



American Society of Agronomy • Crop Science Society of America • Soil Science Society of America

5585 Guilford Road, Madison WI 53711-5801 • Tel. 608-273-8080 • Fax 608-273-2021
www.agronomy.org • www.crops.org • www.soils.org

July 15, 2022

Mr. Bruce Summers
Administrator, Agricultural Marketing Service (AMS)
United States Department of Agriculture.
1400 Independence Avenue SW
Washington, DC 20250

Re: Access to Fertilizer: Competition and Supply Chain Concerns
Docket Number: AMS-AMS-22-0027
Federal Register Effective Date: 03/17/2022
Federal Register Page Number: 35956

Dear Mr. Summers:

Thank you for the opportunity to offer comments to the U.S. Department of Agriculture (USDA) regarding competition-related challenges in the U.S. fertilizer market and other obstacles to producers accessing affordable, responsibly manufactured fertilizer.

The American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and Soil Science Society of America (SSSA) represent more than 8,000 scientists in academia, industry, and government, 13,000 Certified Crop Advisers (CCA), and 620 Certified Professional Soil Scientists (CPSS). We are the largest coalition of professionals dedicated to the agronomic, crop and soil science disciplines in the United States. As such, we are pleased to offer responses to USDA's questions that reflect the boots-on-the-ground realities facing producers with current supply chain challenges in fertilizer access and provide input from the scientific community on innovative means to tackle these challenges.

In the face of currently insufficient domestic fertilizer production in the United States, we maintain both hope and healthy skepticism regarding the likelihood of new, undiscovered, opportunities in this arena. We applaud USDA for tackling this challenge – one that our members and professionals have been working on, alongside farmers, for nearly a century.

Rigorously review proposals for scientific and agronomic merit

ASA, CSSA, and SSSA members and practicing professionals all recognize the need for innovative and creative solutions to address current fertilizer price and access challenges facing producers. We define fertilizers as products that provide nutrients essential to crop growth. It's clear that fertilizer supplies, particularly phosphorus (P) and potassium (K) sources, will become more limited by the world's sanctions against Russia. Research is needed now to find new ways to optimize the use efficiency of the nutrients that all plants require.

We urge USDA to proceed with rigor and to critically evaluate proposals that will be submitted to the innovative, domestic fertilizer grant program which was announced on March 11, 2022. Current supply chain challenges are partially due to the fact that few recent fertilizer products have proven to be cost-effective and agronomically viable. The fertilizer product space is replete with many 'innovative' products of questionable value. The USDA should facilitate a grant review process that identifies promising research towards development of the most effective products.

The review process for grant proposals should be rigorously conducted by technical experts. USDA can look to the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) peer review processes as examples. **Rather than solely reviewing 'new' fertilizer products, USDA should also consider proposals that support work on using our existing fertilizer materials more efficiently, including optimizing 4R nutrient management practices and precision technology strategies, as mentioned below.**

Proposed studies should contain the following elements to demonstrate viability: 1) replicated field-scale trials based on rigorous statistical analysis, not demonstrations, 2) empirical yield data collected at crop maturity, and 3) information on water inputs and detailed characterization of the soils where the study is conducted. All data should be georeferenced for quality assurance purposes. Each proposal should include a discussion of the agronomic feasibility and a protocol for determination of the return on investment to the proposed product/practice/technology.

Incentivize site-specific nutrient management using 4R nutrient management

Effective, site-specific nutrient management is the best agronomic solution to help producers address current supply chain challenges and high input prices. Nutrient management is an integrated process that considers not only the agronomic aspects of soil fertility and crop nutrition, but also the social, economic, and environmental relationships within the management system. The 4R concept has been developed and is being implemented world-wide by industry, researchers, government agencies, and farmers and their advisers. It is centered on building a nutrient management plan that applies the right nutrient sources, at the right rate, at the right time, in the right place---the 4Rs of nutrient management. Complete 4R nutrient management integrates agronomic practices with economic analysis and environmental concerns, at field level, as well as social impacts on the community and downstream stakeholders.

USDA can create voluntary incentives that encourage producers to practice 4R nutrient management practices. The Environmental Quality Incentives Program (EQIP) is an excellent way to provide funding for conservation practices on working lands. EQIP offers financial payments to producers who implement proper nutrient management. While EQIP is viewed positively by many crop advisers and producers, many others may not choose to enroll due to stiff competition and a burdensome application process. USDA should streamline paperwork for enrolling in EQIP to make the program more accessible to a larger number of producers. Congress should also allocate more funding for EQIP to reduce competition.

Expand access to precision agricultural technologies

Precision agriculture is a technology that combines best practices with on-farm data and digitally enabled equipment so that fertilizers can be applied in response to variation in soil properties and crop needs across a field. Precision agricultural technologies allow detailed combinations of soils and nutrient use data to be constructed, leading to better nutrient use efficiencies. Precision agricultural

technologies enable producers to implement 4R nutrient management strategies in the field, but not all producers have access to the equipment and software tools needed to make precision in-field decisions.

When we add stronger rural broadband, access to technology such as robust data management tools can aid implementation of even better nutrient management practices. Only with rural broadband will producers have equitable access to the modern techniques required to promote transformational nutrient use efficiency. Likewise, the ability to continue to do research underpinning new nutrient management practices and documenting efficacy of precision techniques relies on this same technology.

Support on-going soil fertility and plant nutrition research

Agricultural research also must play a role in developing nutrient-efficient crop varieties, optimizing agronomic nutrient management practices, and improving our understanding of the critical impacts of soil physical, chemical, and biological properties on fertilizer and nutrient uptake dynamics. The dedicated scientists working on these aspirational projects continue to operate on insufficient budgets, impeding their ability to improve food production resiliency. USDA's Agriculture and Food Research Initiative (AFRI) was conceived in 2008 as a competitive research program with a \$700 million budget. However, that full level of funding is yet to be achieved. AFRI needs to be fully funded for agricultural research to begin making sustained, systematic inroads in building agricultural production resiliency. However, missing from these efforts are dedicated programs to fully support a better understanding of our soil resources. As soil is the basis of agriculture, this is a critical shortcoming.

In addition to funding the low-risk research that keeps America's food system moving, the Agriculture Advanced Research and Development Authority (AGARDA), authorized in the 2018 Farm Bill, is a pilot program for high-risk/high-reward advanced research that should be funded at \$50 million annually. AGARDA was conceived as an agency in the style of the Advanced Research Projects Agency - Energy (ARPA-E), a highly successful program of transformational research within the Department of Energy. Agricultural research would benefit from a true ARPA-style agency at USDA that pushes the boundaries of the possible. USDA needs a strategic plan to create this agency, should funding be appropriated. The Societies are ready to work with USDA to develop this plan.

Public-private partnerships, like the research supported by the Foundation for Food and Agricultural Research (FFAR), are a critical component of nutrient management research. Nutrient use from proper management of fertilizers and other amendments, such as manure, is of utmost importance to environmental nonprofits, commodity groups, agri-businesses, and farmers alike. FFAR leverages matching funds from private industry partners to support transformational research, including studies on fertilizer use and nutrient management. Continued funding for FFAR is critical to developing an innovative fertilizer agenda.

Finally, the USDA Equipment Grants Program is a (sole) source of funding for many researchers seeking precision agriculture equipment. Researchers must be able to conduct research with on-farm relevance, using equipment comparable to that available to agricultural producers. The Equipment Grants Program, authorized by the 2018 Farm Bill, should continue to be funded at \$5 million to provide support for researchers refining precision nutrient management techniques.

As USDA continues to look for solutions, we stand ready to provide science-based and agronomically-realistic perspectives. Please do not hesitate to contact us for further information.