



October 1, 2019

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

**Docket:** AMS-NOP-19-0038

**RE: Materials Subcommittee - Research Priorities 2019 (Proposal)**

Dear Ms. Arsenault:

Thank you very much for this opportunity to provide comments on the Materials Subcommittee proposal on Research Priorities for 2019.

The Organic Center is a non-profit organization with the mission of convening credible, evidence-based science on the environmental and health benefits of organic food and farming and communicating findings to the public. We are a leading voice in the area of scientific research about organic food and farming, and cover up-to-date studies on sustainable agriculture and health while collaborating with academic and governmental institutions to fill knowledge gaps.

The Organic Center thanks the Materials Subcommittee for its recommendation on Research Priorities. We appreciate the creation of the Research Priority Framework and the efforts made by each Subcommittee to bring forth its research priorities for 2019.

**Summary:**

- ✓ The Organic Center supports the subcommittee's proposed 2019 Research Priorities. The proposed priorities are in line with the needs of the organic industry, and will serve as an important resource to guide The Center's research priorities and project development.
- ✓ Based on feedback we've received during our own outreach efforts, we would also like to suggest that the areas of **soil health**, **climate change**, and **pathogen protection** be considered for inclusion in the 2019 Research Priorities.



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**We offer the following more detailed comments:**

### **Current Research Needs**

We have reviewed the list of topics included for 2019 priorities, and we're particularly pleased to see the inclusion of "Organic no-till practices for diverse climates, crops, and soil types," "Development of systems-based plant disease management," "Strategies for the prevention, management, and control of invasive insects," and "Production of celery for celery powder yielding nitrates sufficient for cured meat." The Organic Center is actively involved in conducting and communicating research on these issues, and we expect the prioritization of these topics by NOSB may help us secure further funding.

### **Organic No-Till Practices**

The Organic Center is collaborating with Dr. Kate Tully's lab at the University of Maryland to examine practices improving soil health on organic farms. One of the areas that we included was the comparison of no- and low-till in organic production versus standard tillage in organic production. Overall, our results suggest that surface-level soil organic carbon levels are higher in low/no-till organic plots compared to standard organic tillage plots. However, we also found that no/low-tillage in organic was associated with significant reductions in yield. These findings suggest that while organic farmers could improve carbon sequestration through no/low-tillage, there needs to be further research to support farmers wishing to make this conversion to ensure that it is a viable and economically feasible option for a wider variety of crops. We are thankful that NOSB included this priority in its 2019 Research Priorities, as it will help encourage research on this critical issue, and provide much-needed tools to help organic farmers realize the benefits of reduced tillage without the threat of reduced yields.

### **Plant Disease Management**

The Organic Center has been working on several aspects of plant disease management directly called out in NOSB 2019 Research Priorities. For example, we have an active project on citrus greening, caused by the bacterium *Candidatus liberibacter*. Our research to find organic solutions to control citrus greening disease is an ongoing project in collaboration with the University of Florida, the University of California, Davis, USDA-ARS, citrus growers, and other non-profits. We recently published a scientific paper and accompanying farmer guide consolidating existing literature on allowable methods for combating citrus greening in organic groves. It details science-based best practices for organic citrus growers. We leveraged this paper to apply for an OREI planning grant to develop a proposal that takes a systems-based approach to combat both the bacterium that causes citrus greening disease and its insect vector, the Asian citrus psyllid, in organic systems.

### **Invasive Insects**

In addition to our work on the Asian citrus psyllid, The Organic Center is also completing research to develop Integrated Pest Management strategies for organic rice production in the Southern United States. This project is being conducted in collaboration with Texas A&M



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University's AgriLife Research & Extension Center, Texas A&M Department of Soil and Crop Sciences, USDA's ARS Dale Bumpers National Rice Research Center, University of Arkansas Rice Research and Extension Center, and University of Arkansas at Pine Bluff Department of Agriculture. Flooded rice production systems used by organic farmers result in increased pressure from the diseases, weeds, and insect pests not commonly found in dryland cropping systems. This is especially problematic in the South because of the region's warm, humid environments and long growing season. This project focuses on developing cover crop-based production systems in combination with cultivar choice and seed treatment to enhance disease, weed, insect pest, and nutrient management, allowing producers to grow organic rice more sustainably and profitably in the South.

### Celery Powder

In collaboration with the Organic Trade Association's National List Innovation Working Group and the University of Wisconsin, Madison, we are investigating the potential for developing organically grown celery or other vegetables used in the curing of organic meat products. This OREI-funded research will help identify potential varieties of organic crops that would meet the chemical specification needed for curing, while being easily incorporated into current crop rotation systems. It will also identify potential management protocols to achieve target nitrate levels in the curing crop to produce the required shelf life and prevent bacteria in the cured meat, and to produce the desired flavor, color and texture in food.

### Additional Research Needs

The Organic Center is continually collecting information on research needs from multiple sectors of the organic community. We conduct industry roundtables, work with the Organic Trade Association's Farmers Advisory Council, meet with professors on our Science Advisory Board and hold one-on-one meetings with individual companies, farmers, professors, and consumers. We feel that the NOSB Materials Subcommittee's proposed 2019 Research Priorities are in line with the needs of the organic industry, and appreciate the release of this report as an important resource to guide The Center's own research priorities and project development. Based on feedback we've received during our own outreach efforts, we would also like to suggest that the areas of soil health, climate change, and pathogen protection be considered for inclusion in the 2019 Research Priorities.

### Soil Health

The U.S Department of Agriculture's Natural Resource Conservation Service (USDA NRCS) defines soil health as "the continued capacity of the soil to function as a vital living ecosystem that sustains plants, animals and humans." While many other definitions of soil health exist, the majority of modern definitions exemplify the ecological attributes of soils, recognizing that their importance extends far beyond simple crop production.

A growing body of scientific literature evaluates the relative contribution of different management practices for improving soil health. However, significant variation in characteristics

assessed and the methods used to gauge those means that oftentimes results across different studies are not comparable. Even when scientific studies do use comparable measures of soil health, they may come to contradictory conclusions. Management decisions that lead to an improvement in soil quality in one study may be less effective in another, suggesting that some protocols must be carefully considered based on localized conditions to achieve best results. As such, reaching solid conclusions on best-management practices for achieving optimal soil health and fertility can be difficult, particularly for organic farmers who cannot rely on formulaic recommendations for fertilizer application.

To address this, The Organic Center is collaborating with researchers from the University of Maryland–College Park to conduct a comprehensive review of the most current science that evaluates organic compliant methods for optimizing soil health to develop best practices for organic farmers. Specifically, this project seeks to (1) review the literature comparing soil health on organic and conventional farms and discussing practices that differ between them that could be contributing to this difference; (2) understand variance in characterization of soil health and indicators used to assess it within the scientific literature; (3) identify science-supported best practices for maintaining and building soil health in organic systems; (4) identify practices that lead to variable results based on geography, climate, soil type, or commodity grown and therefore must be optimized based on local variables, and (5) identify areas where more research is needed.

### Climate Change

Climate change is having serious consequences on our environment and public health. More extreme weather events, sea level rises, ocean acidification, increased frequency and intensity of wildfires highlight just a few areas that have been impacted recently. Food systems are especially vulnerable to climate change, and they are in an interesting predicament—they are a significant contributor to one of their own biggest threats. However, a growing body of research demonstrates that organic farming is poised to be part of the climate change solution, and some strategies employed by organic farming can also help with resilience to current climate issues such as drought and flooding.

The Organic Center recently held its annual Organic Confluences Conference, co-hosted this year by USDA, FiBL, The Climate Collaborative, and ISOFAR. The 2019 focus of the conference was on mitigating and adapting to climate change. It brought together scientific experts, farmers, policymakers, and organic stakeholders to address the current impacts of climate change and best practices within the organic sector for mitigation and adaptation, while examining methods for encouraging the adoption of strategies for fighting climate change. We are currently working on a white paper detailing the outcomes of the event, but it is clear that additional research is needed to address this issue; the long-term security of our food system depends on it.



The Organic Center is already engaged in climate research. For example, we are working on a project in collaboration with researchers at the University of Maryland to pinpoint specific strategies organic farmers can take to increase carbon sequestration in the soil. We are also working with Harvard University's Department of Public Health examining the specific aspects of organic agriculture that can contribute the greatest benefits to climate stability. These net benefits include carbon sequestration in the soil and reduced energy usage by avoiding synthetic nitrogen fertilizer.

However, additional research is needed to pinpoint specific strategies that organic farmers can take to reduce greenhouse gas emissions and respond to current climate challenges threatening the future of our food security.

#### Pathogen Prevention

Organic agriculture is one of the most strictly regulated agricultural systems. Instead of relying on synthetic fertilizers, the National Organic Program regulations require organic crop producers to manage crop nutrients and soil fertility through crop rotations, cover crops, and the application of plant and animal materials such as manure and compost. Simultaneously, the NOP regulations require organic farmers to maintain and support biodiversity on their farms. Unfortunately, some third-party food safety auditors believe that some biodiversity-maintenance strategies employed by organic farmers may increase the risk for introduction of human pathogens on the field. While some research has been conducted disproving this myth, more research, extension, and education are needed to fully understand the relationship between on-farm biodiversity and food safety – and this research must be communicated to third-party food safety auditors and incorporated into their audits.

Organic regulations also require that raw manure is applied with 90- or 120-day pre-harvest intervals to reduce the possibility of pathogen presence. However, in 2015, the U.S. Food and Drug Administration (FDA) published the final version of the FSMA Produce Safety Rule after a public comment period on the proposed rule requirements.

Of the revisions between the proposed rule and the final rule, most notable to the organic sector were changes made relating to the use of manure and the required application interval between applying untreated manure and harvesting crops covered by the FSMA Produce Safety Rule. FDA deferred from its earlier proposed nine-month minimum interval requirement to give the agency time to conduct research into determining an appropriate science-based application interval. The Organic Center has been collaborating with the University of California, Davis, among other organizations, to address the need for additional information on raw manure intervals to provide critical information for guidelines on risk mitigation of foodborne pathogens for organic and sustainable agriculture.

Please do not hesitate to contact us for information on the data that we have been collecting or with questions you would like us to pose the research community.



Again, on behalf of The Organic Center, I would like to extend my thanks to the Materials Subcommittee for your commitment to furthering organic agriculture.

Respectfully submitted,

Jessica Shade  
Director of Science Programs  
The Organic Center