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Date: November 30, 2022

Dr. Dionne Toombs
Acting Director
National Institute of Food and Agriculture
U.S. Department of Agriculture

RE: National Institute of Food and Agriculture – Notice of Stakeholder Listening Session
Regarding Science Priorities

Submitted via electronic mail: NIFAListens@usda.gov

Dear Dr. Toombs,

The Institute of Food Technologists (IFT) appreciates the opportunity to provide input on the National Institute of Food and Agriculture (NIFA) Science Priorities. IFT is a global organization of approximately 12,000 individual members, in 95 countries, who are committed to advancing the science of food. Since 1939, IFT has engaged experts in food science, technology, and related professions from academia, government, and industry to solve many of the world's greatest food challenges. IFT provides scientific, technical, and career development resources for advancing the science of food and its application across the global food and agricultural systems. Our mission is to connect global food system communities to promote and advance the science of food and its applications. We believe that science is essential to ensuring a global food supply that is sustainable, safe, nutritious, and accessible to all.

What are the greatest challenges that you see facing food and agriculture in the coming decades, and what fundamental knowledge gaps exist that limit the ability of research, extension, and education to respond to these challenges?

In recent years the food and agriculture sector has faced some of its greatest challenges in decades. A global pandemic, climate change, energy and water shortages, and escalating military conflicts have tested the resiliency and flexibility of the global and domestic food supply chain. Millions around the globe suffer from food and nutrition insecurity, yet 1/3 of food produced is wasted. Domestically, increases in microbial food safety recalls have led to illness and food shortages for some of the most vulnerable of our population. The recent White House Conference on Hunger, Nutrition and Health also brought to light the growing issue of diet-related chronic diseases and the numerous disparities in food and nutrition security across our nation.

These challenges have revealed many knowledge gaps that need to be addressed through research, extension, and education. One of the greatest gaps is understanding and

implementing more efficient utilization of the limited resources we have. There is no doubt that food and agriculture research and technology has contributed substantially to improving food and nutrition security and health around the globe. Food processing technologies, such as fortification, have saved lives and improved the quality of life domestically and around the globe. Preservation technologies, such as high-pressure processing and modified atmosphere packaging, have improved shelf-stability to help ensure nutritious foods are not wasted but available, affordable and safe. Yet, with a continually growing population and limited resources, future research and technological advancements must focus on greater efficiency, affordability, and agility while improving nutritional value and reducing planetary impact. It is a tall order that will require a move away from siloed approaches and embrace a broader systems approach to strengthen the efficiency, sustainability, and resiliency of the food system and ensure better nutrition and health equity around the globe.

As science & technology advance, the additional gaps in large scale implementation and consumer understanding must also continue to be addressed. In the current information age, it will be essential to break through the “noise” to provide accurate, relevant, and actionable information to all stakeholders, from farmers to consumers. Misinformation about agriculture and food science technologies has the potential to halt scientific advances in their tracks and limit the potential of technology to improve food and nutrition security, advance economic development, create jobs, and positively impact the planet. NIFA’s role in extension and education are critical to ensuring accurate, timely and relevant information and resources are available to the people who need it most, when they need it.

Based on those challenges, what general areas of food and agricultural research should be advanced and supported to fill the knowledge gaps, and what is your top priority for research, extension, and/or education for NIFA investment?

IFT supports the advancement of the following food and agricultural research, extension, and education areas to address the challenges and knowledge gaps described above.

- Research and development of sustainable technologies that increase access to safe, affordable, and convenient food products that fit into healthy, culturally-relevant dietary patterns and meet consumer preferences.
- Development and accelerated implementation of technologies to reduce food loss and waste across the food supply chain, such as packaging technologies to improve shelf-life, valorization of waste streams and crop losses
- Development and implementation of food processing technologies that minimize resource use (e.g., water, energy) while maintaining food safety and improving nutrient retention and quality
- Advancing research on foodborne pathogen risks and agricultural diseases related to natural and human driven disasters (e.g., foodborne or agricultural diseases arriving from other countries). Accelerate research on rapid, reliable methods for early detection of potential contamination.

- Development of scientific methods, new IoT tools (e.g., sensors) and modeling tools to assess agricultural, aquacultural, livestock, forestry, and human microbiome ecosystems and their impact on food safety, supply chain resilience and human, animal and plant health and disease
- Research that advances our understanding of the association between food and nutrition and diet-related chronic diseases, particularly in disparate populations
- Development of new low/no cost digital data collection technologies to improve supply chain traceability and transparency
- Educational tools and resources to help consumers prepare and purchase foods that are culturally relevant and fit a healthy dietary pattern.
- Increase and improve access to education tools for in-classroom teaching about the food supply chain and preparing foods/meals that can fit into a healthy dietary pattern
- Broader outreach to nutrition, food and health influencers with tools and resources on inclusion of all forms of foods into a healthy dietary pattern (e.g., fresh, frozen, canned, and dried). This is particularly important in emergency situations when certain options may be limited.
- Broader education and outreach to mitigate consumer “pantry stocking” behaviors during early crisis phases
- Training and educational resources on safety and other aspects of food production for food and agriculture work force to maintain the food supply, especially during crisis.

What is your top priority for research, extension or education for NIFA?

IFT is very concerned with the chronic underfunding of food science and technology research in the United States, specifically when domestic public and private investments are compared with our foreign allies and adversaries. While the USDA has a role to play in funding Agriculture and Food (AgriFood) research efforts, it understandably focuses primarily on agriculture research, education, and extension. While agriculture research is important, investment in research across the full food supply chain from farm to fork is critically needed. IFT recommends USDA NIFA prioritize this broader approach to research that integrates all components of the food supply chain.

Additional cross-cutting areas that need research to improve efficiency, sustainability and scalability would be technologies that valorize food waste streams or crop losses to improve nutrition and health for consumers.

What are the most promising opportunities/solutions for advancement of these food and agricultural priorities?

IFT believes the most promising opportunities and solutions are those that will address multiple issues relating to food and nutrition security, health, and sustainability. Solutions will need to be cross-functional in approach and consider all aspects of the food supply chain from farm to fork. Development and implementation of solutions will require multi-stakeholder engagement to ensure solutions reach a broad scale.

What is NIFA doing right and are there opportunities to improve?

IFT commends NIFA on their broad research focus including climate change, sustainable agriculture, and food safety. We are also pleased that NIFA has a focus on nutrition security and improving the quality, diversity, and access to nutritious foods in the US. We share this common focus as we believe food science and technology has and will continue to play an important role in improving food and nutrition security.

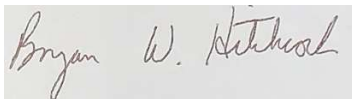
IFT appreciates the efforts NIFA has made to engage with stakeholders and academic researchers seeking funding through NIFA and encourages this continued engagement. NIFA representatives have attended several IFT meetings, virtual and in-person, to engage with food scientists and answer questions about NIFA programs. Our members have found the meetings to be extremely useful for helping researchers at their institutions identify funding and collaboration opportunities.

As a global food science professional organization, IFT is also particularly interested in developing the next generation of young food science & technology researchers and would encourage NIFA to continue to expand their current efforts, such as NEXTGEN, to consider how they may further engage and fund students at the college level interested in pursuing careers in food and agricultural sciences.

IFT would also recommend NIFA consider re-balancing research grant awards to ensure food science and technology receives similar funding to agricultural grants as the segment of the food supply post-harvest to the consumer makes a major contribution to US and global food and nutrition security.

If there are any questions regarding our input, please do not hesitate to contact Bryan Hitchcock (CSTO) at bhitchcock@ift.org or Anna Rosales (Senior Director Government Affairs & Nutrition) at arosales@ift.org.

Sincerely,

A handwritten signature in cursive script that reads "Bryan W. Hitchcock". The signature is written in dark ink on a light-colored background.

Bryan Hitchcock

Chief Science and Technology Officer & Executive Director of the Global Food Traceability Center
Institute of Food Technologists