

**Formal Recommendation by the
National Organic Standards Board (NOSB)
to the National Organic Program (NOP)**

Date: December 2, 2011

Subject: Sunset 2013 Copper Sulfate on §205.601

Chair: Tracy Miedema

The NOSB hereby recommends to the NOP the following:

Rulemaking Action.

Statement of the Recommendation (Including Recount of Vote):

Relist: §205.601 Synthetic substances allowed for use in organic crop production. (a) As algicide, disinfectants, and sanitizer, including irrigation system cleaning systems. (3) Copper sulfate—for use as an algicide in aquatic rice systems, is limited to one application per field during any 24-month period. Application rates are limited to those which do not increase baseline soil test values for copper over a timeframe agreed upon by the producer and accredited certifying agent.

Relist: §205.601 Synthetic substances allowed for use in organic crop production. (e) As insecticides (including acaricides or mite control). (4) Copper sulfate—for use as tadpole shrimp control in aquatic rice production, is limited to one application per field during any 24-month period. Application rates are limited to levels which do not increase baseline soil test values for copper over a timeframe agreed upon by the producer and accredited certifying agent.

The vote was 14 in favor, 0 against, 0 abstain and 0 recused.

Rationale Supporting Recommendation (including consistency with OFPA and NOP):

The Crops Committee recommendation is attached and includes details of the committee deliberations. The Board heard new information during public testimony in Savannah, most convincingly from a majority of stakeholders that drill seeding is not viable for growing rice organically. Please see attached Technical Review (TR), the citations contained within the TR and Crops Committee recommendation.

NOSB Vote:

Moved: John Foster	Second: Tina Ellor			
Yes: 14	No: 0	Abstain: 0	Absent: 0	Recusal: 0

National Organic Standards Board (NOSB)
Sunset 2013 Copper Sulfate in Rice
December 2, 2011

Rationale Supporting Recommendation (including consistency with OFPA and NOP):

The committee noted that although there have always been concerns about the use of copper, particularly in rice because of its toxicity to aquatic organisms, new information was used by the committee in making its decision. This included a new Technical Review (TR), the citations contained within the TR, and additional sources consulted by the committee.

There is a large body of research concerning the impacts of copper sulfate on aquatic plants and animals. There is no doubt that copper poses more ecological hazards in an aquatic environment like as a flooded rice field than in a terrestrial environment like a bean field. One element that the committee focused on was the fact that concentrations of copper that would be found in a rice field are high enough to be toxic to amphibians, which may contribute to biological controls of both algae and arthropods. The committee relied on testimony of rice growers that the soil testing, as required by the annotation, did not result in increased accumulation of copper.

The TR (1048-1050) notes that, "Tadpole shrimp are not a problem in transplanted rice, and are in fact encouraged as a method of biological weed control. Japanese literature has many references to efficacy and use of tadpole shrimp (Igarashi, 1995; Yonekura, 1979; Matsunaka, 1975)." So, one approach that is possible is to transplant rice seedlings instead of direct seeding. However, the committee is aware that transplanting rice is labor-intensive, and American rice production is highly mechanized, so we felt we were unable to consider this alternative. We did have several references to a drill seeding system practiced by in California that supposedly makes copper sulfate unnecessary. This system is documented in the NAS book *Alternative Agriculture*, the ATTRA publication "Organic Rice Production", and the growers' website. The website said no pesticides were used. (It now says only organic pesticides are used.) All of these publications present the drill seeding system as a success, and one requiring no inputs for shrimp control. Algae are not mentioned as a problem in any of these publications. With this background, we contacted the growers, who told us that the system does not always work in wet years. This feedback was built into the committee recommendation, which aimed to reduce the use of an environmentally damaging material by requiring that it only be used when a proven method (with documentation going back to 1989) is not feasible. We have received many comments from rice growers—including the growers we contacted—who are outraged that we are prescribing a particular planting method. It was not our intent to prescribe a particular

planting method, but to restrict the use of copper sulfate.

In addition to the drilled rice system, sodium carbonate peroxyhydrate (sodium peroxycarbonate) was approved by the board in 2007, precisely because it promised to be an alternative to copper sulfate for controlling algae. Commenters who have used it have given it mixed reviews. Some growers cited a study of alternative for algae control as support for the claim that sodium carbonate peroxycarbonate is ineffective—a study that also said that copper sulfate is ineffective.

One grower said that organic rice treated with sodium carbonate peroxyhydrate is not approved for export. In the comments received in response to the ANPR, CCOF said that most organic rice is exported, and none of the countries receiving CCOF-certified exports recognize copper sulfate for shrimp control. They asked for a change of “algae” to “scum” in the listing to match international usage. However, growers use “algae” and “scum” to denote different things in their comments. This makes it unclear to us how any organic rice is being certified for export when copper sulfate is used.

Other commenters pointed out that the impacts of copper sulfate on biodiversity and organisms that could provide some degree of biological control make its use incompatible with a system of organic and sustainable agriculture. The comments submitted by the California Rice Commission cited research showing a shift in algal species in rice fields from green algae and diatoms to blue-green algae (also known as cyanobacteria). They also state that the two main reasons for the 27% decrease in the use of copper sulfate from 2000 to 2009 are price, which is increasing, and efficacy. In following up on the efficacy issue, we learned from the 2001 TAP, the recent TR, and other research that cyanobacteria have developed resistance to copper sulfate. As was noted in the 2001 TAP review, “If resistance builds, application of copper sulfate is inconsistent with sustainable agriculture as it would become ineffective, and would not be a sustainable approach.”

Commenters from all perspectives agree that research is needed into the uses of and alternatives to copper sulfate. This includes terrestrial crop uses, which are not clearly defined, as well as use in rice.

The original committee recommendation, which would have included an additional annotation to both uses, “*when it is determined that weather conditions prevent the drill-seeding production practice,*” was replaced with a recommendation to relist both uses in view of public comments.

Committee Vote: The committee vote on the recommendation as listed was:

Moved: Jay Feldman	Second: Tina Ellor
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Yes: 6	No: 0	Abstain: 0	Absent: 1	Recusal: 0
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NOSB Vote:

Moved: John Foster	Second: Tina Ellor
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Yes: 14	No: 0	Abstain: 0	Absent: 0	Recusal: 0
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