

**National Organic Standards Board
Materials Subcommittee
Proposal: Research Priorities for 2012**

August 17, 2012

Introduction

A Recommendation for a Framework to Establish Research Priorities was approved at the last National Organic Standards Board (NOSB) meeting in May 2012. Part of that recommendation was that the priorities from the previous year of NOSB deliberations would be presented at each fall meeting. Therefore, we have collected suggested research topics from the NOSB subcommittees and from suggestions within the public comments and will present the top research priorities for approval this fall.

After a recommendation is finalized by the NOSB each fall the Chair of the Board will make sure it is sent to the primary organic research funders such as NIFA, ARS, NRCS, OFRF, and private foundations and other funders that may be identified. In addition all NOP staff, NOSB members and stakeholders can use the list for inspiring appropriate research.

Background

The reasons for encouraging research into organic production systems are well discussed in the previous two Materials Committee papers from fall 2011 and spring 2012.

The recommendation that was passed recommends that potential topics be prioritized. The criteria for prioritization are for those topics that the NOSB believes will have the largest long-term impact on growth and integrity of organic agriculture. These criteria are not presented in order of importance, but are evaluated by the Materials Subcommittee in selecting the top research needs.

Criteria for research topics are:

- Persistent and chronic (i.e., perennial topics of debate and need)
- Challenging
- Controversial (i.e., topics on which there are widely differing perspectives or for which there have been close NOSB votes)
- Nebulous (i.e., the research need is hard to identify but the organic agriculture need is clear). For example, improved methods of weed control.
- Lacking in primary research. That is, topics for which there is no active research being conducted, primarily relating to the criteria in OFPA for review of materials.
- Relevant to assessing the need for alternative cultural, biological, and mechanical methods to materials on the National List.

Call for Researchers

We hope that this information will be useful for researchers in many fields to defend and solicit funds for research that benefits organic production and handling. Therefore we invite the public to comment on these topics, to circulate this widely, and to recommend that funders also prioritize these topics. Please submit comment on which funding agencies should be informed of research needs for organics.

NOSB Research Priorities and issues of concern:

Several important topics have been identified and must be applied within an organic context. Research and evaluation of these and interrelated issues are urgently needed.

➤ **Whole Farm Systems Research**

- How can working with the natural world by including diversity of habitat, cropping systems, and biological life benefit an organic farm?
- Can crop species and varieties be specifically adapted to their site through plant breeding or cultural practices?
 - How does biodiversity contribute to pest and disease resistance?
 - What is the relationship between nutrient balancing fertilization practices and microbial life in the soil and susceptibility or resistance to pests?
 - How can the need for a diverse ecological system be balanced with food safety concerns for a sustainable organic farming system?
 - How can the complex whole environmental system inform, support and educate a farmer in developing a farming system plan?

➤ **Evaluation of Copper Sulfate for Rice (Sunset Review)**

- In the timeframe that CuSO_4 is used in the field, 5 to 15 days after planting, are there documented effects on other organisms in the rice fields (frogs, fish, insects, etc.)?
- What are the obstacles or opportunities for the use of sodium carbonate peroxyhydrate as an alternative to copper sulfate? Evaluate both agronomic and market issues.
 - Can the build-up of copper in rice fields be mitigated with other minerals such as Calcium or Magnesium?
 - Are there biological control alternatives for algae control in rice, such as viruses or organisms that consume algae?
 - Can drill-seeding techniques be adapted so that they can be a viable alternative to produce rice without copper sulfate?

➤ **Evaluation of Antibiotics (Tetracycline and Streptomycin alternatives)**

What are the elements that are considered in an organic systems plan that avoids the use of antibiotics?

(Please address any or all of the following and their relative importance: location, planting density, choice of varieties of cultivar and rootstock, diversity of cultivars in orchard and region, diversity of crops in farm and region, soil improvement practices, pruning practices and general sanitation, groundcovers or intercrops, pollinator management, other preventive or general orchard management practices, dormant copper sprays, bloom thinning/lime sulfur, early bloom sprays to prevent stigma colonization by fire blight bacteria, full and late bloom sprays to protect the floral cup, surveys for fire blight activity, computer models, others.)

- Is there any new technology that can aid organic growers in determining potential fire blight infection periods? (Detection models, in field sampling, etc)
- What are the impacts of geographic locations on the severity of fire blight and control programs?
- What materials could be potential replacements for the antibiotics as part of a comprehensive fire blight control and management component of an Organic Farm Plan? What time frame before they would be commercially available? What are the pros and cons of these materials?

➤ **Evaluation of Genetically Modified Vaccines (GMO)**

GMO prevention and unintended GMO contamination are foundational to organic production and brand. It is of such importance that NOSB has a GMO Ad-Hoc Subcommittee. GMO free is a major selling point of organic commodities to consumers.

- A need exists for research and/or outreach on easier ways to determine the types of vaccines. A better way of identifying the types of vaccines is critically important to our stakeholders, especially livestock producers. The testing of products that could be alternatives to GMO vaccines in livestock production is a top priority.

➤ **Organic Aquaculture**

Organic aquaculture is on the rise. One report has shown that organic aquaculture generated over 30 billion dollars in 2006. It is said to be the fastest growing organic sector in the world according to another source. There is a great debate as to whether organic aquaculture should be approved for open, closed, or both in the United States. Therefore, research efforts pertaining to open and closed systems seem warranted in some cases.

- Research is needed or data located regarding the impact of fish waste water on the environment, and feed and other materials used (100% organic, fish by-products, synthetic nutrients, etc.). Waste management, fish health (diseases and parasites), fish escapes in open and closed systems need to be explored.

➤ **Methionine Alternative**

Methionine is an essential amino acid for poultry. Prior to the 1950's poultry and pigs were fed a plant and meat based diet without synthetic amino acids such as methionine. One former NOSB member stated, in §205.237(5) (b), "We have seemingly made vegetarians out of poultry and pigs". As the organic community moves toward reducing, removing, or providing additional annotations to synthetic methionine in the diets of poultry, a heightened need exists for the organic community to rally around omnivore producers to assist in marshaling our collective efforts in finding viable alternatives to synthetic methionine and help find approaches for making them more commercially available.

- Research on alternatives such as herbal methionine, corn gluten meal, potato meal, management practices, pastures management, fish meals, animal by-products, and other non-plant materials, needs to be explored as an alternative to synthetic methionine.
- Research on the use of natural herbal methionine seemingly is showing great potential. It could possibly replace synthetic methionine at a rate of 1:1. However, more research is needed.

➤ **Carrageenan**

- Can Carrageenan be produced using methods that are non-synthetic and can those methods be used for all the types of carrageenan?
- Does the gel formed by carrageenan when it is used in food provoke an inflammation response? Injected or in vitro studies allegedly cannot be

- compared to feeding studies because the carrageenan has formed a gel that is more resistant to degradation in food.
- Is there replicated proof that carrageenan breaks down into smaller molecular weight forms in digestion and that these forms are small enough and populous enough to pose a health concern?
 - Allergic and toxicological responses to carrageenan are so far primarily anecdotal. Can there be further research done to quantify how widespread and truthful these claims are?
 - Are there viable alternatives to carrageenan and if so, for what uses?

Other Topics for Future Review:

- **Parasitism**
 - The control of internal and external parasites is important to animal welfare, growth, reproduction, and production. In organic production, the control of parasites is critical. The use of antibiotics is prohibited. A limited number of substances are available to control parasites. Antibiotics are not allowed in organic livestock production for growth, reproduction, and production. Antibiotics can be used on sick animals. However, these animals cannot be sold as organic. A critical need exists to explore ways to find materials for the control of internal and external parasites in organic livestock operations.
- **Mastitis**
 - Mastitis is a disease of the mammary gland. It is an inflammation in the mammary gland. It is generally associated with dairy cattle. It can be caused by bacteria, physical injury, etc. Mastitis is one of the most common and expensive diseases of dairy cattle. It can result in reduced milk production, discarded milk, treatment, and veterinary expenses. An urgent need exists for looking at ways to reduce mastitis in dairy herds. The research needs include the areas of herbal treatment of mastitis and management practices.
- **Herd Health**
 - The assessment of preventive organic practices to improve organic livestock health is critical and of high importance. These include general animal health as it relates to diseases prevention, uterine infections in peri-parturient animals, growth, and identification of vaccine types, nutrition, and production systems.

- **Plant Extract**

- Plant extracts that could be environmentally and economically beneficial to organically control methane producing bacteria in the animal could lead to practices that reduce methane. Reduced methane results in more energy going to the animal from a given amount of feed. This reduces total feed required to meet nutritional needs and particularly helps grazing animals that have high protein availability from pasture, but low energy. Research in this area could be economically significant.

Subcommittee Vote

Motion to adopt the proposal on NOSB Research Priorities.

Motion by: Zea Sonnabend Second: Calvin Walker
Yes: 4 No: 0 Absent: 2 Abstain: 0 Recuse: 0