ORGANIC FARMING RESEARCH FOUNDATION
Fostering the improvement and widespread adoption of organic farming.

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National Institute for Food and Agriculture
Washington, DC

Dear Dr. Ramaswamy and the National Institute for Food and Agriculture,

Thank you for the opportunity to provide written comments for the *Stakeholder Listening Opportunity for Priorities in Research, Education and Extension* (Federal Register, Vol. 82 No. 178, p 43325, September 15, 2017).

1. What is your top priority in food and agricultural research, extension or education that NIFA should address?

The Organic Farming Research Foundation (OFRF) is a non-profit organization that works to foster the improvement and adoption of organic farming systems by cultivating organic research and education, as well as engaging in federal policies. Research, extension, and education policies and programs are key issues and have been a core component of OFRF for over twenty-five years. These recommendations and suggestions are based on outreach and engagement with organic farmers and researchers from around the country, as well as the comprehensive evaluation of organic research needs outlined in the *National Organic Research Agenda*, as well as an analysis of USDA organic agriculture research, funded by the Organic Research and Extension Initiative, *Taking Stock: Analyzing and Reporting Organic Research Investments, 2002 – 2014*.

OFRF's top research priority is to address the needs of producers seeking to implement or improve organic farming and ranching systems. Based on our comprehensive analysis of the research needs of organic farmers, OFRF urges NIFA to increase research into:

- Soil health and management practices as the basis for agricultural productivity.
- Fertility management and agroecological approaches, including management-intensive rotational grazing and crop-livestock integration.
- Weed, insect, and disease management.
- Plant breeding and public cultivar development.
- Site and regionally specific approaches to sustainable soil, crop, livestock, weed, and pest management.
- Addressing, adapting, and mitigating unpredictable weather and climate, and the associated agronomic impacts.

NIFA's top extension and education priority should be to translate research findings on organic and sustainable agricultural systems and methods into practical information, tools, and guidelines that farmers and ranchers can implement now. The Agriculture and Food Research Initiative (AFRI), Sustainable Agriculture Research and Education (SARE), OREI, Organic Transitions (ORG), and other NIFA competitive grant programs have generated a tremendous body of scientific data on crop and livestock production systems, resource conservation, climate impacts, and socio-economic aspects of agricultural and food system sustainability. While much additional research is needed on the topics listed above, the potential to implement currently-available research-based information and tools on working farms has not been fully realized. The OREI funded eOrganic Community of Practice has performed an important service in making many OREI and ORG project outcomes more available to producers and other stakeholders, yet key research findings with potential for practical application remained buried in project reports and professional literature.

After completion of the *Taking Stock* report, OFRF undertook further review of OREI and ORG project findings to develop a series of soil health management guides for organic producers that address topics from organic matter and nutrients to conservation tillage and water. In this process, we identified and communicated several robust trends across multiple projects with clear practical applications.

This project reviewed a small fraction of NIFA-funded research, and is utilizing a few of the many education and extension venues to provide practical information on one topic. Expanding and strengthening the Extension and Education components of NIFA programs could facilitate farmer access to the full gamut of NIFA-funded research on multiple critical issues in agriculture.

Specific recommendations for NIFA are as follows:

- Include organic production systems and practices among research priorities across all NIFA programs.
- Increase emphasis on education and extension across the full portfolio of NIFA competitive grant programs, while maintaining a vigorous research component.
- Increase emphasis on development and delivery of practical information and tools in Requests for Applications and in review panel criteria.
- Invite proposals for review or meta-analysis of NIFA-funded research to date to identify robust trends that can be translated into practical information and tools for producers.
- Prioritize delivery of practical information on organic and other sustainable production systems that meet "triple bottom line" criteria: resource conserving and environmentally sound, economically viable for producers and rural communities, and socially responsible to ensure a good quality of life and equitable access to healthful food for all.
- Prioritize extension and education efforts that deliver practical information and tools to farmers and ranchers, including minority and limited resource producers, beginning farmers and ranchers, military veterans entering the farming/ranching profession, small-scale diversified farmers, and other historically underserved constituencies.

2. What are the most promising science opportunities for advancement of food and agricultural sciences?'

Organic Farming and Ranching Systems

Organic agriculture is booming, with double digit growth in sales, certified organic acres, and certified organic farms according to the latest USDA NASS 2016 certified organic survey data. At the same time, demand for organic products is outpacing supply. Organic producers face specific challenges related to crop nutrition and protection without the use of conventional agro-chemicals, maintaining soil health while relying on some tillage to manage weeds and crop residues, and maintaining desirable nutrient balance while using organic fertility inputs. There exists an urgent need for science-based practical information, tools, and guidelines to support successful organic enterprises and fully realize the potential of organic agriculture.

While the OREI and ORG programs specifically address organic systems, and have made significant advances, they represent only a small fraction of NIFA program funding. Across all USDA agencies, organic research accounts for about 1.5% of total research dollars, which lags significantly behind the market share for organic foods, currently near 5% and rising steadily year to year. Given the promise that organic practices offer for resource conservation, long term productivity, and profitability, we urge that the USDA funding for organic research should increase across all research programs in order to become commensurate with the market share.

OFRF recommends that, in addition to maintaining the high quality OREI and ORG programs, NIFA include organic production systems and practices among research priorities across all NIFA programs.

Soil Health and Soil Biology

While healthy living soil has long been considered the cornerstone of organic farming, it is now widely recognized as the foundation of *all* successful farming. Tremendous advances have been accomplished in this area through NIFA funded and other research, but many questions remain unanswered. Research into plant-soil-microbe interactions and their impacts on vital nutrient, carbon, and moisture cycles; crop nutrition and vigor; soil organic matter, structure, and carbon sequestration can be especially fruitful for long term agricultural productivity and sustainability. Research into building functional below-ground biodiversity through aboveground biodiversity– crop rotation and diversification, cover crop cocktails, multispecies grazing, crop-livestock integration, and more–can further advance our knowledge of best soil health management practices. The impacts of agricultural practices and inputs–both synthetic and natural organic–on soil biology and soil health also merit continued investigation.

Because soil health is foundational to the sustainability of US agriculture, food system, and society as a whole, NIFA should continue and expand its emphasis on soil health research across its portfolio of competitive grant programs. Review panels should prioritize projects that aim to provide practical, farmer-ready information and tools, as well as basic research on key soil health issues and constraints.

Plant Breeding Research and Public Cultivar Development

Several leading plant breeders and other agricultural researchers have expressed concern that, over the past 65 years, crop cultivars have been bred and selected primarily for performance in conventional agricultural systems with monoculture or low-diversity crop rotations, reliant on relatively high inputs. The OREI program has stood out as an exception, funding the development of some 45 new cultivars with greater water and nutrient use efficiency, increased tolerance to weed competition, disease resistance, deep root systems that enhanced interactions with soil microbiota, along with establishing several robust farmer-scientist participatory breeding networks.

Overall, the public plant breeding community faces a crisis of dwindling funding and infrastructural support. NIFA should continue and expand funding for plant breeding research across NIFA programs, with increased emphasis on development and release of farmer-ready public cultivars across a wide variety of specialty and commodity crops to support crop diversification and enhance the quality, diversity, and security of the nation's food system.