and Trade Act of 1990, provided references that support the development of standards for aquatic animals and their products. OFPA includes “fish used for food” in its definition of livestock. OFPA has been amended twice; first to add general provisions to allow certification of wild caught seafood as organic; and second, to address a ruling in a lawsuit filed by Arthur Harvey. One aspect of the Harvey lawsuit pertaining to the rearing of aquatic animals is that it clarified, among other things, that the agricultural products fed to organic animals must be organic.

On March 13, 2000 the Agricultural Marketing Service (AMS) issued a Federal Register notice announcing plans to hold three public meeting to consider the certification of aquatic animal production. AMS convened public meetings on April 10, 2000 in Mobile, Alabama, April 12, 2000 in Anchorage, Alaska, and May 3, 2000 in Providence, Rhode Island and received a total of 71 written and oral comments.

AMS also participated in an organic certification workshop for wild capture operations in Seattle, WA on April 9, 2000 and the National Organic Aquaculture Workshop held at the University of Minnesota on June 23 and 24, 2000.

In September 2000, the NOSB named 6 of its members to an aquatic animals task force to evaluate aquaculture and wild capture aquatic animal operations and to assess the feasibility of developing organic production and handling standards for their certification. The task force assembled two working groups; one on aquaculture and the other on wild capture operations.

Beginning their deliberations in November 2000, the Working Groups engaged in an expansive dialogue over four months and presented their final reports to the Task Force at the NOSB meeting in Buena Park, CA in March 2001.

The Task Force reviewed the working groups findings and, on May 30, 2001, NOSB Aquatic Animal Task Force issued its report on development of organic standards for aquatic animals. The report provided recommended standards for the production of seafood to be sold as organic. On the subject of wild caught seafood, the report concluded that OFPA requires the management of organic animals and that wild caught fish do not meet that level of management. They also concluded that mollusk production was incompatible with OFPA and that mollusk producers were not called upon to make a sufficient number of management decisions to differentiate between organic and nonorganic operations.

At its October 2001 NOSB meeting, the Board made its recommendations for aquatic animals. The Board recommended the development of standards for aquatic animals, no standards for

wild caught, and to use the Aquatic Animals Task Force report as the basis for developing standards for organic aquatic animals.

On April 16, 2003, Congress amended section 6506 of OFPA to provide for the certification of wild caught fish as organic. The legislation was sponsored by Senators Stevens and Murkowski of Alaska. The amendment drew sharp criticism from some in the organic industry, including the Organic Trade Association.

At its October 2004 meeting, the NOSB recommended the formation of an aquatic animal task force to develop proposed production, handling and labeling standards for aquaculture. This task force was to be comprised of two working groups— aquaculture (Aquaculture Working Group) and wild fisheries (Wild Caught Working Group).

On January 24, 2005, Federal Register notice (FR 70 3356) announced the intention to develop draft organic production and handling standards for aquatic animals produced in aquaculture and called for volunteers.

In May 2005, the NOP named 12 individuals to the Aquaculture Working Group (AWG). A Wild Caught Working Group was never appointed due to a lack of nominees interested in participating.

The AWG's discussions were informed by the May 24, 2005 National Organic Aquaculture Working Group (NOAWG) white paper¹. The NOAWG was a private sector ad hoc group of approximately 85 individuals interested in advancing organic aquaculture in the United States.

On January 13, 2006, the AWG issued an Interim Final Report of the Aquaculture Working Group for the USDA National Organic Program, with recommendations for Aquaculture standards.²

Public comments on the Interim Report were received until April 10, 2006.

In March 2007, the NOSB issued a formal recommendation to the NOP on Aquaculture standards, which identified some issues of concern and indicated where additional public comment was requested. Specifically, the issues of feeding wild caught fish to fish being raised in aquaculture facilities and open net pens were of concern. The sections of the AWG's recommendations addressing these issues were removed from the formal recommendation to the NOP pending public comment.³

In July 2007, the AWG issued a Supplement to the Interim Report (Bivalve Molluscs) of the Aquaculture Working Group.⁴ This supplement included recommendations for standards for production, handling and transportation of bi-valves, including oysters, clams, mussels, and

¹ [National Organic Aquaculture Working Group \(NOAWG\) white paper. May 2005](#)

² [Aquaculture Working Group; "Interim Final Report of the Aquaculture Working Group, for the USDA National Organic Program", Winter 2006](#)

³ [National Organic Standards Board; "Formal Recommendation By the National Organic Standards Board to the National Organic Program, Aquaculture Standards Recommendation", March 2007](#)

⁴ Aquaculture Working Group; "Supplement to the Interim Final Report (Bivalve Molluscs) of the Aquaculture Working Group for the USDA National Organic Program"; <http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5062437&acct=nopgeninfo>, July 2007

scallops. Gastropod molluscs, such as abalone and conch, and cephalopods, such as octopus and squid, were not included. Public comments were received through November 9, 2007.

At the November 2007 NOSB meeting in Washington DC, the NOSB hosted the Organic Aquaculture Symposium on fish feed and net pens to explore the range and depth of scientific and environmental challenges facing global aquaculture. Of particular focus of the symposium was the challenge around providing adequate supplies of essential nutrients to a new industry with non-existing sources of organic fish meal and fish oil. The meeting was marked with the NOP's first activist demonstration where protesters opposing net pens and feeding forage fish to salmon paraded through the meeting wearing fish hats.

On May 22, 2008, the NOSB submitted to the NOP Recommendations on Farmed Aquatic Plants in Organic Agriculture.⁵ These recommendations were based upon a joint document from the Livestock and Crops committees, and were intended to provide clarification around recommendations for farmed aquatic plants.

On September 8, 2008, the AWG issued a revision to the Supplement to the Interim Report (Bivalve Molluscs), in response to public comments.⁶

In November of 2008, the NOSB submitted to the NOP final recommendations on fish feed and related issues, and net pens and related issues.^{7,8}

These two recommendations addressed the issues of concern raised by the NOSB in March 2007 in response to the AWG's Interim Final Report for aquaculture standards, and sought to modify sections of the rule language originally proposed by the AWG. Specifically, the use of wild caught fish for feed sources had proposed step-downs to allow for the development of certified organic sources for fishmeal and fish oil. Further, the allowance for net pens included stringent environmental considerations including non-point source and point source pollution documentation, living conditions and aquaculture facilities.

In November 2009, the NOSB submitted final recommendations to the NOP on Bivalves and Molluscan Shellfish. The recommendation placed emphasis on strict environmental monitoring of living areas and careful harvesting techniques, and included an appendix, which outlined the differences between conventional and proposed organic standards for bivalve production.⁹ This document rounded out the recommendations by the NOSB on aquaculture. The Livestock Committee had already presented three other parts of aquaculture to the entire Board for vote (fin fish in March 2007; fish feed and net pens in November 2008). All recommendations had

⁵ [National Organic Standards Board; "Recommendation to the National Organic Program on Farmed Aquatic Plants in Organic Agriculture"](#), May 22, 2008

⁶ [Aquaculture Working Group; "Revised Supplement to the Interim Final Report \(Bivalve Molluscs\) of the Aquaculture Working Group for the USDA National Organic Program"](#), September 8, 2008

⁷ [National Organic Standards Board; "Formal Recommendation by the National Organic Standards Board to the National Organic Program, Aquaculture: Fish Feed – Fish Oil and Fish Meal and Related Issues"](#), November 19, 2008

⁸ [National Organic Standards Board; "Formal Recommendation by the National Organic Standards Board to the National Organic Program, Aquaculture: Net Pens and Related Issues"](#), November 19, 2008

⁹ [National Organic Standards Board; "Formal Recommendation by the National Organic Standards Board to the National Organic Program, Molluscan Shellfish \(Bivalves\)"](#), November 5, 2009

passed and were recommended to the Program for inclusion in the regulation. At the Spring 2010 NOSB meeting, the board adopted recommendations for Bivalves. With this action, the board had provided a complete set of recommendations for NOP rulemaking for organic aquaculture.

In October 2010, the AWG submitted to the NOSB, Comments and Proposed Revisions by the Aquaculture Working Group Pertaining to the Recommendations of the USDA National Organic Standards Board for Organic Aquaculture Standards. (Footnote for hyperlink).

Written and Oral Public Testimony

A thorough analysis of available written and oral testimony presented to the NOSB on aquaculture demonstrates a number of repetitive areas of concern. Prior to 2006, public comments primarily focused on if an organic aquaculture standard should be developed in the first place, and whether wild aquatic species should be certified organic. More specific areas of concern emerged in public comments beginning in 2006 and coincided with the Aquaculture Working Group's Final Report

The greatest number of public comments span from Fall 2006 through Fall 2008. In some cases, testimony was submitted on behalf of multiple organizations and/or signed by multiple members of the public.

There has been overwhelming agreement within the public record of written and oral public comments about two important issues:¹⁰

- 99.1 percent (54,994) of comments oppose open ocean pen facilities being certified organic.
- 99.1 percent (54,990) of comments oppose the use of wild-caught fishmeal and oils in organic aquaculture feed.

From 2006 to present, public comment on organic aquaculture largely focused on these two issues.

Materials Petition and Review

Beginning in June 2010 and at the request of the NOP, the AWG started submission of petitions for materials to be used in Organic Aquaculture. There was the thought among AWG members that it was important to start the petition process with those materials that were absolutely crucial to successful organic aquaculture operations, but by no means was the initial list considered to be comprehensive of all materials that might eventually be needed.

It should be noted that Aquaculture standards were still going through the clearance process within the NOP and had not yet been promulgated. However, subcommittee members were encouraged by the NOP to evaluate materials using the standards recommended by the NOSB to the NOP between 2007 and 2010.

Per NOP staff, most petitions are revised at least once to address incomplete information identified by NOP before they are submitted to the NOSB for review. It is fairly common to have a delay of a few months or more while the petitioner revises the information.

As an example, the first aquaculture petition, for carbon dioxide, was submitted to NOP as a draft on June 25, 2010, but was revised and later submitted to the NOSB for review in April 2012.

¹⁰ [Information compiled from public records](#)

The following table shows the ten (10) materials petitioned for use in organic aquaculture and their current status as of October 2014:

Table 1: Materials Petitioned for Organic Aquaculture as of October 2014				
Petition Submittal Date*	Substance	Type	Technical Report	Notes
1/6/12	Vitamins (PDF)	Aquaculture - Animals	Technical Report (2013) (PDF)	Initial petition insufficient; Petitioner notified 8/10/11; revised petition sent to MC on 1/9/2012; sent to LS on 5/30/2012; TR requested on 8/6/12; TR sent to LS on 4/29/2013; TR accepted as final 6/18/2013; Spring 2015 Agenda
3/27/12	Trace minerals (PDF)	Aquaculture - Animals	Technical Report (2013) (PDF)	Petition sent to LS on 6/8/2012; TR requested on 8/6/12; TR sent to LS on 6/25/2013; TR accepted on 7/16/2013; LS vote complete; Spring 2015 Agenda
4/19/12	Chlorine (PDF)	Aquaculture - Animals	Chlorine, Livestock (2006) (PDF)	Petition sent to Livestock on 5/30/2012; petition determined to be sufficient on 7/3/2012; no TR requested; LS vote complete; Spring 2015 Agenda
4/19/12	Chlorine (PDF)	Aquaculture - Plants	Chlorine, Crops (2011) (PDF)	Petition sent to Crops on 5/30/2012; Petitioner notified of more info needed on 11/20/12; chlorine TR determined sufficient on 11/20/12; Spring 2015 Agenda
4/27/12	Tocopherols (PDF)	Aquaculture - Animals	Technical Report (2013) (PDF)	Petition sent to LS on 5/30/12; TR requested on 8/6/12; TR sent to LS on 4/16/2013; TR determined complete 6/4/2013; Spring 2015 Agenda
6/7/12	Micronutrients (PDF)	Aquaculture - Plants	Micronutrients (2010) (PDF)	Petition sent to CS on 6/8/2012; additional Q for petitioner and TR request received 12/4/12; clarification requested from CS on 1/7/13; petition accepted as sufficient on 7/2/2013; Spring 2015 Agenda
6/12/12	Vaccines	Aquaculture - Animals	Technical Report (2014) (PDF)	Petition sent to LS on 6/14/2012; petition sufficient on 5/21/2013; TR request sent to contractor on 6/14/2013; TR accepted as sufficient on 2/12/2014; Spring 2015 Agenda

6/27/12	Lignin Sulfonate (PDF)	Aquaculture - Plants	Lignin Sulfonate (2011) (PDF)	Note: there are two petitions for lignin sulfonate for aquaculture (plants and animals). Petition sent to CS on 7/3/2012; additional Q for petitioner and TR request received 12/4/12; clarification requested from CS on 1/7/13; petition accepted as sufficient on 7/2/2013; Spring 2015 Agenda
8/3/12	Vitamins, B1, B12, H (PDF)	Aquaculture - Plants		Petition sent to CS on 8/10/2012; accepted as sufficient by CS on 6/18/13; Spring 2015 Agenda
4/3/12; updated 11/20/12	Carbon dioxide (PDF)	Aquaculture - Plants	Carbon Dioxide, Processing, 2006 (PDF)	Initial petition insufficient; Petitioner notified 8/10/11; revised petition sent to MC on 4/17/12; sent to CS on 5/30/2012; petition & TR determined sufficient on 11/20/12; Spring 2015 Agenda
* - <i>Petition Submittal Date reflects the date when a completed petition has been forwarded to the NOSB for review, not necessarily the first date of submission of a draft petition to the NOP.</i>				

Significant NOSB institutional memory had been lost due to the rotation of members off the board and due to the time lapse between the NOSB's adoption of recommendations for organic aquaculture standards and the petition for aquaculture materials. Both the Crops and Livestock committees (now designated as subcommittees going forward) sought additional education of subcommittee members on general principles of aquaculture. A series of guests joined the standing subcommittee calls for both Crops and Livestock in an effort to provide a context from which to begin materials review. The subcommittees made concerted effort to invite speakers such that a diverse and balanced view was presented.

In January 2012, the NOP provided an aquaculture briefing to a joint meeting of the Crops and Livestock subcommittees. The intent of the briefing was to provide some historical perspective on the work completed by previous NOSB on standards development, to provide an update regarding where recommended Organic Aquaculture Standards were in the clearance process, and to address concerns of NOSB members on the absence of standards while reviewing materials petitions for use in Organic Aquaculture.

Initially, five (5) materials for aquatic plants were assigned to the Crops subcommittee, and six (6) materials were assigned to the Livestock subcommittee for review. Subsequently one material, Lignin Sulfonate, for use with aquatic animals, was withdrawn by the petitioner.

On July 25, 2013, the NOP arranged for a few members of the Livestock and Crops subcommittees to tour and familiarize themselves with aquaculture facilities in Maine and to ask specific questions of the operators of the facilities. The tour included both land based and open net pen operations. Prior to the tour, the NOSB prepared questions for the facilities operators. Two attending members submitted to the NOSB reports of the facilities tour. While many questions were answered, one NOSB member continued to express concerns regarding the evolving nature of the technology around net pens and around the strength of regulations governing aquaculture facilities.

In preparation for the Fall 2013 NOSB meeting, the Crops and Livestock subcommittees began to develop proposals for their assigned Organic Aquaculture materials, to be brought before the entire NOSB. While the Livestock subcommittee completed proposals for all of its materials,

the Crops subcommittee was unable to complete proposals that met with the approval of all its subcommittee members. As a result, in August of 2013 the Crops subcommittee voted to table all proposals for materials to be used in aquatic plants.

Government shutdown in October 2013 necessitated the cancellation of the Fall 2013 NOSB meeting. However, prior to the shutdown, public comments were received regarding the proposals prepared by the Livestock subcommittee. Generally, the comments reflected concern that materials were being reviewed prior to promulgation of regulations governing Organic Aquaculture.

In January 2014, the NOSB chair re-assigned all Organic Aquaculture petitioned materials to the Livestock subcommittee citing the need to consider all materials as a group and the need for consistency in analysis and presentation of materials, while acknowledging the gridlock in the Crops subcommittee. All aquatic plant materials were assigned to Livestock subcommittee members and a review of the existing draft proposals from the Crops subcommittee was undertaken. In the end, each of the aquatic plant materials proposals was rewritten, with the additional step of a single member of the Livestock subcommittee providing a final consistency check across all materials – both for aquatic plants and aquatic animals. In order to address some committee members’ and public comment concerns, the following sentence was added to each proposal:

“It should be noted that at the time of drafting this proposal there are no federal standards promulgated for aquatic plant or animal production and this proposal is based on NOSB recommendations of standards voted in 2007, 2008, and 2009.”

Some members from the Crops and Livestock subcommittees felt that minority perspectives were lost with the re-writing of the proposals, and after significant debate, the Livestock subcommittee agreed that a Minority Opinion would be included as an attachment to each material proposal sent to the entire board.

Public comments for the Spring 2014 meeting again addressed concerns regarding the evaluation of materials in the absence of Organic Aquaculture regulations. The Livestock subcommittee recognized the public concern and made the decision to continue bring all material proposals forward so that the full NOSB could have the opportunity to discuss the materials and to allow for further public oral comments at the Spring 2014 meeting.

At the Spring 2014 meeting, each material proposal was brought for the full board to discuss. Out of those discussions, and based upon written and oral public testimony, the NOSB decided to send all ten (10) materials proposals back to the Livestock subcommittee for further evaluation. Specifically, the board and public comments indicated a preference for the materials to be reviewed within the framework of Organic Aquaculture regulations. It should be noted that there were no written comments submitted by individuals or companies who were seeking to use these materials in their organic fish farming business. No one from industry or the general public came to the meeting or provided oral testimony, which made it difficult for the NOSB to understand any market demand for any of the materials petitioned. Specific issues by material are as follows:

Table 2: Aquaculture Materials – Issues for Review**			
Substance	Type	Current Proposal	Notes

Vitamins (PDF)	Aquaculture - Animals	Vitamins Proposal	Are there different requirements for closed systems versus net pens? Need discussion on how the differences might affect usage.
Trace minerals (PDF)	Aquaculture - Animals	Trace minerals proposal	Characterization (or list) of the types of minerals to be used.
Chlorine (PDF)	Aquaculture - Animals	Chlorine proposal	Culture water issues not clear. Need to change annotation to include culture water. Specific questions for a limited scope TR or expert opinion to address the purposes and use of chlorine for culture water. Category 1, Question 6: need discussion of the impact of chlorine on culture water.
Chlorine (PDF)	Aquaculture - Plants	Chlorine proposal	Similar as for aquatic animals. Need more robust and detailed checklist. Need discussion of culture water.
Tocopherols (PDF)	Aquaculture - Animals	Tocopherols proposal	Question regarding feed manufacturing using tocopherols. Cold water vs. warm water vitamins. Is there a difference? What is the availability of tocopherols made without synthetic solvents (i.e., rosemary oil) for animal feeds?
Micronutrients (PDF)	Aquaculture - Plants	Micronutrients proposal	Need a discussion on multi-tropic systems and their impact on the need for routine application of micronutrients. Compare and contrast hydroponics vs. aquaculture plants – clarification needed.
Vaccines	Aquaculture - Animals	Biologics – Vaccines in Aquatic Animal Production	How does stocking density affect the need for vaccines? Is there a competitive advantage if vaccinated animals escape into the ocean? Need specificity on vaccination techniques. Need discussion on management techniques that would reduce the need for vaccinations.
Lignin Sulfonate (PDF)	Aquaculture - Plants	Lignin Sulfonate proposal	Essentiality as it relates to the need for Lignin Sulfonate to be used as synthetic micronutrient.
Vitamins, B1, B12, H (PDF)	Aquaculture - Plants	Vitamins, B1, B12 and H proposal	Discuss types of systems where these are now used.
Carbon dioxide (PDF)	Aquaculture - Plants	Carbon Dioxide proposal	Comment that CO2 might only be needed at the very early stages in aquaculture system set up. Clarify. Need more information on specific uses in AQ system. Suggestion that a stronger annotation is needed to address closed tanks and possible release of CO2 into the environment. Need update on the use of CO2 internationally. What are alternatives for pH adjustment?
** - All materials should be reviewed using the framework of Organic Aquaculture standards as promulgated by the NOP.			

As of October 2014, all materials are currently tabled within the Livestock subcommittee with the intention to re-evaluate all materials as soon as a proposed rule for Organic Aquaculture standards is available.

Respectfully Submitted,

Tracy Favre
Livestock Subcommittee Chair