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Key agricultural products in U.S.-China trade disputes: the proportional, the significant, and the substitutable

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Trade issues are boiling over between the United States and China. At the beginning of 2018, the United States imposed tariffs on imported solar panels and washing machines, and China responded by initiating an anti-dumping investigation into U.S. sorghum. On March 8th, President Trump announced steel and aluminum tariffs with China being one of the primary targets. The tariffs affect \$2.8 billion worth of Chinese imports. Within two weeks, China responded by announcing a list of 128 U.S. products that are the targets of retaliatory tariffs (The Chinese Ministry of Commerce, 2018), including notably pork products and ethanol. On April 3rd, the U.S. announced a potential list of tariffs for roughly 1,300 products, with a trade value of \$50 billion. The following day, China announced a potential list of tariffs for over 100 products, including soybeans, cotton, and

beef, with a rough trade value of \$50 billion. For both the U.S. and China, the proposed tariffs will take effect in a few weeks. In response, President Trump is now considering targeting \$100 billion of Chinese products for additional tariffs and the Chinese government has issued statements indicating they will respond to any actions in a proportional way.

The United States exports over \$24.1 billion worth of agricultural and related products to China every year (USDA FAS GATS), thus it is difficult to overestimate the importance of the trade relationship. Stakeholders in U.S. agriculture are nervously speculating China's next move, fearing that agricultural products will be the target for additional retaliatory measures. The most feared outcome is that the proposed trade barriers against U.S. soybeans, which currently account for 66 percent of the total U.S. agricultural exports to China (USDA FAS GATS), will be implemented. In this article, we hope to shed light on the key products that are or could be involved in any potential action.

China's three principles in agricultural trade retaliations

By reviewing China's previous agricultural trade retaliation cases, we find that China's approach to trade disputes can be summarized in three principles (Li, Zhang and Hart 2018):

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Handbook updates

For those of you subscribing to the handbook, the following updates are included.

Delayed and Prevented Planting Provisions – A1-57 (5 pages)

Historical County Farmland Values – C2-72 (10 pages)

Farmland Value Survey (Realtors Land Institute) – C2-75 (2 pages)

Please add these files to your handbook and remove the out-of-date material.

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Key agricultural products in U.S.-China trade disputes, continued from page 1

1. A financially proportional response
2. Targeting products that are substitutable
3. Targeting products that inflict economic and political cost.

In past disputes, China tended to target agricultural commodities with trade flows comparable to U.S. targets in order to send a clear message. At the same time, China has carefully avoided escalation by choosing targets with a smaller trade value. Furthermore, China has chosen commodities that are easily substitutable across products and across sources. This is partly made possible by the Chinese government's active pursuit of import diversification. One goal of retaliatory tariffs is to inflict economic loss on politically influential interest groups, in hopes that they will in turn put political pressure on the opposing government to ease the trade restrictions. China has chosen agricultural products in part because they see the affected U.S. agricultural producers as politically powerful.

Significance and substitutability of U.S. ag exports from the Chinese perspective

The data in Table 1 measure the importance and substitutability of top agricultural and related products that the United States currently exports to China. The *proportional response principle* suggests that China will choose commodities with proportional trade value. By the *substitutability principle*, China is more likely to choose commodities with lower import share in China's domestic consumption, lower U.S. share in China's total import demand, and lower China's share in total global import. So far five of the top ten U.S. agricultural exports to China have been involved in the trade disputes (sorghum (coarse grains), pork, soybeans, cotton, and wheat.)

The information in Table 1 provides a starting point to measure importance and substitutability. To more precisely measure importance, we must take into account the potential impacts on producers' profit margins, political importance (Are producers concentrated in important political districts?), and symbolic importance

Table 1. The importance and substitutability of top 10 U.S. agricultural product exports to China

	Importance to the U.S.		Substitutability for China			
	China-U.S. trade value in 2017 (\$ billion)	China's share in US exports	Import share in China's consumption	U.S. share in China's total import demand	China's share in global total imports	Top exporters other than the U.S.
Soybeans	12.36	57.3%	87.5%	41.7%	63.1%	Brazil (45%) Argentina (9.5%)
Forest Products	3.20	33.7%		13.0%	15.2%	Russia (18.8%) New Zealand (7.9%)
Fish Products	1.25	18.5%		13.5%	5.7%	Russia (19.6%) Canada (8.8%)
Cotton	0.98	16.7%	12.8%	33.1%	17.2%	Australia (32.5%) India (12.1%)
Hides & Skins	0.95	50.1%		13.6%	21.9%	Brazil (9.7%) Australia (7.6%)
Coarse Grains (ex. corn)	0.84	78.1%	62.4%	39.8%	31.8%	Australia (35.3%) Canada (8.5%)
Pork & Pork Products	0.66	10.2%	3.0%	11.9%	14.5%	Germany (18.2%) Spain (12.5%)
Dairy Products	0.58	10.7%	0.8% (Liquid) 33.0% (Powder)	5.1%	6.8%	New Zealand (33%) Netherlands (17.2%)
Wheat	0.35	5.7%	3.4%	25.6%	2.4%	Australia (40.4%) Canada (26.9%)
Hay	0.34	27.3%		67.9%	26.5%	Australia (14.0%) Canada (3.2%)

Source: USDA FAS GATS, UN Comtrade data, and authors' calculations.

Key agricultural products in U.S.-China trade disputes, continued from page 2

(Has the commodity received recent media attention or was the commodity recently highlighted in previous trade deals?). The substitutability information in this table is mainly concerned with substitution across source countries for Chinese imports. To better measure substitutability, we also have to consider substitution across products as well as nuances such as China's trade relationship with competing suppliers and the seasonality of products, etc.

Why soybeans were targeted?

The three principles outlined help shed light on China's recent moves. That China did not choose soybeans as the target of retaliation for the steel and aluminum tariff is not surprising in light of the "proportional response" principle: while China exports \$2.8 billion of steel and aluminum products to the United States, it imports more than \$12 billion in soybeans from the United States. But with the additional tariffs from the U.S. targeting \$50 billion of Chinese products, a retaliation using soybeans had to be on the table to reach a proportional response. In fact, since the total value of U.S. agricultural exports to China (including related products) is \$24.1 billion, most of the U.S. agricultural exports to China would be needed to achieve the \$50 billion response.

Currently, China relies on soybeans from Brazil and U.S. to supply about 90 percent of its soybean consumption, predominately for feed. The sheer volume of Chinese soybean imports makes it more difficult to displace than other products. However, if needed to, China could shift some significant share of imports to other countries such as Brazil and Argentina, produce more soybeans domestically, and look to replace soybeans with other products.

Reviewing the list of top 10 U.S. agricultural product exports to China, it becomes obvious that products outside of the top 10, unless combined, do not have large enough trade flows to be a major part of a proportional response. China is likely basing retaliations on the three principles

outlined in this article, exploring areas where there is a high share of Chinese imports in total U.S. exports, a low percentage of Chinese imports from the United States when compared to other countries, and a low percentage of Chinese imports in world exports.

Trade relations worldwide are in a period of flux right now. The trade-dependent U.S. agriculture system has been dragged into the trade drama before, and unfortunately is being targeted again. The data in Table 1 highlights why soybeans are the center of discussion when it comes to U.S.-China agricultural trade. The crop represents the majority of agricultural trade between the countries. The tariffs have already impacted agricultural markets, driving prices lower on the prospects of reduced trade flows. With the delayed implementation of the tariffs from the \$50 billion announcements on both sides, there is some time for trade negotiations to reduce and/or eliminate these tariffs. But both sides will need to be at the negotiating table.

For more information

China, People's Republic of, Ministry of Commerce (MOC). 2018. Announcement for the U.S. 232 measure on imported steel and aluminum and call for comments on China's response. (www.mofcom.gov.cn/article/au/ao/201803/20180302722670.shtml)

Li, M., W. Zhang, and C. Hart. 2018. What Can We Learn about U.S.-China Trade Disputes from China's Past Trade Retaliations? CARD Policy Briefs. March 2018, No. 18-PB 22. (www.card.iastate.edu/products/publications/pdf/18pb22.pdf)

Data sources

United States Department of Agriculture (USDA) Foreign Agricultural Service (FAS) Global Agricultural Trade System (GATS), (<https://apps.fas.usda.gov/gats/default.aspx>)

United Nations (UN) Comtrade Database, (<https://comtrade.un.org/data/>)

United States Census Bureau, USA Trade Online, (<https://usatrade.census.gov/>)



A look at long-term corn and soybean profitability

By Don Hofstrand, retired extension specialist, agdm@iastate.edu

The profitability of corn production over the years has been marked by spikes of high profitability interspersed with long periods of low and flat profitability. The income, costs, and net returns per acre for a hypothetical Iowa tenant corn farmer from the year 2000 to the present show this trend in Figure 1.

During periods of high profitability, there is often an optimism that we are entering a new era of farming where high levels of profitability will go on forever. The optimism is usually short-lived. In their enthusiasm, farmers over-produce, resulting in declining corn prices. This fulfills the old grain trader's proverb that "high prices lead to low prices".

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A look at long-term corn and soybean profitability, continued from page 3

Revenue and net returns are computed monthly and are based on the lowa average corn yield for each year and the monthly lowa average corn price. Costs reflect typical production costs incurred for each crop year. The marketing period for each crop begins September 1 and lasts until August 31 the following year.

However, when the brief periods of high profitability are over and the industry returns to more normal conditions, we find that the cost structure for corn production has increased. The cost of inputs like seed, fuel, fertilizer and farmland rent increased during the period of high profitability and are now resistant to declining to previous levels. So the new period of low profit margins are at a higher cost level. This trend is shown for corn production in Figures 1 and 2 for the tenant farmer.

Prices of all production inputs have increased since 2000, as shown in Figure 2, with some of them substantially higher. Although farmland rental rates increased the most in dollar terms, the increase in percentage terms was modest compared to most other production inputs. Seed corn has increased the most by percent over the time period, followed by diesel fuel. Fertilizer prices had a smaller increase.

The profitability of corn production varies greatly depending on how the farmland is controlled. The farmer may be both farm operator and landowner. Or the landowner may be an independent party with the farm operator paying rent for the land. Figure 3 shows the profitability of a farm operator who owns the farmland, without debt. Compare this to Figure 1 for the farmer who rents the farmland (tenant). Although the two operations are identical except for the difference in land ownership, the profitability levels are much different.

The landowner farmer received good profit margins over the entire time period while the tenant farmer had low or breakeven profit levels except for the two periods of high corn prices. This difference occurs because most of the profit comes from farmland ownership rather than profits generated as the farm operator.

This shows that the key to sustaining a long period of high profitability as a farm operator is not necessarily based on

Figure 1. Tenant farmer corn returns per acre

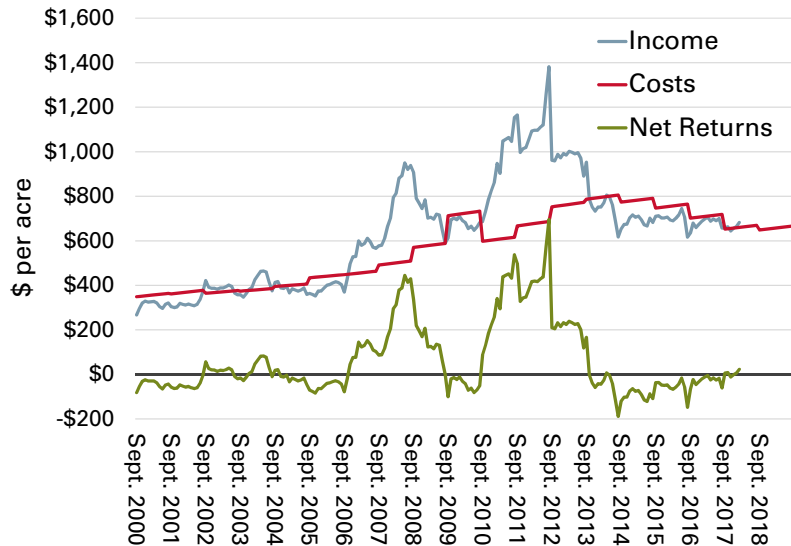
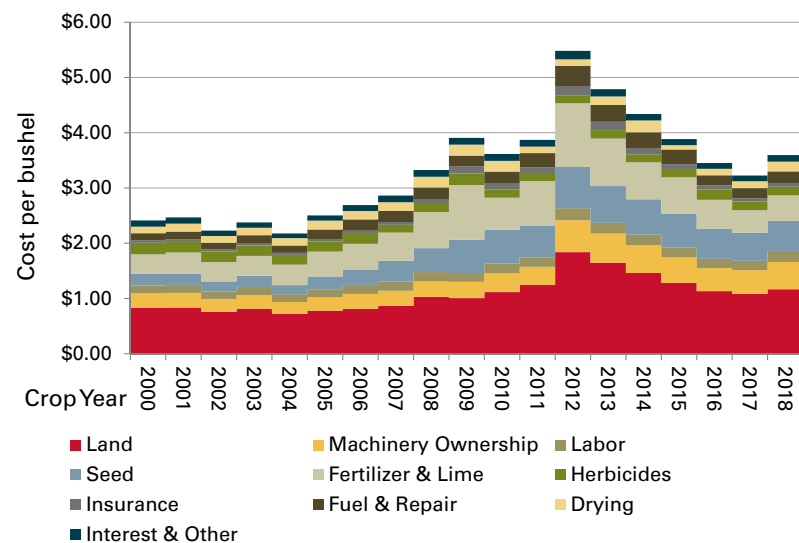


Figure 2. Tenant farmer corn costs of production per acre



the level of grain prices. Rather it is based on the demand for farmland by farmers. With a demand driven market for farmland, farmers bid up farmland rental rates until most of the profits have been transferred to the landowners. Even if the long-term price of corn increases to \$8.00 or \$10.00 per bushel, over time the profits from the higher prices will be bid into higher farmland rental rates. Of course this is after input suppliers take a bite out of the profit margin.

As long as there is a strong desire by farmers to expand their operations and farm machinery companies make ever bigger machinery, the demand for farmland will continue to outstrip supply, regardless of the price of corn. So,

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A look at long-term corn and soybean profitability, continued from page 4

over the long term, profit margins for farm operators will remain fairly constant and competitive except at times of short-term high profitability. Conversely, the farmland rental rates will move in parallel with long-term corn price levels and trends in corn yields. So, the long-term profitability of corn production will accrue to the landowner, not the farm operator.

The profitability patterns for soybeans in Figure 4 are similar to those for corn, two peaks of high profitability with long periods of low profitability.

These farmer profitability models are updated frequently so they show the current status of the long-term trends in the profitability of corn and soybean production, find updates on the Ag Decision Maker website, (www.extension.iastate.edu/agdm/info/outlook.html). These spreadsheet models are also interactive so a farmer can enter their own information to compute profitability. The wide variety of financial charts embedded in the spreadsheets provide the farmer with a thorough economic examination of the farm operation.

Figure 3. Landowner farmer corn returns per acre

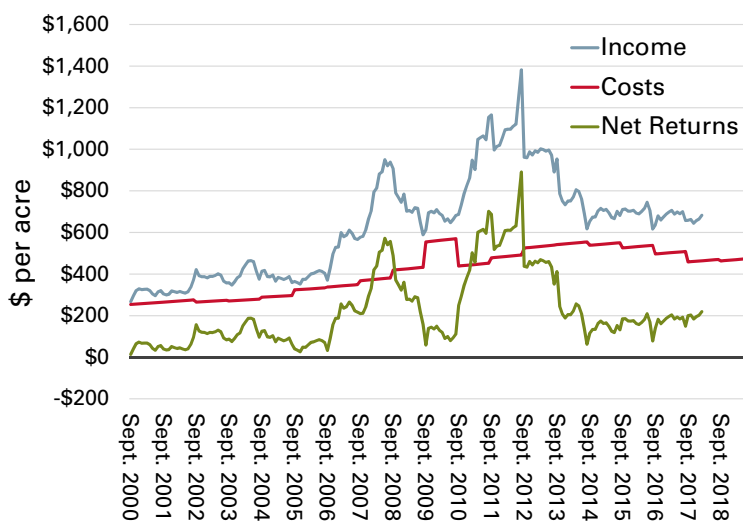
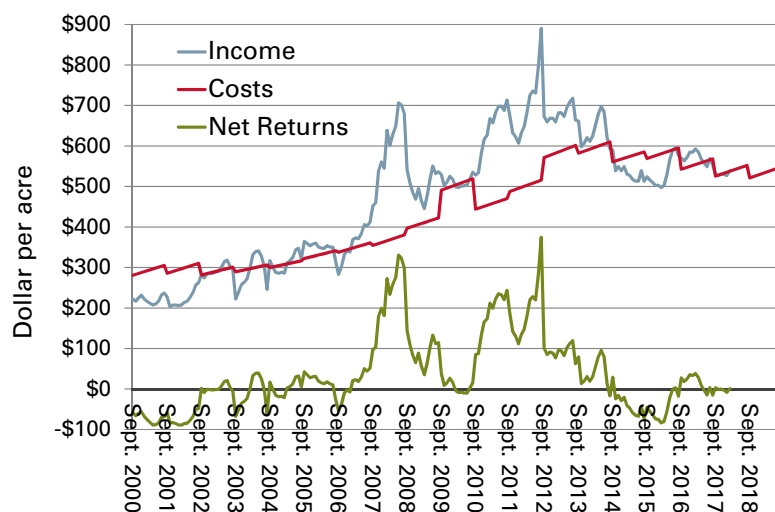


Figure 4. Tenant farmer soybean returns per acre



Initial, delayed, and prevented planting decisions

By Steve Johnson, extension farm management specialist, 515-957-5790, sdjohns@iastate.edu

The cool, wet early spring weather conditions mean some corn and soybean fields will be planted later than normal. It is a good time to revisit what options are available under multiple peril crop insurance coverage.

Insured acres that have already been planted but need to be replanted, may qualify for a special replanting insurance payment. This assumes that the acreage was planted after the beginning planting dates, which for Iowa are April 11 for corn and April 21 for soybeans. Replant payments are

based on the value of eight bushels of corn or three bushels of soybeans per acre, times their respective projected insurance prices determined in the month of February. For 2018, that is about \$32 per acre for corn and \$30 per acre for soybeans. To qualify for an indemnity payment under the replanted or prevented planting provisions, a minimum area of 20 acres or 20 percent of the insured unit must have suffered loss, whichever is smaller.

In Iowa, the crop insurance "late planting period" begins after the final planting date of May 31 for corn and June

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Initial, delayed, and prevented planting decisions, continued from page 5

15 for soybeans, but varies across the Corn Belt. The new “practical to replant periods” will run from June 1 through June 10 for corn and June 16 through June 25 for soybeans. Insureds might want to contact their crop insurance agent to make sure they understand the “practical to replant” provisions in their crop insurance policy since the ending dates have changed slightly for 2018.

Unplanted corn acres

Beginning June 1, producers in Iowa with unplanted corn acres have three choices:

1. Plant corn as soon as possible with a reduced guarantee.
2. Shift to soybeans with full insurance coverage.
3. Apply for prevented planting. Qualified acres are insured at 55 percent of their original guarantee for corn (60 percent for soybeans).

ISU Extension resources on crop insurance

More details can be found in the publication *File A1-57, Delayed and Prevented Planting Provisions*, (www.extension.iastate.edu/agdm/crops/html/a1-57.html), on the ISU Extension and Outreach Ag Decision Maker website. An electronic decision tool spreadsheet, (www.extension.iastate.edu/agdm/crops/xls/a1-57delayedplantingevaluator.xlsx), is also available to help analyze alternative actions. Insured producers should communicate with their crop insurance agent before making decisions about replanting or abandoning acres.

Establishing a cover crop is not required on prevented planting acres but is highly recommended. The rules set by USDA's Risk Management Agency (RMA), (www.rma.usda.gov/), which oversees the federal crop insurance program; do not require a cover crop. However, RMA encourages cover crops and you will receive a full-prevented planting payment — even if you choose not to

“Practical to replant periods are new for 2018 and run from June 1 through June 10 for corn and June 16 through June 25 for soybeans.”

- STEVE JOHNSON

plant a cover crop. The cover crop choices likely include oats, wheat, barley or millet.

Keep in mind if you plant any kind of cover crop and expect to receive a crop insurance payment for prevented planting, you cannot harvest or graze those acres until after November 1.

What if you leave unplanted or idle acreage?

Another option is to leave the unplanted or abandoned acreage idle (black dirt), but this is probably not the best agronomic choice. However, for some small areas of fields it might be the only choice. There may be some portions of fields in the river bottoms or low-lying areas where equipment cannot gain access because of flooded or continued wet conditions.

Expect most Iowa fields to be planted this spring, but some acres may require replanting. For crop insurance purposes, portions of fields may be in the delayed planting or a replant situation. Regardless, producers should keep good records of planting dates and acres for both crop insurance purposes and the Farm Service Agency (FSA) acreage certification. Write down the dates you planted that particular crop, the number of acres planted and reference the farm name or number.

Updates, continued from page 1

Internet Updates

The following Decision Tools have been updated on www.extension.iastate.edu/agdm.

Delayed and Prevented Planting Provisions – A1-57 (Decision Tool)

Economics of Cover Crops – A1-91 (Decision Tool)

Historic Farmland Value Survey (Iowa State University) – C2-70 (Decision Tool)

Current Profitability

The following tools have been updated on www.extension.iastate.edu/agdm/info/outlook.html.

Corn Profitability – A1-85 (Decision Tool)

Soybean Profitability – A1-86 (Decision Tool)

Iowa Cash Corn and Soybean Prices – A2-11

Season Average Price Calculator – A2-15

Ethanol Profitability – D1-10

Biodiesel Profitability – D1-15

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