



# *National Association of Wheat Growers*

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July 31, 2020

Stephen Censky  
Deputy Secretary  
U.S. Department of Agriculture  
1400 Independence Avenue SW  
Washington, D.C., 20250

Re: Docket No. USDA–2020–0003 | FR Doc. 2020–06825

Dear Deputy Secretary Censky,

Thank you for the opportunity to provide comments on the U.S. Department of Agriculture’s (USDA) Agriculture Innovation Agenda as the department strives to foster innovation, increase agricultural production, and reduce food loss and waste in the coming decades. American agriculture has a storied success in this area, having increased food and fiber production by over 400 percent since 1930 on the same acres. This impressive boost in productivity was achieved through a host of mechanisms, including adoption of hybrid seeds, advances in genetics, improved fertilizers, biotechnology, precision agriculture, and improved data applications. The National Association of Wheat Growers (NAWG) appreciates USDA’s engagement in identifying priorities and opportunities as the USDA looks forward in increasing agricultural production by 40 percent, while cutting the environmental foot print by 50 percent, to help meet the needs of the global population in 2050.

NAWG is a federation of 20 state wheat grower associations that works to represent the needs and interests of wheat producers before Congress and federal agencies. Based in Washington, D.C., NAWG is grower-governed and grower-funded, and works in areas as diverse as federal farm policy, trade, environmental regulation, agricultural research, and sustainability. Our members feel it is important to provide comments on this Docket (USDA–2020–0003) as it impacts wheat research aimed at improving wheat productivity for our producers and the goals set forth in this initiative could impact future research funding priorities and regulatory frameworks.

NAWG believes there is room for improvement across the four research areas identified as genome design, digital and automation, prescriptive intervention, and systems-based farm

management. Across agriculture and in wheat production specifically, our industry partners and public researchers continue to make significant progress in these areas and are committed to meeting the challenge of equipping our growers with the tools necessary to feed a growing world in a responsible manner. However, of consequence to the long-term success and future of the American farmer, is making these tools affordable and cost-effective. Even prior to market and supply chain disruptions that resulted from COVID-19, our growers were experiencing continued low prices and ever-increasing input costs. One cross cutting theme in considering how we meet this challenge, is ensuring these technologies can be affordable to all farmers.

### **Genome Design—Utilization of genomics and precision breeding to explore, control, and improve traits of agriculturally important organisms.**

Wheat research is vital to wheat growers in the United States in order to improve productivity, reverse the declining acreage trend and help the U.S. wheat grower feed a growing global population in a sustainable way. From conventional breeding to biotechnology, the wheat industry believes these tools will lead to greater sustainability for the value chain and improve productivity.

With respect to technologies and our international partners, with approximately 50 percent of wheat produced in the United States being exported on an annual basis, NAWG urges U.S. government agencies to engage our trading partners to work toward consistent, science-based policies across countries to avoid trade disruptions. All foreign customers expect the continued oversight by USDA to ensure consistent food safety, which is fundamental to their confidence in purchases of U.S. wheat.

Additionally, the wheat industry recognizes the importance of new breeding technologies to farmers, customers, and consumers and supports plant breeding innovations that can address wheat production, yield and quality needs. Continued investments in plant breeding innovation and new technology in agriculture are vital for the continued success and sustainability of U.S. wheat production. NAWG is supportive of the development of wheat traits that benefits farmers, customers, and consumers. These benefits include, but are not limited to, incorporating traits related to climate stress, end-use quality, health, and disease-resistance.

One particular area that shows promise is work to accelerate breeding cycles using modern genomic technologies. USDA's National Institute of Food Agriculture (NIFA) supported this type of work through the Wheat Coordinate Agriculture Project (WheatCAP) consortium. An acceleration of breeding cycles using modern genomic technologies is also important to increase the resilience of U.S. wheat production in a changing environment. In the previous WheatCAP project, researchers sequenced the exomes of ~1300 wheat lines including 300 US wheat varieties from all market classes. This information has been integrated into The Triticeae Toolbox (T3) database and used to develop a detailed description of the haplotypes present in the U.S. wheat germplasm. This haplotype map allows the imputation of genomic information from a limited set of informative SNPs and will be used to develop cost-effective medium-density

SNP platforms. Looking forward, these SNPs platforms will be used for genomic selection in combination with rapid generation advance methods (*e.g.* DH and speed breeding) to accelerate breeding progress.

Looking forward, the community of wheat growers and researchers from across the nation have targeted wheat rusts, stem sawfly, hessian fly and bacterial leaf streak as the greatest future challenges to wheat production across the nation. Together, these diverse pests and pathogens affect every growing region and market class of wheat grown across the U.S. Wheat is grown, milled and delivered as a dietary staple in every state of the union. In December 2019, the National Wheat Improvement Committee adopted a resolution to pursue funding for a *Wheat Resiliency Initiative*, which seeks to build the capacity necessary to address these growing challenges to wheat production. Through this initiative, the community of U.S. wheat researchers will build a new genetic base in all wheat market classes for resiliency to wheat rusts, stem sawfly, hessian fly and bacterial leaf streak. The strength of local agricultural economies of every state will be sustained through these efforts. While research priorities are varied amongst the challenges, they encompass increased monitoring, enhanced breeding efforts to develop resistant varieties, identification of novel resistance traits, and identification of new sources of resistance through enhanced germplasm screening.

**Digital/Automation—Development of precise, accurate and field-based sensors to collect information in real time in order to visualize changing condition and respond automatically with interventions that reduce risk of loss and maximize productivity.**

As recent technologies like satellites used for precision agriculture, automated systems, and big data applications have taught us, innovations in the form of robotics, computing, and autonomous vehicles have and could further prove to create significant efficiencies in agriculture. However, access and affordability for growers is essential to maintain a robust domestic agriculture industry. It is important we continue leveraging such technological advancements whereby farmers can improve applications to crops, water management, and gain real-time insights to their crop. As these technologies develop, it is essential farmers' data and privacy are maintained and that the decision to share any information is left for all farmers to make on an individual basis. While the data provides farmers the ability to review detailed information on their field and target management systems, access to that data must be at the discretion of each farmer. By properly leveraging public-private partnerships in this space, USDA can help facilitate breakthrough technologies and create more economically useful data from existing sensory and mapping data.

**Prescriptive Intervention—Application and integration of data sciences, software tools, and systems modeling to enable advance analytics for managing the food and agricultural system.**

The USDA's Agriculture Research Service (ARS) continues to be a valuable source of information and research partner for the wheat community. ARS administered programs – like

the U.S. Wheat and Barley Scab Initiative (USWBSI) and National Predictive Modeling Tool Initiative (NPMTI) – will continue to serve a vital function in the coming years.

The USWBSI's mission is to enhance food safety and supply by reducing the impact of Fusarium Head Blight (FHB) – also called scab – on wheat and barley. The fungal pathogen that causes scab invades the developing wheat head shortly after flowering, effectively robbing the grower of yield. The fungus that causes scab, also produces toxins that can accumulate in infected wheat seeds. These toxins have serious implications for human and animal health should they enter the food and feed chain. Each year, scab-related losses to farmers, food processors, and brewers run in the hundreds of millions of dollars. Continued support in the coming years will be necessary to support the goals of the USWBSI to breed wheat varieties with FHB resistance, evaluate the best management practices that include the use of fungicides and crop rotation, deploy a disease forecasting system that provides growers with a tool to predict the risk of the disease within the growing season, and improve our understanding of the biology of the pathogen.

In 2019, Congress initiated funding for the NPMTI, which includes wheat among two other agronomically important crops to address the resulting threats of soil erosion, rainfall runoff and soil crusting, and improve the resilience of U.S. agriculture. The last two decades have demonstrated that the U.S. is vulnerable to invasive and resurgent pathogens spreading from distant states or countries or being triggered by unusual weather. The next two decades could be even more challenging as pathogens from South America and the tropics spread further North. A forecast system would provide growers actionable detection of pathogens before widespread damage occurs and provide public scientists data on changes in pathogen diversity necessary to breed and deploy protective host plant resistance traits. The overall goals of NPMTI are to ensure crop sustainability and crop quality; improve soil health; monitor pathogens and microbial diversity in the environment, including, but not limited to, crop residues, soils, and air; improve disease management to reduce yield losses and input costs; increase precision of in-season disease management tactics; and reduce the indiscriminate use of pesticides. For wheat, the objective is to develop and validate prediction modeling tools for disease affecting wheat and tools that support disease management decisions and help reduce yield stress. These projects are intended to create the next generation of wheat disease prediction models that can be tested through larger multi-state projects. Producers will make decisions based on regionally validated science-based information. These projects address specific knowledge gaps identified through interaction with wheat producers.

**Systems based Farm Management—Leveraging a systems approach in order to understand the nature of interactions among different elements of the food and agricultural system to increase overall efficiency, resilience, and sustainability of farm enterprises.**

Acres planted to wheat in the US have been on a steady decline due primarily to current economic conditions. Farmers are increasingly considering a systems-based farm approach and wheat plays an integral role in those systems by providing diversity, carbon capture, durable

residue, weed control, soil moisture retention, and water quality benefits. The USDA research portfolio in this area should be focused on providing additional information about the economic and environmental benefits of cropping systems and the contributions of individual crops like wheat as a component. As farmers continue to prioritize building resiliency through increased use of cropping systems, USDA technical and financial assistance in this area will be essential to achieve the desired goals of the Ag Innovation Agenda.

To address the decline in wheat acres while promoting long-term sustainability, the National Wheat Foundation (NWF) is investing in programs to help growers have a better understanding of the link between crop rotation, on-farm management practices and the yield and quality of the wheat crop harvested. NWF and the Soil Health Partnership are working together to demonstrate the soil health benefits of management practices and crop rotations that include wheat. Data will be collected to help assess the impact of different systems on productivity, profitability and grain quality. SHP and NWF are working with wheat farmers to set up research trials and demonstration sites.

Additionally, the NWF runs the National Wheat Yield Contest (NWYC), sharing information on wheat production that exemplifies quality wheat production, high yield, and appropriate management. One of the objectives of NWYC is to improve the overall quality and marketability of U.S. produced wheat, identify best management practices responsible for improvements in quality, and to educate and communicate to growers the importance of quality to customers. From our experience, farmers need credible sources of information to change practices and understand impacts on yield and quality. We believe that as the USDA works to improve deliverables to farmers, this approach can be emulated through existing USDA, extension and Natural Resources Conservation Service tools and materials.

Wheat growers see conservation as the heart of farming. Farmers want to leave the land in better condition than they found it which means including healthy soil practices into their operations. Data and analysis of wheat production in different production regions is important for growers to understand the impacts for their operations. The long-term research and analysis will guide farming operations into the future. USDA's role to help producers meet goals of increased productivity and reduced environmental impact includes supporting research, data analysis, education, outreach, financial and technical assistance, and retaining access to important crop protection tools and new technologies. As research and data demonstrate areas of increased productivity, profitability, and environmental improvement – doing more with less inputs in an economically and environmentally sustainable manner, USDA programs can accelerate adoption of new technology and practices. University extension, USDA conservation programs providing financial and technical assistance can share information and motivate adoption of these practices and technology. However, USDA programs must continue to innovate and update to reflect the changes that are ongoing in production agriculture to support the new scientific research and production practices. Additionally, USDA must devote resources to ensuring there is sufficient and trained staff at the local level that are providing on-the-ground assistance to farmers.

USDA data collection efforts are also important to support and demonstrate wheat growers' adoption of conservation practices and environmental improvement over time. NAWG is a member of Field to Market: The Alliance for Sustainable Agriculture and supports the ongoing availability and use of USDA data to support the *Environmental and Socioeconomic Indicators for Measuring Outcomes of On-Farm Agricultural Production in the United States* report and the development of sustainability metrics. Field to Market uses National Agricultural Statistics Service and the Agricultural Resource Management Survey and other USDA data to benchmark and analyze the changes in environmental impact over time for wheat production and other commodity crops. Maintaining these data sources over the coming years will continue to be important in demonstrating the agricultural production changes over time. Attached is additional information from Field to Market about the use of USDA, EPA, and DOE data.

Thank you for the opportunity to provide comments on the Agriculture Innovation Agenda.

Sincerely,

A handwritten signature in cursive script that reads "Dave Milligan". The signature is written in dark ink and is positioned above the printed name.

Dave Milligan

National Association of Wheat Growers