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The Tariff Conflict and Change in Value of Production of U.S. Field Crops

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On July 24, 2018, President Trump announced that the U.S. Department of Agriculture (USDA) would provide a $12 billion program of assistance to U.S. farms to address economic loss from his use of tariffs to impact trade policy (Bernstein, 2018). As reported, the program consists of (1) approximately $7-$8 billion in cash payments to corn, cotton, dairy, hogs, sorghum, soybeans, and wheat; (2) purchase of beef, fruits, legumes, milk, nuts, pork, and rice for distribution to food banks and nutrition programs; and (3) $200 million or so in additional spending on trade promotion programs. To provide perspective, this article examines the changes in quantity of exports and market value of production that coincide with the tariff conflict. Barley, corn, cotton, oats, rice, sorghum, soybeans, and wheat are examined. Data are from the monthly *World Agricultural Supply and Demand Estimates* (WASDE). Losses in market value of production are concentrated in corn and, especially, soybeans.

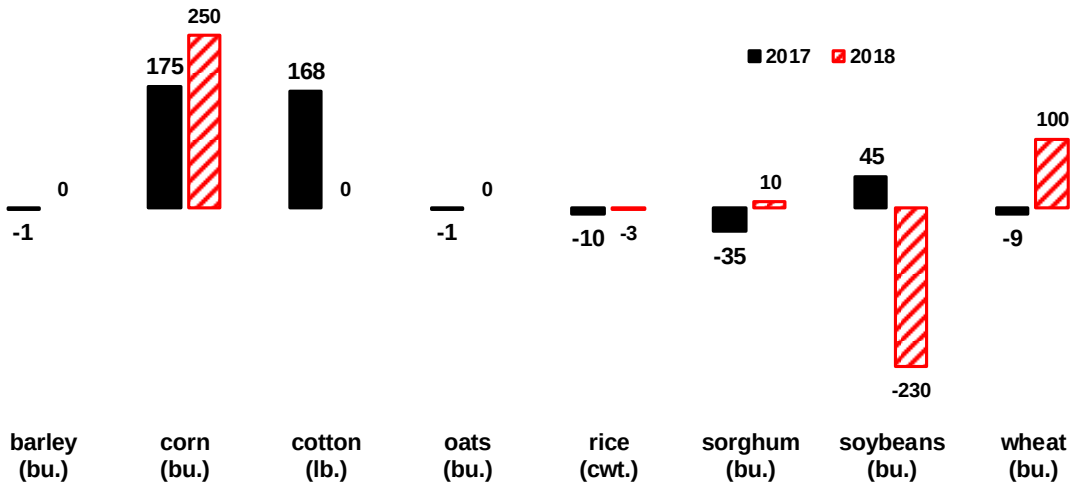
Export Quantity Changes

When assessing economic loss, it is important to have a good estimate of value that predates the start of economic loss. The May 11, 2018 WASDE predates the impact of the tariff conflict on crop prices. A reasonable start date for market impacts of the tariff conflict is May 29, 2018, when President Trump announced the U.S. would impose tariffs by June 15 (see *farmdoc daily*, July 13, 2018).. Prior to this date hope existed that an agreement could be reached to avoid the imposition of tariffs and counter-tariffs. The August 10, 2018 WASDE is the most recent issue.

Since tariffs are imposed on imports, an obvious measure of a tariff conflict's impact is the change in quantity of exports. Caution however is in order. Net impact of a "trade dance" needs to be considered. Using U.S. soybeans as an example, China has reduced imports from the U.S. as it outbids other countries for South American soybeans that are cheaper than U.S. soybeans with a 25% counter-tariff. South America has fewer soybeans to sell to Europe, which in turn buys more U.S. soybeans (see Good, 2018). One thus has to examine U.S. exports in total, not to an individual country, such as China.

Figure 1 presents the change in projected U.S. exports of the 8 crops for the 2017 and 2018 crop marketing years as reported in the May 2018 and August 2018 WASDEs. The marketing year begins on June 1 for barley, oats, and wheat; on August 1 for cotton and rice except for California rice whose marketing year begins on October 1; and on September 1 for corn, sorghum, and wheat. Thus, the 2017 crop marketing year had ended for barley, cotton, oats, wheat, and all rice types except California rice prior to the release of the August 2018 WASDE.

Figure 1. Change in U.S. exports (million units), 2017 and 2018 crops
August minus May 2018 WASDE



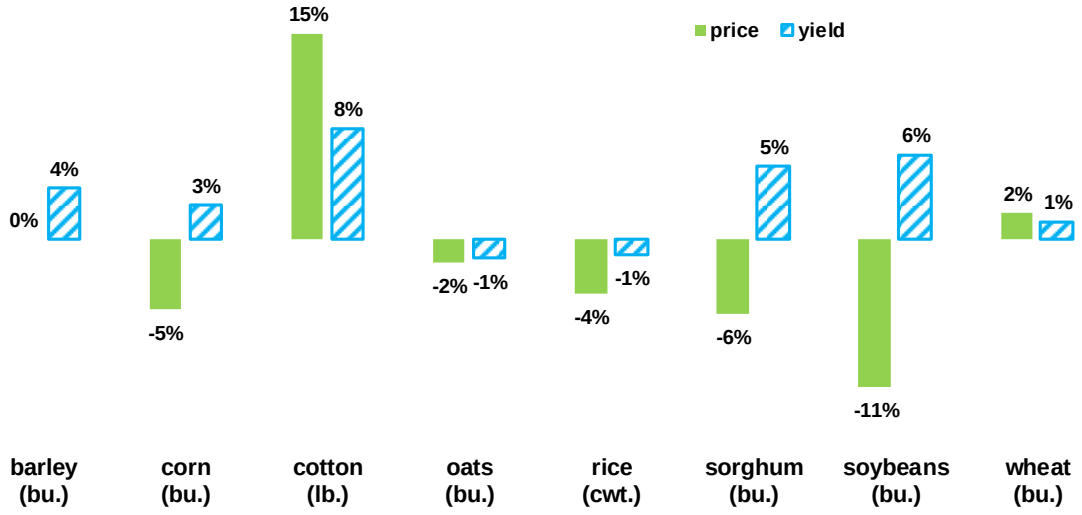
A mixed set of changes in exports emerges. For 7 crop and year combinations, exports were lower in the August 2018 WASDE than in the May 2018 WASDE. For 6 crop and year combinations, exports were higher in the August 2018 WASDE. No change occurred for 3 of the crop and year combinations. Sorghum had the largest decline in 2017 projected exports. Rice is the only crop with declines in both 2017 and 2018 projected exports. Soybeans has by far the largest projected decline in 2018 exports at 230 million bushels. However, projected soybean exports for the 2017 crop year has increased, with the main reason likely being a surge in Chinese imports to avoid its soybean counter-tariff.

Several factors impacted the changes in projected exports. They include tariffs as well as supply availability and demand momentum. Crop production problems occurred in a number of countries, including notable droughts in Argentina earlier this year and northern Europe this summer. No attempt is made to parse out the causes of the change in exports due to the simultaneous occurrence of many of the factors and complications from the "trade dance" discussed in the previous paragraph.

Price Changes

Even if export quantity does not decline, economic loss can result from tariffs. Everything else constant, U.S. prices will likely need to decline to encourage non-traditional importers to buy from the U.S. The midpoint price projection for the 2018 crop marketing year in the August 2018 WASDE are lower than in the May 2018 WASDE for corn, oats, rice, sorghum, and soybeans (see Figure 2). Soybeans has the largest decline, 11%. Price is the same for barley and higher for cotton and wheat.

Figure 2. Percent change in U.S. price and yield, 2018 crop August vs. May 2018 WASDE



Similar to export quantity, the storyline is complicated by changes in other factors. Projected yields were higher in August than May 2018 for all U.S. crops excluding oats and rice (see Figure 2). The U.S. dollar appreciated against many currencies, making U.S. exports more expensive. Production expectations were also changing for other countries. Australia, Europe, Russia, and Ukraine had enough growing season problems to reduce the likelihood of above trend-line 2018 production. Moreover, 2018 crop year production of corn and soybeans in Argentina and Brazil is expected to increase by 17% and 13%, respectively (see August 2018 WASDE).

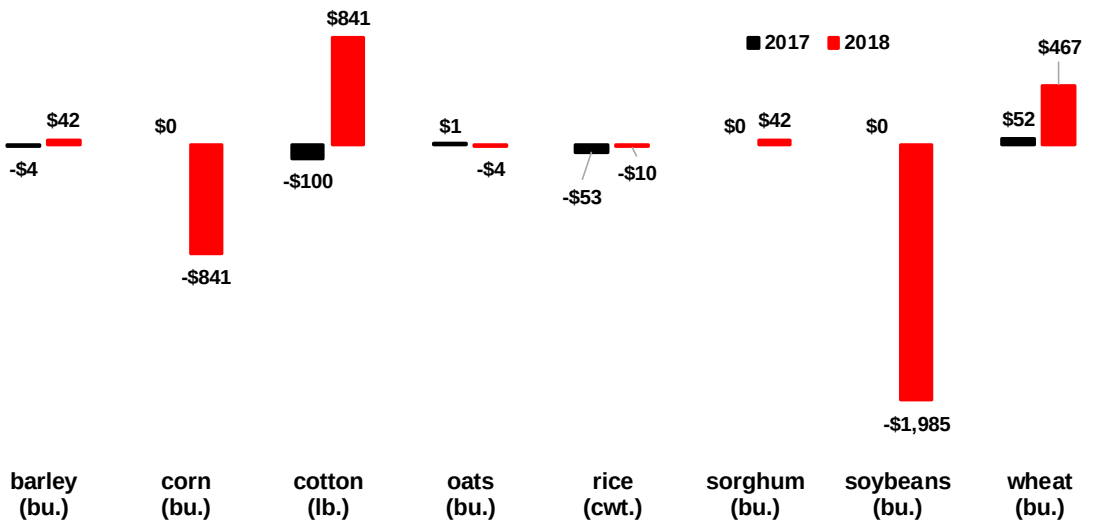
Revenue Changes

If crop prices had dropped all at once on May 29 or even over the next week, the decline could be attributed with high probability to the tariff announcement. Instead the decline has been persistent and cumulative (see *farmdoc daily*, July 13, 2018). And, other factors have impacted prices. It is thus desirable to parse out the economic loss caused by the tariffs. But this is difficult given the number of variables changing at the same time. Moreover, we have no observed historical period where a tariff conflict involving agricultural commodities can be examined and used as a guide for the current situation.

To provide a relative indicator of economic loss across the 8 crops since May 29, we calculate the change in value of U.S. production for the 2017 and 2018 crop years between the May and August 2018 WASDEs. Specifically, we multiple the midpoint price projection times the quantity of production as reported in the May 2018 WASDE. The same calculation is made using the price and production values reported in the August 2018 WASDE. The value of production calculated using the May 2018 WASDE is subtracted from the value of production calculated using the August 2018 WASDE. A positive value means the value of production was higher in August than May 2018 while a negative value means the value of production was lower in August than May 2018.

Soybeans have by far the largest decline in value of production (see Figure 3). This is unsurprising because it has the largest quantity of production subject to counter-tariffs (China). Corn has by far the second largest decline. This is also unsurprising. Corn and soybeans compete against each other over the largest number of U.S. acres. It is reasonable to expect acreage planted to corn to increase in 2019 as acres shift out of soybeans. Even though the acreage shift is for the 2019 crop, markets are expectational in nature. Future expected declines in prices are transmitted to earlier prices, including cash prices, via changes in expected future stocks.

Figure 3. Change in value of U.S. production, 2017 and 2018 crop
million $, August minus May 2018 WASDE



Summary Observations

- President Trump has announced a $12 billion package of assistance to U.S. farm commodities impacted by his decision to implement tariffs, especially with China.
- For the sake of policy fairness, it is desirable that the assistance be distributed in line with economic loss caused by the tariff conflict.
- Economic loss can result from either negative impacts on quantity of exports or prices.
- Unfortunately, both impacts are difficult to assess. Export quantity is impacted by trading partners shifting in response to the tariff. It is thus inappropriate to look at exports to individual countries. Unless price declines occur in a short time window after a tariff is announced, other factors affecting price begin to change. In short, data issues make it difficult to reliability assess the economic loss occurring from the trade conflict.
- To provide a rough indicator of loss for 8 crops in WASDE, we calculate the change in value of U.S. 2017 and 2018 production since the May 29, 2018 announcement by President Trump that the U.S. would impose tariffs on Chinese imports.
- Soybeans has by far the largest decline in crop value between the May 2018 and August 2018 WASDE reports. Corn has by far the second largest decline. These relative declines seem reasonable as soybeans has the largest quantity of production subject to counter-tariffs while corn is negatively impacted by the likely shift of soybean acres to corn in the 2019 crop year.
- This assessment does not provide estimates of the exact dollar value of economic loss from the tariff conflict due to the data issues discussed above. Nor does the assessment say that the other 6 crops have not been harmed. For example, it is likely that soybean acreage will also shift to the other 6 crops in 2019, putting downward pressure on their prices.
- As the tariff conflict lengthens, chances that it causes U.S. crop exports to decline grow, provided production in other large exporters is not below trend. Declines become even more likely if limiting factors are addressed, such as transportation and port infrastructure bottlenecks in South

America. Long run impacts are troubling. See Zulauf, Coppess, Paulson, and Schnitkey (*farmdoc daily*, July 31, 2018). for a discussion of the USSR grain embargo of 1980 and its relationship to the long-run time path of U.S. corn, soybean, and wheat exports.

- Reports indicate that the assistance is one-time. Assuming this is correct, long-term economic loss from the tariff conflict will be addressed through U.S. commodity programs. Crop insurance is unlikely to provide much assistance because its prices are reset each year. Issues that may thus arise in the Conference deliberations over the new farm bill are, "Will Congress feel the need to adjust commodity programs in light of the on-going tariff conflict?" and "If so, where does the money come from?"

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