November 22, 2019

House Select Committee on the Climate Crisis
H2-359 Ford Building
Washington, D.C.
Via E-mail: ClimateCrisisRFI@mail.house.gov

RE: Request for Information

To whom it may concern:

Founded in 1883, ASTA's mission is to enhance the development and use of quality seed worldwide. ASTA's diverse membership consists of over 700 companies involved in seed production, distribution, plant breeding and related industries in North America. ASTA represents all varieties of seeds, including row crops, vegetables, grasses, forages, cereals and conservation seeds. Many ASTA members are research-intensive companies engaged in the discovery, development and marketing of seed varieties with enhanced agronomic and end-use quality characteristics.

The development and commercialization of innovative plant products is already playing a significant role in helping U.S. agriculture to reduce greenhouse gas emissions. Further crop improvements using new precision breeding methods, including gene editing, can hasten these positive trends. ASTA believes that for U.S. agriculture to maximize its potential to reduce greenhouse gas emissions and increase carbon sequestration, several things are needed:

1) Additional private and public sector investment in research
2) Rational government policies
3) Programs that incentivize farmers to adopt conservation practices.

Innovation is necessary to address climate change. Plant breeding innovation is based on an increased understanding of plant genomes, refinements in breeding techniques, and identification of new characteristics so farmers have a wide array of high quality, high producing seed varieties available when making planting choices. ASTA's members are committed to investing in research and development and delivering products to farmers that address constantly evolving and interlocking threats from changing weather, evolving diseases, and insect pressures. An increasingly warming climate means an increase in disease intensity, mutation rates, and the evolution of pests and diseases in areas where they formerly didn't exist. While tackling these threats, plant breeders are also developing higher-yielding crop varieties – from vegetables to row crops. These new plant varieties enable farmers to grow more food on less land. This sustainable intensification leaves land that would otherwise be used for farming available for wildflowers, animals and insects, and contributes to healthier soils.

Public funding for agriculture research is critical to innovation, but the Federal research budget at USDA has not kept pace. The U.S. agricultural research infrastructure housed at USDA and land-grant universities conducts long-term research that can't be undertaken by the private sector. These

discoveries, however, can be further developed for commercialization by large and small companies. In an era of climate change, agricultural research funded at the Federal level plays a critical role in serving as an early warning system for emerging threats from diseases and pests resulting from changing weather patterns.

An area of federal investment that is not well-known but critically important is the USDA Agricultural Research Service National Plant Germplasm System (NPGS), which collects and stores unique plant germplasm from around the world. Plant breeders use these plant materials to help bring forth new varieties that can resist pests, diseases and environmental stresses. Modest additional investments of $40 million in the NPGS would undoubtedly help researchers uncover new sources of climate solutions within the 584,000 samples of 15,000 plant species currently stored within the system.

Through innovative plant breeding methods, like gene editing, scientists can create new varieties in years instead of decades. This is important as we race against the clock to find solutions to address critical environmental challenges facing today's food production system. Plant breeding innovation holds tremendous promise for the future of our planet, our health and our food.

Researchers are using cutting-edge plant breeding methods to develop new water-efficient varieties of crops. With 70% of the world's freshwater used for agriculture, reducing the amount of water needed to grow food could have a significant environmental impact. For example, lettuce struggles in the heat. But researchers at UC Davis have found a wild lettuce that is capable of germinating at high temperatures in the Central Valley of California– a useful characteristic given warming global temperatures. Using gene editing, they have shown that it is possible to develop lettuce varieties that have the same heat tolerance as their wild relative with the same taste and nutritional value as the lettuce we enjoy today.

In 2007, the global carbon footprint of wasted food was 3.3 billion tons — about 7% of greenhouse gas emissions, according the U.N. Food and Agriculture Commission. Plant breeders are using gene editing to develop new crop varieties specifically designed to cut the amount of food wasted. By making a small change to a potato's DNA, for instance, researchers will be able to make it less likely to bruise and brown. The new characteristic could eliminate 1.5 billion pounds of wasted potatoes.

In Florida, the citrus industry has been devastated by citrus greening disease, and production has dramatically decreased by 75% in less than 15 years. Citrus growers need long-term, sustainable solutions. There is no question that plant breeding innovation holds the key. Using gene editing, researchers are working on developing citrus trees that are resistant, if not immune, to citrus greening, the bacteria that causes it, and the insect that spreads it. Innovation is enabling us to potentially do in years what would previously only have been possible in decades, or longer.

Salinity in irrigation water is a major factor limiting the production of rice, a globally significant food crop. Gene editing has been used to develop rice lines that can be grown using saline water, with no changes to any other genes and no deleterious changes on any other aspects of plant yield and performance. Work is also underway to address drought tolerance in rice as well. With decreasing land and water resources available to meet the future needs of humanity, such changes become critical for our future.

Scientists at the Salk Institute in San Diego are engineering crops to have bigger, deeper roots made of a natural waxy substance called suberin—found in cork and cantaloupe rinds—which is incredibly effective at capturing carbon and is resistant to decomposition. The roots would store CO2, and when

farmers harvest their crops in the fall, those deep-buried roots and the carbon they have sequestered would stay in the soil, potentially for hundreds of years.

In order to maximize the benefits of innovations in plant breeding, there needs to be a rational path to commercialization for new products that does not include unnecessary duplicative requirements or processes among the three U.S. regulatory agencies: the Department of Agriculture (USDA), Food and Drug Administration (FDA), and Environmental Protection Agency (EPA). Historically, under the Coordinated Framework for Regulation of Biotechnology, USDA, FDA and EPA have each served a specific function in ensuring the health of our food and the environment. ASTA encourages the U.S. government to ensure alignment in risk-based policies around plant products of newer breeding methods across these three federal agencies. Lack of consistency and science-based regulation among the agencies will stifle research investments and activity and prohibit widespread access for public sector scientists to these evolving tools and the array of critical benefits they hold for society now and in the future.

It's also important that the U.S. continues to take a leadership role in driving consistent plant breeding policies at the global level. Late last year, 13 countries, including the U.S., joined together in signing an International Statement on Agricultural Applications of Precision Biotechnology. This was a strong and encouraging show of support by governments around the world in recognition of plant breeding innovation, and the critical role that it will play in ensuring a more sustainable and secure global food production system.

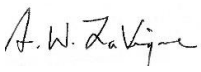
Cover crops are widely viewed as a means to improve soil health and resiliency and improve carbon sequestration. The 2017 Ag Census shows that overall cover crop acres grew from 10 million in 2012 to 15 million in 2017. This is well short of the potential for cover crops which should grow to 100 million acres. A great deal of work is needed to capitalize on the potential benefits of cover cropping. ASTA members are working to develop new varieties of cover crops that address a range of issues including improving water infiltration to address excessive moisture, nitrogen fixation to reduce run-off, weed suppression to reduce herbicide use and soil health. However currently, the cover crop market is insufficient to support large-scale research and development costs. More research is needed to develop and test varieties that can maximize environmental benefits including carbon sequestration and to identify optimal management strategies.

One concern that has been identified is that most of the current cover crop offerings don't provide income to farmers. They need to put time and labor into growing them but don't receive enough monetary benefit. A new cover crop currently under development called pennycress has an added economic benefit for farmers, because it produces oilseed. This can provide income to Midwestern farmers during the winter, when land is typically sitting empty. Pennycress and its oilseed can be used as a cover crop for farmland, as nutritious feed for animals, and as fuel for transportation.

There are other practical impediments that are preventing cover crops from being more widely adopted. Farmers may not be aware of the benefits of cover crops or may lack the technical know-how to incorporate them into their operations. There are several entities conducting education and training for farmers on cover crops. Additional funding is needed to scale these initiatives up. Minimizing bureaucratic hurdles for enrolling in USDA programs and multi-year contracts will further encourage producers to use beneficial conservation practices. Lastly, additional funding through the Farm Bill is needed to make sure that farmers have access to the programs that offset cover crop expenses

Plant breeding holds the key to addressing many of our collective global challenges – from health and nutrition, to hunger and climate change. The public and private sectors both have an important role to play. It's critical that we continue moving forward, through a robust investment in research and development, to drive forward the next generation of innovative solutions to meet the new and emerging challenges of tomorrow.

Sincerely,



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