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Chair Cleveland and Vice Chair Bartholomew and members of the commission, thank you for the opportunity to discuss China's agricultural policies and how they impact U.S. growers of major commodity crops.

Background

I am here representing the interests of the National Corn Growers Association representing nearly 40,000 dues-paying corn farmers nationwide and the interests of more than 300,000 growers who contribute through corn checkoff programs in their states. The National Corn Growers is a federation funded by growers voluntarily contributing a few cents per bushel to their respective states and national organizations. We speak on behalf of our growers from across the Corn and Cotton Belt guiding our policies and positions to accurately represent the interests of the U.S. grower.

Production Basics

U.S. corn growers produced over 14.6 billion bushels in 2017, representing 47.5 billion dollars in value to the economy. Corn is traditionally the largest area row crop in the United States with more than 90 million acres planted in 2017 at a yield of 176 bushels per acre on average[1] nationally. Annually, we export roughly two billion of those bushels[2] to international markets contributing to the positive trade surplus in the agricultural sector. Due to the nature of the commodity system, every market helps generate demand and support the price of corn. That support translates to higher crop value and greater positive economic impact. Thus, the U.S. grower values all functioning markets, domestic and international, to maintain farm profitability and positively impact the U.S. economy.

Efficiency and Sustainability

Beyond simple production and valuation numbers, U.S. growers constantly strive to increase farm efficiency and sustainability. Corn is a resource intense cropping system and ensuring that all inputs required to produce a crop are not wasted, we depend on new technological development. Just ten

[1] USDA, NASS, Crop Production 2017 Summary, Jan. 12, 2018

[2] USDA, ERS Feed Outlook, Dec. 14, 2017

years ago, an acre of corn was only producing 151 bushels per acre on average[3], 25 less than in 2017. Those additional 26 bushels are produced with very similar inputs to 2007 under increased weather variability. This trend has continued consistently for decades; efficiency has increased on the heels of consistent technology development and adoption. U.S. growers pride themselves as the most effective producers of corn globally, and any restriction to access to new technology threatens that. If we lose both the tools we have now and ones being developed, our use of natural resources, our arable land and our water becomes wasteful having a negative impact on the economy and environment. Our competitive advantage, and even our food security, is based on the consistent development of new tools for growers.

Technology adoption

To go further into the technological developments in corn production, we have to start with the 1936 Corn Belt drought commonly known as the Dust Bowl. It was during this event that the value of a new type of corn breeding, developed in 1918, known as double cross hybrid corn was realized[4]. While adoption started in the mid-1920s, the robustness of this new breeding technique came though during times of high stress. Growers saw the value understanding how better seed through new technology could allow them to produce more through varied weather conditions started widespread adoption. From 1937 to 1957, yield almost doubled, from around 28 bushels per acre, to 48 bushels[5].

By the mid-1950s new breeding techniques such as single cross hybrids had been developed and adoption of hybrid corn crossed over the 90 percent mark. Concurrently, understanding nutrient management and the use of fertilizers further increased yield gains. By the mid 1960s yields were hitting 80 bushels per acre and farm equipment and further refinements in soil management allowed for even greater gains to be realized. When the next wave of technology hit in the mid-1990s, we were producing more than 120 bushels an acre. This progress carries through today with drought tolerant corn to cope with climatic stresses in much of the corn belt through July and August.

Biotechnology Era

In the late 1970s and into the 80s, scientific understanding of genetics and how DNA can be modified in plant systems was growing at a rapid pace. There were tools discovered and invented that could extract genes from one plant and place them into another outside of the standard breeding methods used to date. This new method of gene transfer was developed into two main classes of new tools set to push agricultural efficiency and productivity into a new era. In 1995, herbicide tolerant soybeans were introduced into the market and in 1996, insect resistant corn was commercialized. In the following two decades more of these products have come to market allowing growers to use more benign herbicides and fewer insecticides to protect plants, resulting in more efficient use of fertilizers, greater adoption of

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[3] USDA, NASS, Crop Production 2007 Summary, Jan. 2008

[4] Richard Sutch , “The Impact of the 1936 Corn Belt Drought on American Farmers’ Adoption of Hybrid Corn”, May 2011 http://www.nber.org/books/libe10-1

[5] USDA, NASS, Historical Data

no-till or reduced till farming practices, and better protected root systems that have allowed plants to survive flooded and drought events like never before. Through the 2000s, agricultural productivity became relatively stable, higher producing and more efficient. This has contributed to greater food security, economic growth and a smaller environmental footprint for all producers. By 2000, more than 90 percent of soybeans planted were from biotechnology derived seed while by the mid 2000's corn reached the 90 percent adoption threshold. These tools were adopted as such an aggressive pace due how well the improved the economics of farming.

Global adoption of biotechnology derived crops has faced some challenges. The technology, while supported as safe by every major medical and scientific society, remains controversial to some populations. Lack of transparent outreach and education as the technology entered the market left some consumers skeptical. This resulted in political actions that have hindered access in markets like the European Union. Soon after herbicide tolerant soybeans were introduced and approved for import into China and EU, development of additional herbicide systems paused at the request of soybean growers. This pause was intended for the global community to catch up on the understanding and adoption of the technology and to minimize any disruption of U.S. access to foreign markets. This hesitancy resulted in one mode of weed control to dominate the market, in both corn and soy, with some negative consequences. Within the corn sector, many products came to market to protect against harmful insects during that timeframe. Corn is less sensitive to foreign demand, and our markets were primarily in East Asia, where acceptance was more progressive. While imperfect, synchronizing the regulatory approval across the corn markets has mostly been achievable allowing product development to continue. China had not been an issue through the mid-2000s as they were not importing corn despite the fact their regulatory system ran one to two years behind the rest of the Asian importers. This systemic delay would begin to cause market issues in the early 2010s that are still impacting growers today.

Weed and Insect Management

As we have outlined earlier, the need for new technology to increase sustainability, production and the economic health of farming operations is critical. New technology is also needed to ensure that current technology remains viable. In the case where one herbicide tolerant variety dominated the market, the growing population of weeds that became tolerant to the system began to impact farmers. Glyphosate resistance has had a negative impact on growers, primarily in the South, for more than a decade. Resistant weeds are harder to control, decrease productivity, introduce foreign material into grain and pose an ecological risk. Growers and researchers responded by implementing more aggressive weed management plans that take the more scientifically-sound approach of using multiple modes of action for weed control.

For insect control, resistance issues could develop if there are not a robust suite of products available for growers. Using multiple modes of action and changing products to control insect populations is critical for the functionality of current biotechnology derived products and their chemical supporting products. Growers depend and plan on new products to come to market to meet ever changing environmental pressures.

China and Regulatory Asynchrony

Since the introduction of biotech crops, the majority of importing countries have developed a regulatory review process that verifies the safety of the products for import or cultivation. As mentioned before, these systems can be synchronized so products can enter the market without disruption. This is due, in large part, to the robust resources around regulatory affairs deployed by the developers. As long as the approval of these products is scientifically based and occurs on a predictable timeline, the market can efficiently bring technology to commercialization. When these approval processes become less predictable and politically influenced, the resulting market disruptions can be costly to the entire agricultural value chain.

There are two regulatory regimes that have shown inconsistencies in timing and reviews. The first is the European Union, which consistently executes a transparent, scientifically based review and recommended approval for import. When these products need to then be voted on by the commission, delays occur. This "political hurdle" has created some market disruptions in the past, but there has traditionally been some diplomatic action that has resolved the asynchrony.

China, especially in recent years, has continued a trend toward delays, opacity in regulatory reviews and possible political or economic motivations for the delay of import of new products. The first issue is its regulatory regime requires a product be approved for cultivation in another country before the application process can even begin. Then, its process requires dossier review, importation of seed, in-country growth of the product, feeding studies and final reviews of those studies before import approval. This creates, approximately, a two-year delay from cultivation approval in the United States before a farmer could plant and deliver that product to an export market. With the fungible nature of commodity grains, seed companies are reluctant to introduce new products to the market until Chinese approval has been achieved. This denies farmers access to these products for years, limiting the tools they can use to combat weeds and insects. This, in turn, negatively impacts their production potential and efficiency, resulting in economic and environmental harm as well as risks to our national food security. The soybean market has primarily operated in the aforementioned fashion due to the significance of the Chinese market in relation to overall demand. For corn, it has been far more complex.

Corn Case Study – 2011-Present

The manner in which these issues impact the export market, U.S. growers, technology access and the rural economy can be demonstrated through the ongoing commercial disruption with one specific product. In 2011, a technology development company, Syngenta, brought a new product designed to protect corn against above ground insects to market. Market demand for an additional product, or mode of action, against these target pests was high, and performance of the product was positive. The product, Viptera, was widely launched to an estimated one-million-plus acres that growing season in what could be described as the last full commercial launch of a biotech product. Because of the events of 2011 and later, companies no longer launch new products so widely.

Prior to the commercial launch, Syngenta communicated with growers, processors and grain traders the timeline for when it would offer the product to market. The company was actively engaged in achieving regulatory approval in the major markets that import corn. Timelines were progressing as expected. The

two-year delay in China was not perceived as significant enough for growers to limit access to the technology as China was not purchasing much corn at that time. After the crop went into the ground that spring, China started showing interest in buying corn and the potential for a disruption became possible.

In reaction to China signing contracts to buy corn, some of the major exporters began notifying their purchase sites not to buy corn that contained the Viptera trait. This proved problematic for growers who had already planted Viptera and had also contracted with an elevator now not accepting the trait prior to this development. These growers could find themselves in breach of contract due to the shift in purchase policy. NCGA, along with other members of the value chain, worked through these short-term issues but, after the commercialization of the product, a baseline risk that Viptera could inadvertently end up in a shipment to China now existed. Syngenta remained committed to achieving import approval in China, but delays continued to occur. Therefore, that risk also continued to grow over the next few growing seasons.

China continued to purchase U.S. grain without Viptera approval through 2013, when it started testing shipments of corn, found the trait and subsequently rejected the shipments. The market impacts of these rejections and the reduced purchase of corn by China are the subject of a multi-billion-dollar lawsuit currently and are still debated in the industry today. What is not under debate is that these disruptions, and subsequent lawsuits, have had a chilling effect on grower access to technology. In the years following 2011, every new product that comes to market is initially is introduced only through a costly stewardship program and on extremely limited acreage in order to avoid any market disruptions. Every major seed provider has limited access to new products, resulting in decreased access to new technology and a weaker business plans for the development of new traits. Additionally, China's regulatory system continues to be inconsistent across all crops with this technology. Corn growers have been denied access to critical herbicide tolerant varieties to combat hard to control weeds, new insect products to battle below ground insects and have seen the pipeline for these new products slowed significantly. After years of continued data sharing and diplomacy, significant traits in corn, soybeans and other crops remain delayed in China's system while no other regimes have had similar issues.

Current Short Term Regression

The U.S. agricultural industry has sent countless envoys to China in attempts to clear the backlog of delays. Our trade associations have spent significant resources to ensure that international scientists reviewing the dossiers have the tools they need. This has expanded beyond the U.S.-China relationship as, globally, regulatory regimes are trending toward more open data sharing, universal dossier requirements and, hopefully, higher acceptance of reciprocity on approvals. In recent weeks, it has become clear that in China's Eighth Decree, it will be moving against this trend by bringing the technical studies for review inside its government. This elevates the lack of transparency of their system and increases the risk even further in bringing new products to market.

There is much speculation as to why China has decided to move in this direction. On its surface, it appears China simply wishes to exercise its right to sovereignty of its regulatory system and have tighter control over the material it tests. One could also reasonably surmise that this could be an attempt to foster domestic development of biotechnology derived or gene edited products by reducing the direct

regulatory burden on its own companies. Currently, there are groups in China trying to dissect what the impacts of the regulatory change will be. They will make a white paper available on this matter soon.

Our nation's agriculture industry leads the world as the most advanced, efficient production system. America's farmers take great pride in their ability to serve all markets. To maintain our nation's excellence, the U.S. need to continually develop and adopt cutting edge technology that meets the needs of evolving buyers. U.S. growers value international markets and hope to work with the Chinese government in modernizing all regulatory oversight for more effective trade. Unfortunately, current conditions restrict our progress, negatively impacting our entire value chain. America's corn farmers seek the continued support of the U.S. government in resolving these issues moving forward.

Thank you.