



BEYOND PESTICIDES

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November 4, 2011

National Organic Standards Board
Fall 2011 Meeting
Savannah, GA

Re. Comments on Copper Sulfate Sunset

Dear Board Members:

These comments are submitted on behalf of Beyond Pesticides. Beyond Pesticides, founded in 1981 as a national, grassroots, membership organization that represents community-based organizations and a range of people seeking to bridge the interests of consumers, farmers and farmworkers, advances improved protections from pesticides and alternative pest management strategies that reduce or eliminate a reliance on pesticides. Our membership and network span the 50 states and groups around the world.

We support the intention of the Crops Committee to place further limits on the use of copper sulfate in rice. As we will explain below, this use does not meet the requirements of the Organic Food Production Act —its ecological effects are threaten wetland ecosystems, there are alternative methods available, and it is inconsistent with a system of organic and sustainable agriculture.

1. The impacts of copper sulfate on aquatic ecosystems are known to be greater than was understood in making the previous decision.

The Crops Committee has done an excellent job of summarizing the severity of the threat of copper to aquatic ecosystems. With 95% of California's wetlands gone, rice fields have become an important habitat for aquatic and semi-aquatic species displaced by agriculture, industry, and housing. Copper is very toxic to a wide range of aquatic organisms. Poisoned rice fields have become an attractive nuisance for aquatic and semi-aquatic organisms. Although chemical-intensive rice production uses many chemicals more toxic than copper, copper is particularly toxic to aquatic organisms and therefore should be eliminated.

2. There is no demonstrated need for copper sulfate in organic rice production.

Apparently, there is a well-understood approach to growing rice that does not depend on copper sulfate. Lundberg Farm describes this system on their website: "Our dry planting technique helps protect the rice from shrimp. The rice plant is well established by the time we apply the permanent flood, so the shrimp cannot ruin the crop."¹

¹ Lundberg Family Farms, "Farming Practices" <http://www.lundberg.com/Commitment/Practices.aspx> Accessed 8/28/2011.

In addition, sodium carbonate peroxyhydrate is available under section 205.601, and would control algae during those years in which the weather prevents the use of the dry planting techniques. Therefore, use of copper sulfate for control of algae does not seem to be necessary.

3. The use of copper sulfate in rice is inconsistent with organic and sustainable agriculture.

Copper sulfate is toxic to aquatic animals that could provide some biological control for the algae the copper is used to kill. For example, one animal mentioned by the California Rice Commission as an inhabitant of rice fields is the western toad (*Bufo boreas*). Tadpoles of the western toad feed on filamentous algae, detritus, and may even scavenge carrion.² The LC50 for tadpoles of *Bufo boreas* is 47.49 parts per billion copper (0.04749 ppm).³ According to the TAP review for copper sulfate (lines 680-683):

Typical application rates in paddies to control algae appear to range from 0.25 ppm to 2.0 ppm. For treating tadpole shrimp, application rates appear to be “less than 10 ppm.” With aquatic organisms showing detrimental effects at levels of about 0.4 ppm and above, this means that the application of CuSO₄ to rice paddies could kill mosquito fish, pond snails, and other organisms that could have beneficial properties.

Thus, application rates of copper sulfate exceed levels that are lethal to tadpoles of *Bufo boreas* by up to two orders of magnitude.

Similarly, tadpoles of the Pacific tree frog, another species found in rice fields, are suspension feeders, eating a variety of prey including algae, bacteria, protozoa and organic and inorganic debris.⁴ A third species inhabiting rice fields is the bullfrog, whose tadpoles eat organic debris, algae, plant tissue, suspended matter and small aquatic invertebrates.⁵

In 2001, the NOSB adopted “Principles of Organic Production and Handling.” The first of those principles is:

Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. These goals are met, where possible, through the use of cultural, biological, and mechanical methods, as opposed to using synthetic materials to fulfill specific functions within the system. The particular impacts mentioned above —on amphibians found in rice fields—not only have a negative impact on biodiversity, but they also reduce possibilities for biological

² [AmphibiaWeb](http://amphibiaweb.org/): Information on amphibian biology and conservation. [web application]. 2011. Berkeley, California: AmphibiaWeb. Available: <http://amphibiaweb.org/>. (Accessed: Jul 25, 2011).

³ EPA, 2007. *Aquatic Life Ambient Freshwater Criteria—Copper*, Office of Water. EPA-822-R-07-001

⁴ <http://www.californiaherps.com/frogs/pages/p.regilla.html>

⁵ <http://www.fs.fed.us/r4/amphibians/bullfrog.htm>

control of algae and tadpole shrimp. Thus, the use of copper sulfate in an aquatic environment like a rice field is inconsistent with a system of organic and sustainable agriculture.

Need for Research

Furthermore, we hope that the uses of copper materials in both aquatic and terrestrial systems will become a priority for research. We noted in our comments at the April 2011 meeting on terrestrial uses of copper:

The listing for coppers does not specify the crops and diseases where it may be used. We believe that the NOSB cannot make an informed decision about the need for these chemicals without performing a specific analysis of need. Furthermore, OFPA requires (7 U.S.C. 6517):

Content of List. The list established under subsection (a) of this section shall contain an itemization, ***by specific use or application***, of each synthetic substance permitted under subsection (c) (1) of this section or each natural substance prohibited under subsection (c)(2) of this section.

This requirement is not being met in the case of the listing for coppers because the “specific use or application” is missing.

In the case of copper sulfate in rice, we hope that there will be additional research into the systems of rice production to determine how much copper is actually used and what changes in the growing system might make it unnecessary.

Conclusion

We agree with the Crops Committee that the hazards posed by copper sulfate to aquatic organisms along with the availability of alternative practices and materials leads “to the conclusion that the use of copper sulfate in rice production should be restricted as much as possible.” At a minimum, the NOSB should adopt the annotations proposed by the Crops Committee. However, it appears to us that the justification presented by the committee would support dropping at least the algicide use. Because of the ecological impacts of copper and the failure to meet *all* of the OFPA criteria, we oppose the continued use of copper sulfate in rice.

Sincerely,



Terry Shistar, Ph. D.
Board of Directors