Transforming Agriculture, Perennially

Dr. Melissa R. Bailey
Agricultural Marketing Service, USDA
Room 2055-S, STOP 0201
1400 Independence Avenue SW
Washington, DC 20250-0201.

Submitted via regulations.gov

RE: U.S. Department of Agriculture, Agricultural Marketing Services "Notice of Request for Public Comment on Supply Chains for the Production of Agricultural Commodities and Food Products " 86 Federal Register 20652 (April 21, 2021) [Docket Number: AMS-TM-21-0034]

Dear Dr. Bailey,

Thank you for the opportunity to comment on the Supply Chains for the Production of Agricultural Commodities and Food Products put forward by the Agricultural Marketing Service.

The Land Institute is a nonprofit agricultural research organization based in Salina, KS, leading a long-term research initiative to develop the world's first perennial grain crops. The initial conceptual and scientific groundwork for this effort was laid in the 1980s and 1990s, and since the mid-2000s the pace of the research outputs has accelerated substantially. Over the last three years, the world's first two meaningful perennial grain crops have entered pilot-scale production: Kernza® perennial grain in the U.S. and perennial rice in southern China. The products of a Land Institute-led consortium and a Land Institute-sponsored project, respectively, these two crops are the first two meaningful perennial grain crops in the history of modern agriculture. The Land Institute's foundational efforts have given rise to the development of significant research programs at U.S. land grant institutions such as the University of Minnesota.

Kernza®, specifically, is the trademark name for the grain of intermediate wheatgrass (Thinopyrum intermedium). Today, this ecologically beneficial perennial grain has already made its way into the commercial supply chain in small niche markets in the US. Most recently, the KernzaCAP was funded as a USDA National Institute of Food and Agriculture Agriculture and Food Research Initiative - Sustainable Agricultural Systems Coordinated Agricultural Project (CAP) grant at $10 million for 5 years to support national-scale research and deployment of Kernza on the landscape and into the food system. The project has brought together the nation's existing Kernza network of 35+ researchers, supply chain stakeholders, and end users to work in a coordinated fashion for on-farm trials across the US, with extensive efforts across the supply chain from germplasm development to commercialization. We represent 65 licensed Kernza growers and 17 other supply chain stakeholders in this submission. We appreciate the opportunity to provide comment for Docket Number: AMS-TM-21-0034

Society is faced with the challenge of producing and equitably distributing enough food and fiber to support a growing and increasingly food insecure global population. This challenge is compounded by the fact that natural resources needed for agriculture are deteriorating and climate change is affecting yields

and production stability.[1,2] Much of the US, for example, is already experiencing yield declines and other climate related disruptions to agriculture.[3,4]

Stakeholders involved in the Kernza supply chain have adopted a philosophy of 'measured technology transfer' by which markets and policies are co-developed to support widespread adoption of the crop while it delivers ecosystems services benefits, including improved water quality, soil health, and carbon sequestration compared with traditional annual cropping systems. At the same time, this approach allows for improved economic opportunities for farmers through the coordination and formation of new markets and improved nutrition for consumers who have access to the high-protein, high-fiber, and high-antioxidant grain.

This type of innovative supply chain development is only possible with public investment during the early stages of development to allow for new and innovative governance structures to be developed that allow for thoughtful supply chain and market development that deliver robust and resilient social, economic, and environmental benefits to their stakeholders. The Kernza stakeholder group is embarking on developing a Commons-based framework for Kernza growers, supply chain partners, end users, and others to directly govern the growth and direction of Kernza in the marketplace through ownership structures such as Steward Ownership. This requires innovating farm-to-end use supply chains that distribute power equitably.

Decisive action by the federal government is now warranted to accelerate perennial grain crop research and development by increasing public funding and stimulating private investment. This can be achieved by concurrently leveraging existing policies and programs and developing new strategies to improve access to nutritious food, improve market opportunities, develop supply chain infrastructure, and ensure climate resilience through perennial grains adoption.

(i) The critical goods and materials underlying agricultural and food product supply chains

(iii) the manufacturing or other capabilities necessary to produce the materials identified in subsections (i) and (ii) of this section, including emerging capabilities.

The Kernza supply chain requires unique technologies to facilitate the processing of the grain, which is smaller than wheat or other annual grains. While plant breeding has resulted in gains in grain size (and continues to do so), Kernza currently requires custom dehulling technology for its small grain size. Supply chain stakeholders have invested in technology development that results in high quality, clean, dehulled grain, but the capability for this is housed in only three locations, two of which are in the Midwest. Two processors are small-mid scale and one is large scale, creating the risk of supply chain disruption. Despite the concentration of processors in the Midwest and Central Plains, much of the grain is grown in central Montana, creating transportation problems for some growers.

(v) the resilience and capacity of American manufacturing supply chains, including food processing (e.g., meat, poultry, and seafood processing) and distribution, and the industrial and agricultural base—whether civilian or defense—of the United States to support national, economic, and nutrition security, emergency preparedness, and the policy identified in section 1 of E.O. 14017, in the event any of the contingencies identified in subsection (iv) of this section occurs, including an assessment of:

(C) supply chains with a single point of failure, single or dual suppliers, or limited resilience, especially for subcontractors, as defined by section 44.101 of title 48, Code of Federal Regulations (Federal Acquisition Regulation). USDA is particularly interested in comments related to the role of market

concentration and consolidation in agricultural sectors and how it affects food system resilience, including potential system failures in the face of supply chain disruptions;

Concentration and consolidation in grain production has interfered with the development of regional grain crop production, despite the popularity of local foods since the 1990s. Growth in regional grain systems has been slow, owing to the large investment in physical infrastructure, crop knowledge, seed varieties, and storage and processing facilities required. Investment in these smaller, regional mills and processors is warranted because they are more agile and therefore prepared to both respond to disruptions in the supply chain, and take on new, climate-resilient agricultural solutions. As seen in many industries from technology to renewable energy, paradigm-shifting solutions in a rapidly changing world are often developed by entrepreneurs and start-ups rather than major, established firms. Similarly, solutions to boost resilience of agricultural supply chains in the face of climate change are likely to be developed at the local and regional level and warrant public investment.

For Kernza, specifically, few large commodity-scale processors are interested in adding new products, but regional stakeholders are willing to develop products and processes for new and innovative grain crops. For new perennial grain crops, the system that favors centralized grain supplies affects community resilience, because the existing, consolidated food system is fragile. Relying on the continuous flow of foods from single geographies to many areas is unwise as weather events, public health disasters, and climate change threaten supply chains. A more decentralized, perennial agricultural system, with grain and grain products in a variety of places, will be more resilient and robust, improving food security in the United States.

(D) the location and geographic distribution of key manufacturing and production assets, with any significant risks identified in subsection (iv) of this section posed by the assets' physical location or the distribution of these facilities. USDA is interested in comments on the risks associated with the current geographic distribution and diversification of where U.S. crops and livestock are grown/raised, processed, and marketed;

In the past three years, Kernza supply chains have drastically improved their resilience in that there are now three, rather than one, available processors who can mill the grain. However, there is still investment needed in order to improve supply chain redundancy and thus, resilience.

We recommend increased funding for supply chain development that has a regional focus, supporting infrastructure, education and staffing in regions that are proving to be important for Kernza grain production, which is increasingly widespread in the central and northern latitudes of the United States to improve grain distribution, avoid interruption, and improve distribution of packaging and shipping materials.

(F) the availability of substitutes or alternative sources for critical goods and materials and other essential goods and materials, as identified in subsections (i) and (ii) of this section. For example, USDA encourages commenters to consider agricultural products that could be domestically grown but are not practically available today for various reasons, and to describe whether and how such products (or their alternatives) could be made available through supply chain resilience efforts;

Kernza is a crop that is currently being grown domestically, but could be grown at a much larger scale if supply chains, including cleaning, dehulling, and milling were available in more regions. Shipping and transport quickly eat into the profitability of producers. With improved supply chain development, Kernza could replace dependence on imported crops with a climate-smart perennial grain crop.

(H) the need for research and development capacity to sustain leadership in the development of critical goods and materials and other essential goods and materials, as identified in subsections (i) and (ii) of this section. USDA is particularly interested in comments related to education, technical assistance, capacity building, organizational development, and support necessary for success in U.S. agriculture and food production, processing, distribution, and marketing, including how to best target support for socially disadvantaged producers and processors, tribal communities, small businesses, beginning farmers and ranchers, and other key stakeholder groups;

For new crops like Kernza, the USDA has provided funding through KernzaCAP to help improve our understanding of supply chain development, including market development and coordination and food science such as shelf stability and tempering. We are grateful for this funding and support from USDA.

However, a gap exists in the ability of Land Grant Universities and their partners to provide training in milling, handling, and storage for new grains due to a lack of funding and expertise. For example, only a single four-year program and two certificate programs that address industrial scale milling are available to interested and potential practitioners. These few programs are incapable of addressing the myriad regional and grain-specific concerns that a miller of Kernza might encounter such as small grain size, the need for dehulling and color sorting, and the removal of debris from dehulled grain.

(J) the risks posed by climate change to the availability, production, or transportation of critical goods and materials and other essential goods and materials, as identified in subsections (i) and (ii) of this section. Given the risks posed, USDA is particularly interested in the potential to retool, reengineer, or develop new capacity that would address the risks, improve efficiency, and have a climate benefit due to lower energy use, less food waste, or hasten capture of by-products and co-products (among other benefits).

The improvement of regional supply chain infrastructure would greatly reduce the amount of energy used due to transportation of Kernza perennial grain. The grain itself requires fewer inputs, including on-farm fuel consumption compared with annual grain crop production. Thus, development of supply chain infrastructure for Kernza is doubly beneficial with regards to climate change.

(vi) allied and partner actions, including whether United States allies and partners have also identified and prioritized the critical goods and materials and other essential goods and materials identified in subsections (i) and (ii) of this section, and possible avenues for international engagement;

The Kernza supply chain is currently solidified in the United States, however US growers and producers will likely see early markets for this perennial grain start to grow in the European Union. For these markets to succeed, the supply chain must be resilient to ensure supply is available to European businesses interested in using the grain. Already we have had conversations with numerous businesses interested in purchasing grain and we are pursuing Novel Food status in the EU with partner businesses. For these businesses to begin importing grain, we must be able to guarantee a resilient supply chain. US policies that bolster the development of robust supply chains and Novel Food applications for new perennial grain crops could support our ability to develop international markets.

(ix) specific policy recommendations important to transforming the food system and increasing reliance in the supply chain for the sector.

Because perennial grains are not defined by USDA as a commodity categorically, they do not have access to some state and private funds and programs that other local food systems benefit from (e.g. Specialty

Crop Block Grants, Double Up Food Bucks, inclusion in the Farmers to Families Food Box program). To address this gap and support further development of perennial grain systems, USDA could create a new crop sector category unique to perennial grains within the federal regulatory framework or include perennial grains as specialty crops.

New programs could also be created to improve the viability of food businesses that utilize perennial grains. For example, in partnership with the Internal Revenue Service, a new tax credit or other incentive could be created to encourage food businesses to purchase perennial grain raw or processed ingredients, such as Kernza.

(xi) proposals for improving the Government-wide effort to strengthen supply chains, including proposals for coordinating actions with ongoing efforts that could be considered duplicative of the work of E.O. 14017 or with existing Government mechanisms that could be used to implement E.O. 14017 in a more effective manner.

To support the adoption of perennial grain crops and their markets, the US government should create a major federal research and development funding initiative to support supply chain development for perennial grain crops. These crops provide myriad benefits compared with annual crops, including improved water quality, reduced nitrogen runoff, negative emissions, improved wildlife habitat, and high protein and fiber from a whole-grain source.

Access to financing, crop insurance, and other benefits extended to commodity crops, however, are lacking due to Kernza's newness in the marketplace. The AMS could provide financing mechanisms for new growers and processors, improved farm production tools (including access to appropriate planting,harvesting, milling, and dehulling equipment for Kernza grain), access to training, education, and technical assistance by making funds available for USDA staff (extension), growers, and non-governmental researchers.

Thank you again for your consideration of our efforts for perennial grain development, and the manner in which they tie directly into the Administration's climate-smart agriculture framework.

Sincerely,

Tessa Peters, Director of Crop Stewardship
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On behalf of 82 licensed Kernza® users