Federal Food Policy Response to the COVID-19 Pandemic

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The COVID-19 pandemic has led to unprecedented spikes in unemployment as well as widespread school closures. As a result, COVID-19 has exacerbated already limited access to resources and sources of food for food insecure households in the United States. In order to better understand the extent to which COVID-19 has magnified issues of limited food access, this article summarizes trends in food insecurity, nutrition assistance program participation and the food policy responses that have been implemented in response to the COVID-19 pandemic.

In 2018, 11% of Americans reported experiencing some form of food insecurity (Tiehen 2020). Alarming, the estimated proportion of food insecure households has more than doubled in the aftermath of COVID-19. The weekly Household Pulse Survey (HPS), conducted by the US Census Bureau, indicates that 25.2% of respondents and 29.6% of respondents with children experienced conditions of food insecurity between April 23 and June 30, 2020 (Schanzenbach and Tomeh 2020).

In FY 2019, one in four US residents participated in one of USDA’s 15 nutrition assistance programs (Tiehen 2020). The largest of these programs, the Supplemental Nutrition Assistance Program (SNAP) provided benefits to 11% of Americans in FY 2019 (Tiehen 2020). In addition to SNAP, the National School Lunch Program (NSLP) and the School Breakfast Program (SBP) served over 5.6 billion free and reduced price meals to eligible school children. These three programs accounted for 85.5% of USDA’s food and nutrition assistance expenditures in FY 2019.

Nutrition assistance programs post-COVID-19

The widespread closure of schools in response to the COVID-19 pandemic has generated large changes in the number of meals served by the NSLP and the SBP. Despite emergency policy provisions, which allow for pickup/delivery of free and reduced price meals, USDA’s preliminary national data reveal a 32.3% decline in the number of free and reduced price meals served in March and April of 2020, relative to...
March and April of 2019 (USDA-FNS 2020a; 2020b).

Figure 1 illustrates the number of free and reduced price meals provided monthly via the NSLP and SBP from January 2018 through April 2020. Comparisons of March and April of 2020 in contrast to March and April of 2019 illustrate drastic reductions that are not common to other year-over-year comparisons.

In response to the challenges associated with providing NSLP and SBP meals to children when schools are closed, the Families First Coronavirus Response Act of 2020 provides states the opportunity to apply for Pandemic Electronic Benefit Transfer (P-EBT) benefits, which provide the value of foregone school meals on an EBT card (Gersten-Paal 2020). Similar to SNAP benefits, P-EBT benefits can be used to purchase food items at EBT authorized retailers. Unfortunately, due to unforeseen challenges in implementation, only 18 states were approved for P-EBT by the end of April; and, of those, it appears only five distributed P-EBT benefits by the end of April 2020. To date, all 50 states have been approved for P-EBT with approval dates ranging from early April to mid-August.

Preliminary USDA data indicate increased participation in the SNAP program following the onset of the COVID-19 pandemic. The number of participating households increased 9.1% in March and April 2020 relative to March and April 2019 (see figure 2). Furthermore, the average benefit amount also increased from roughly $120/person in February of 2020 to $140/person and $180/person in March and April of 2020, respectively (see figure 3).

The USDA has warned that SNAP recipient and benefit data are likely to include P-EBT benefits and participant counts for some states. However, only five states issued P-EBT benefits by the end of April 2020. Furthermore, we would expect increased enrollment and higher per person benefit amounts due to the changing economic climate and the policy provisions that have been enacted in response to the pandemic.

The Families First Coronavirus Response Act of 2020 provides several additional state options to SNAP policy. Most notably the emergency provisions include Emergency Allotment (EA) benefits, the widespread ability to use SNAP benefits for online grocery purchases, extended re-certification timelines, and the temporary waiver of work requirements for Able-Bodied Adults without Dependents (ABAWD).
EA benefits allow states to provide SNAP beneficiaries with the maximum SNAP benefit amount according to their household size, which effectively increases the household’s benefit amount by 30% of their net income (Shahin 2020a). According to the USDA, an additional $2 billion per month in SNAP benefits have been issued via EA benefits.

Prior to the onset of the pandemic, the use of SNAP benefits for purchasing groceries online was in pilot and was only available in select areas of the United States. In response to the pandemic, USDA rapidly expanded the ability to use SNAP benefits when purchasing groceries online. SNAP benefits can currently be used to purchase food online in 44 states and the District of Columbia (USDA-FNS 2020d). Interestingly, despite widespread adoption of the pilot, Amazon and Walmart remain the predominant retailers that accept SNAP as a form of payment when purchasing groceries online. Of the 44 states, only six have an additional participating retailer outside of Amazon and Walmart.

The Families First Coronavirus Response Act of 2020 also allows states to apply for extended SNAP-eligible certification periods for households with certifications set to expire in March, April, May and/or June of 2020. Effectively, this increases the length of time households can receive benefits without going through the re-certification process, which is generally required every six months. Furthermore, in some states, extended certification periods are available for households with certifications set to expire in July, August and September as well (Gersten-Paal 2020).

The suspension of ABAWD work requirements also increases the length of time that affected households can receive SNAP benefits. Under normal circumstances, ABAWDs can only collect SNAP benefits for three months over a three year period unless they are engaged in work activity (Shahin 2020b). Given the high unemployment rates, this time restriction was

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**Figure 3.** Average monthly Supplemental Nutrition Assistance Program benefits per person, 2018–2020.
*Source: USDA-FNS 2020c.*

**Figure 4.** Percent of US households reporting weekly food insecurity, May–July 2020.
China’s Recent Corn Price Hikes Beg the Question of Whether It Will Expand Its Tariff Rate Quota (TRQ) to Meet Growing Demand

Chinese policymakers, in light of the recent corn price hikes and growing demand, have been weighing the possibility of expanding its corn tariff rate quota (TRQ) to meet growing demand. While China’s corn price increased by about 30% from $6.59/bushel in January 2020 to $8.41/bushel in August 2020 (MARAC 2020), China’s corn imports also reached a record 5.59 million metric tons (MMT) as of August 2020 (GACC 2020). In addition, USDA weekly sales reports show China ordered 2.11 MMTs of corn sales for the 2019/20 marketing year and an additional 9.24 MMTs for the 2020/21 marketing year as of September 10, 2020. USDA daily export notices also show that China ordered 350,000 and 140,000 metric tons of corn on September 14 and 22, respectively (USDA 2020a). If we assume that China will import as much corn from non-US countries from September to December 2020 as it did from September to December 2019, and that the United States exports the 9.24 MMT in booked sales to China in 2020, then China’s total corn imports will reach 15.7 MMT in 2020.

In addition, on May 28, 2020, China began its annual corn auction from its state stockpile, and, as of the end of August, has almost sold all of the 58 MMTs of corn it put up for sale from the state reserve. The futures, trade, and auction markets are sending a clear signal that China’s corn supply is falling short of its demand, which is quite different from 2016, when China’s government adopted a series of policies to destock its more-than 200 MMTs of corn inventory (Wu and Zhang 2016).

In this article, we first review China’s various de-inventorying efforts since 2016 that led to the recent corn price hikes and then discuss uncertainties in China’s ethanol market driven by corn supply shortages. We also discuss the possibility of China expanding or even lifting its corn TRQ to meet growing demand.

China’s recent corn price hikes

Figure 1 shows China’s corn harvested area, production, consumption, and stocks from 2000 to 2019. China’s harvested area gradually increased from 23 million hectares in 2000 to a record 44.9 million hectares in 2015; and, ending inventory also increased from 35 MMT in 2005 to 223 MMT in 2016. In 2008, China started a corn stockpiling program, in which the government purchased corn from farmers at a price higher than the market level. This explains the growth in harvested area and inventory prior to 2016. The main purpose of the stockpiling program was to protect farmers’ income after China joined the WTO in 2001. However, while the stockpiling program incentivized corn production and increased corn inventory, the growing financial burden and inventory costs drove China to reduce the stockpiling purchase price in 2015 and, ultimately, end the program on March 27, 2016. In its place China adopted a regional corn price subsidy policy to subsidize farmers based on the planted acreage (Wu and Zhang 2016).

To further destock corn inventory, in 2016, China proposed a supply-side reform to reduce corn planted acreage by 3.33 million hectares and increase soybean planted acreage by 2.67 million hectares from 2016 to 2020. It accomplished this by reducing corn subsidies and increasing soybean subsidies. As a result, corn planted

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area has dwindled and corn production has remained flat since 2016. On the demand side, China subsidized corn transportation for processing plants in the south, and promoted the use of ethanol fuel, which uses corn as a primary feedstock. As a result, China’s corn consumption exceeded production for the first time in 2016 and the gap has widened since, eventually reaching 16 MMT in 2019.

Figure 2 shows that, since 2017, China’s growing corn prices are reflective of the widening gap between demand and supply. While the stockpiling program supported high corn prices from 2007 to 2015, prices gradually reduced when the program ended in 2015, with a gradual rebound since 2017 when corn consumption exceeded production. In addition, the gap between US and China corn prices has also grown over time, providing a lot of room for US corn exports to China (He et al. 2020).

**China’s uncertain ethanol market**

China’s ethanol production uses corn as the primary feedstock, and corn availability determines the ethanol industry’s prospects to a large extent. China’s ethanol production increased from 1.6 billion liters in 2006 to 4.3 billion liters in 2019, and the corn used in ethanol production increased from 3.2 MMT to 8.9 MMT from 2006 to 2019 (see figure 3). In September 2017, China announced a national mandate to use ethanol for 10% of its gasoline-type fuels by 2020 (Li et al. 2017); however, this mandate was suspended in December 2019 due to a lack of corn supplies, the trade war, and limited ethanol production capacity.

There are four ethanol-producing plants that could begin production in 2020 in addition to the 15 plants previously approved, increasing China’s ethanol production capacity from 5.38 billion liters in 2019 to 6.58 billion liters in 2020 (USDA 2020b). In addition, three cellulosic fuel ethanol projects with a total 558 million liter capacity are seeking investors in Jilin province (USDA 2020b).

To support ethanol demand, China gradually increased ethanol imports from 2010 to 2016, mainly from the United States. However, China increased the tariff on denatured ethanol to 30% on all trading partners in January 2017, up from the 5% tariff before 2017. In addition, China increased the tariff on

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2 The major corn producing areas are in the north while the major corn consuming areas are in the south.

3 In 2019, corn accounted for more than 80% of the feedstock of ethanol production (other feedstocks are wheat, sugarcane, and cassava).
As we outlined in the previous edition of Agricultural Policy Review, agriculture felt the sting of COVID-19—the pandemic lowered prices, forced significant shifts in supply chains, and disrupted markets. However, as the summer progressed, there was some recovery in prices, supply chains realigned with consumer demand, and the markets rebalanced to the new conditions under COVID-19.

To explore the extent of recovery in the US agricultural sector, we updated our previous comparison of USDA’s meat, corn, and soybean projections. Our previous comparison ran from January 2020 (before the first confirmed case of COVID-19 in the United States) to USDA’s June outlook. This update incorporates the changes from the most recent outlook, released in mid-October 2020, and reflects not only the impact of COVID-19, but also the progress on the US/China phase one trade deal and the natural disasters that struck the Midwest (drought and derecho).

In June, the livestock sectors took a step backward in terms of production. The January projections were for record or near-record production across the meat counter. Animal numbers increased on strong demand both domestically and internationally; however, between the closing of restaurants and schools and the COVID-19 outbreaks at processing facilities, the meat supply chain faced major challenges. The June revisions showed 2%–3% declines in meat production across the board. During the summer, however, processing plants made up some lost ground. The October update still shows declines in comparison to the January estimates, but for three of the four meats, the reductions are smaller than first thought. Beef production recovered over half of their projected declines, pork gained back 45% of projected decline, and broilers recaptured about 40%. Only the turkey industry has seen a continuation of the production shortfall, losing another half percentage point of projected production.

Price projection changes are mixed as well. The initial hit in prices from COVID-19 sent futures prices for cattle and hogs falling by 30%–40% in the depths of the outbreak. In June, USDA showed less recovery for hogs and broilers than for cattle and turkeys, with both hogs and broilers seeing prices 20% below the January estimates. The October update hasn’t changed the outlook that much, but there has been slight improvement across the board. Thus, for most of the livestock sector, the 2020 outlook continues to look like a double hit financially, with both production and price losses.

Due to the timing, the COVID-19 pandemic is impacting two crop years—the crop that was harvested last year and marketed throughout the spring and summer and the crop that is now being harvested and will be marketed this fall through the summer of 2021. For the 2019 corn crop, the main

### Table 1. USDA 2020 Meat Production Estimates

<table>
<thead>
<tr>
<th></th>
<th>January</th>
<th>June</th>
<th>October</th>
<th>January-June</th>
<th>January-October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef</td>
<td>27.44</td>
<td>26.67</td>
<td>27.14</td>
<td>-2.8%</td>
<td>-1.1%</td>
</tr>
<tr>
<td>Pork</td>
<td>28.65</td>
<td>27.77</td>
<td>28.16</td>
<td>-3.1%</td>
<td>-1.7%</td>
</tr>
<tr>
<td>Broiler</td>
<td>45.40</td>
<td>44.04</td>
<td>44.60</td>
<td>-3.0%</td>
<td>-1.8%</td>
</tr>
<tr>
<td>Turkey</td>
<td>5.91</td>
<td>5.77</td>
<td>5.74</td>
<td>-2.4%</td>
<td>-2.9%</td>
</tr>
</tbody>
</table>

Source: USDA-WAOB.

### Table 2. USDA 2020 Livestock Price Estimates

<table>
<thead>
<tr>
<th></th>
<th>January</th>
<th>June</th>
<th>October</th>
<th>January-June</th>
<th>January-October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>117.25</td>
<td>108.58</td>
<td>108.71</td>
<td>-7.4%</td>
<td>-7.3%</td>
</tr>
<tr>
<td>Hogs</td>
<td>54.50</td>
<td>42.38</td>
<td>43.25</td>
<td>-22.2%</td>
<td>-20.6%</td>
</tr>
<tr>
<td>Broiler</td>
<td>86.30</td>
<td>69.90</td>
<td>70.80</td>
<td>-19.0%</td>
<td>-18.0%</td>
</tr>
<tr>
<td>Turkey</td>
<td>92.30</td>
<td>104.90</td>
<td>106.10</td>
<td>13.7%</td>
<td>15.0%</td>
</tr>
</tbody>
</table>

Source: USDA-WAOB.
COVID-19 impact was the substantial decline in corn usage for ethanol. As the stay-at-home orders rippled through the country, gasoline and ethanol consumption dropped. By June, USDA had lowered its corn usage for ethanol by 475 million bushels. At that time, feed and residual usage of corn were expected to offset some of that loss. The October outlook revealed the ethanol pullback was deeper than first thought, but the feed and residual usage boost was larger than expected. Despite the ethanol usage losses, the season-average price estimate held fairly firm from June to October, coming in at $3.56/bushel, 7.5% below the January forecast.

For the 2020 corn crop, COVID-19 was just one of the many factors shaping the crop outlook. Compared to January, the basis for the June production estimate was early planting and good crop conditions, raising expectations for record production. USDA projected feed and residual usage and export demand to increase, but cut corn usage for ethanol by 250 million bushels, showing a more drawn-out recovery path for the fuel sector. With those market shifts, USDA lowered its season-average price by $.20/bushel, to $3.20. Since then, the drought and derecho have lowered expected corn production by one billion bushels, which implies smaller residual use (think harvest and storage losses), and the ethanol outlook has continued to slightly erode. The only corn usage category that has increased is exports, as China’s purchases have accelerated as harvest approaches. The combination of smaller supplies and increased exports have pushed prices higher, as USDA reversed direction and raised the season-average price estimate to $3.60/bushel, $.20 higher than the estimate in January and $.40 higher than June.

In June, the 2019 soybean crop was experiencing increased domestic demand, mainly for livestock feed, but declining international demand. The markets had been anticipating larger sales to China than were appearing on USDA reports, so price expectations had fallen, and USDA lowered its

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**Table 3. USDA 2019/20 Corn Estimates**

<table>
<thead>
<tr>
<th></th>
<th>January</th>
<th>June</th>
<th>October</th>
<th>January-June</th>
<th>January-October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (Billion bushels)</td>
<td>13.692</td>
<td>13.617</td>
<td>13.620</td>
<td>-0.5%</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Feed and residual</td>
<td>5.525</td>
<td>5.700</td>
<td>5.827</td>
<td>3.2%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Ethanol</td>
<td>5.375</td>
<td>4.900</td>
<td>4.852</td>
<td>-8.8%</td>
<td>-9.7%</td>
</tr>
<tr>
<td>Exports</td>
<td>1.775</td>
<td>1.775</td>
<td>1.778</td>
<td>0.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Price ($/bushel)</td>
<td>3.85</td>
<td>3.60</td>
<td>3.56</td>
<td>-6.5%</td>
<td>-7.5%</td>
</tr>
</tbody>
</table>

Source: USDA-WAOB.

**Table 4. USDA 2020/21 Corn Estimates**

<table>
<thead>
<tr>
<th></th>
<th>January</th>
<th>June</th>
<th>October</th>
<th>January-June</th>
<th>January-October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (Billion bushels)</td>
<td>15.545</td>
<td>15.995</td>
<td>14.722</td>
<td>2.9%</td>
<td>-5.3%</td>
</tr>
<tr>
<td>Feed and residual</td>
<td>5.775</td>
<td>6.050</td>
<td>5.775</td>
<td>4.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Ethanol</td>
<td>5.450</td>
<td>5.200</td>
<td>5.050</td>
<td>-4.6%</td>
<td>-7.3%</td>
</tr>
<tr>
<td>Exports</td>
<td>2.100</td>
<td>2.150</td>
<td>2.325</td>
<td>2.4%</td>
<td>10.7%</td>
</tr>
<tr>
<td>Price ($/bushel)</td>
<td>3.40</td>
<td>3.20</td>
<td>3.60</td>
<td>-5.9%</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

Source: USDA-WAOB.

**Table 5. USDA 2019/20 Soybean Estimates**

<table>
<thead>
<tr>
<th></th>
<th>January</th>
<th>June</th>
<th>October</th>
<th>January-June</th>
<th>January-October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (Billion bushels)</td>
<td>3.558</td>
<td>3.552</td>
<td>3.552</td>
<td>-0.2%</td>
<td>-0.2%</td>
</tr>
<tr>
<td>Crush</td>
<td>2.105</td>
<td>2.140</td>
<td>2.165</td>
<td>1.7%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Exports</td>
<td>1.775</td>
<td>1.650</td>
<td>1.676</td>
<td>-7.0%</td>
<td>-5.6%</td>
</tr>
<tr>
<td>Price ($/bushel)</td>
<td>9.00</td>
<td>8.50</td>
<td>8.57</td>
<td>-5.6%</td>
<td>-4.8%</td>
</tr>
</tbody>
</table>

Source: USDA-WAOB.

continues on page 11
The Impact of Flooding on China’s Agricultural Production and Food Security in 2020

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In June and July 2020, severe floods wreaked havoc in many provinces in southern China (Wong 2020). China’s Ministry of Emergency Management reported that rainfall during this year’s rain season reached 759.2 mm, which is more than twice the usual amount and the highest level since 1961.1 According to news from the State Council Information Office, as of August 13, 2020, the heavy rainfall has affected 27 provinces, 63 million people, and led to a direct loss of $26 billion, which is around 0.21% of China’s estimated 2020 GDP. Specifically, the floods affected 6.03 million hectares of cropland, with 1.14 million hectares of crop failure, mostly concentrated in the middle and lower reaches of the Yangtze River basin.2 To put the affected cropland into perspective, the total summer crop sown area in 2020 is 26.17 million hectares; therefore, the floods affected 23% of the planted area of summer crops and caused 4.3% crop failure. After severe flooding in the Yangtze River basin, heavy rain also hit Sichuan and Shandong in mid-August, causing more agricultural production loss and pushing food prices further.

The summer floods and their consequences have focused attention on the flood control role of the Three Gorges Dam (TGD) and increases in food prices and China’s food security. President Xi’s visit to crop fields in Jilin in late July, and the call to reduce food-waste in mid-August, exacerbated concerns over China’s food security (Cao 2020).

We first review the flood damage that impacted the seven provinces within the Yangtze River basin in June and July, and Sichuan and Shandong in August. We then analyze the potential impact on agricultural production and

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1 The plum rain, also called East Asian rainy season, is caused by precipitation along a persistent stationary front for nearly two months during the late spring and early summer in East Asia between mainland China, Taiwan, Korea, and Japan.

2 See more details at http://www.gov.cn./xinwen/2020-08/13/content_5534534.htm.
food prices.

From June 2 to July 31, China’s Central Meteorological Observatory issued heavy rain alerts for 52 days, among which 41 were consecutive. The seven most seriously affected provinces were Chongqing, Hubei, Hunan, Anhui, Jiangxi, Jiangsu, and Zhejiang, which are at the middle and lower reaches of the Yangtze River. The worst impacted regions were Jiangxi, Anhui, Hunan, and Hubei as shown in figure 1a. Some parts of Heilongjiang in northeast China also experienced heavy rain and were flooded as of July 31, 2020.

After severe flooding in the Yangtze River basin in June and July, heavy rain hit Sichuan and Shandong provinces in August, neither of which are along the Yangtze River, as shown in figure 1b. On August 18, 2020, Sichuan activated the highest level of flood control alert for the first time on record.

Most of the severe flooding was downstream of the TGD. The TGD is the world’s largest hydropower dam and stretches 2,335 meters across the Yangtze River (Deng 2020).3 The TGD has a hydropower generating capacity of 22,500 megawatts, which is more than three times the capacity of Grand Coulee Dam in the United States, and it improves river transportation conditions.4 One of TGD’s goals is to provide flood control to the middle and lower reaches of the Yangtze River.

### Table 1. Agricultural Production in China’s Most Flood-Affected Provinces, 2020

<table>
<thead>
<tr>
<th>Provinces affected in June and July</th>
<th>Grains</th>
<th>Rice</th>
<th>Wheat</th>
<th>Corn</th>
<th>Soybeans</th>
<th>Pork</th>
<th>Beef</th>
<th>Poultry</th>
<th>Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chongqing</td>
<td>1.2%</td>
<td>2.3%</td>
<td>0.1%</td>
<td>1.0%</td>
<td>1.2%</td>
<td>2.6%</td>
<td>1.1%</td>
<td>1.3%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Hubei</td>
<td>4.4%</td>
<td>9.3%</td>
<td>3.1%</td>
<td>1.3%</td>
<td>2.1%</td>
<td>5.7%</td>
<td>2.4%</td>
<td>5.5%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Hunan</td>
<td>4.7%</td>
<td>12.6%</td>
<td>0.1%</td>
<td>0.8%</td>
<td>1.7%</td>
<td>8.2%</td>
<td>2.8%</td>
<td>3.4%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Jiangxi</td>
<td>3.5%</td>
<td>9.9%</td>
<td>0.0%</td>
<td>0.1%</td>
<td>1.6%</td>
<td>4.9%</td>
<td>2.0%</td>
<td>1.5%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Anhui</td>
<td>6.4%</td>
<td>7.9%</td>
<td>12.2%</td>
<td>2.3%</td>
<td>6.1%</td>
<td>4.6%</td>
<td>1.4%</td>
<td>5.1%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>5.9%</td>
<td>9.2%</td>
<td>9.8%</td>
<td>1.2%</td>
<td>3.1%</td>
<td>3.4%</td>
<td>0.4%</td>
<td>5.7%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>0.9%</td>
<td>2.3%</td>
<td>0.3%</td>
<td>0.1%</td>
<td>1.3%</td>
<td>1.4%</td>
<td>0.2%</td>
<td>1.0%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provinces affected in August</th>
<th>Grains</th>
<th>Rice</th>
<th>Wheat</th>
<th>Corn</th>
<th>Soybeans</th>
<th>Pork</th>
<th>Beef</th>
<th>Poultry</th>
<th>Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sichuan</td>
<td>4.6%</td>
<td>7.0%</td>
<td>1.9%</td>
<td>4.1%</td>
<td>5.6%</td>
<td>8.3%</td>
<td>5.5%</td>
<td>4.8%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Shandong</td>
<td>8.5%</td>
<td>0.5%</td>
<td>18.8%</td>
<td>10.1%</td>
<td>2.7%</td>
<td>6.0%</td>
<td>11.0%</td>
<td>14.3%</td>
<td>11.3%</td>
</tr>
</tbody>
</table>

Total of affected provinces        | 40.1%  | 60.9%| 46.3% | 20.9%| 25.5%     | 45.2%| 26.8%| 42.5%   | 47.5%      |

Heilongjiang                       | 11.1%  | 12.7%| 0.3%  | 15.5%| 41.2%     | 3.2% | 6.8% | 3.5%    | 0.9%       |

Other provinces                   | 48.8%  | 26.5%| 53.5% | 63.6%| 33.3%     | 51.6%| 66.4%| 54.1%   | 51.6%      |

Total (Million tons)              | 610    | 212  | 131   | 257  | 7         | 43   | 7    | 31      | 721        |

Notes: Based on data from the China National Bureau of Statistics (2020). We use 2019 data for pork, beef, and vegetables, and 2018 data for grains, rice, wheat, corn, soybeans, poultry, and eggs.

### Table 2. Flood Area and Affected Cropland Area in Anhui, Jiangxi, Hunan, Hubei, Shandong, and Sichuan Provinces, 2020

<table>
<thead>
<tr>
<th></th>
<th>Flooded areas (Thousand hectares)</th>
<th>Share of flooded areas in each province (%)</th>
<th>Flooded cropland (Thousand hectares)</th>
<th>Share of flooded cropland in each province’s (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunan</td>
<td>350</td>
<td>1.6</td>
<td>101</td>
<td>1.7</td>
</tr>
<tr>
<td>Anhui</td>
<td>360</td>
<td>2.5</td>
<td>275</td>
<td>3.7</td>
</tr>
<tr>
<td>Hubei</td>
<td>376</td>
<td>2</td>
<td>217</td>
<td>3</td>
</tr>
<tr>
<td>Jiangxi</td>
<td>357</td>
<td>2.1</td>
<td>138</td>
<td>4</td>
</tr>
<tr>
<td>Shandong</td>
<td>-</td>
<td></td>
<td>21.98</td>
<td>0.3</td>
</tr>
<tr>
<td>Sichuan</td>
<td>-</td>
<td></td>
<td>165</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>1444</td>
<td></td>
<td>917.98</td>
<td></td>
</tr>
</tbody>
</table>


Agricultural production in affected provinces

The seriously affected provinces are crucial agricultural production regions. Table 1 shows that, in 2019, the nine provinces that experienced flood damage produced 40% of China’s grains, including 60.9% of its rice and 46.3% of its wheat. These provinces

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3 China’s Congress officially approved the TGD construction on April 3, 1992. The dam construction began on December 14, 1994, and was completed in 2012.

4 The Chongqing-Wuhan shipping capacity rose from 10 million to 100 million tons/year.
US ethanol to 45% on April 2, 2018, then increased the tariff to 70% on July 6, 2018. Beginning in March 2020, China started allowing ethanol buyers to seek Section 301 countermeasure exemptions for one year, effectively reducing China’s tariff on US ethanol to 45%. China resumed its US ethanol imports in 2020 and has imported 312,796 liters of US ethanol as of July 2020.

As of now, surging corn prices, the high tariffs China imposes on ethanol imports, and the difficulty in expanding ethanol production capacity makes the prospects for China’s ethanol fuel industry quite uncertain. Given the surplus of ethanol in the United States and the inability of China’s ethanol industry to expand, this would clearly be a good time for the United States and China to agree to reduce tariffs on imported ethanol.

Record corn imports and the possibility of expanding corn TRQ

With growing corn prices, China’s corn imports reached a record 5.59 MMT as of August 2020 (GACC 2020). The large corn demand is driven by efforts to rebuild its hog industry, which was hit by African swine fever in 2018. Other than corn, China’s imports of corn substitutes, including barley, sorghum, and oats, are also increasing, as shown in figure 4. This reflects China’s efforts to use corn substitutes as feeds for meat production.

As noted, China’s total corn imports could reach 15.7 MMT in 2020/21 marketing year. Therefore, China is very likely to exceed its corn TRQ of 7.2 MMT for the very first time since the corn TRQ system came into effect in 1996. Sources indicate that China is considering granting an additional 5 MMT of quota for 2020 (Agricensus 2020).

The fact that China will likely exceed its corn TRQ has significant implications for China’s further agricultural trade liberalization. The United States launched a trade dispute against China on its grain tariff rate quota in 2016. In April 2020, the WTO dispute panel, in which Australia, Brazil, India, and the EU reserved their rights, concluded that China’s administration of grain TRQs violated its obligation to administer them on a “transparent, predictable, and fair basis” (Nebehay 2020). The Office of the United States Trade Representative reported that it would continue to press China to comply with its WTO obligations. However, to date, China refuses to lift the TRQ for 2020, even though private importers have ordered more corn for delivery than the quota would allow.

China’s recent corn price hikes are caused by de-inventory efforts that started in 2016. China ended its stockpiling program that purchases corn from farmers at a price above the market level, which reduced planted acreage from 44.9 to 41.2 million hectares between 2016 and 2019. However, China’s corn demand has been rising, mainly due to ethanol production expansion, subsidies to corn processing industries, and the growing feed demand from hog production.

To meet the growing demand, China imported record corn and corn substitutes, and its corn imports will easily exceed the TRQ of 7.2 MMT this year. Given WTO’s decision on the trade dispute filed by the United States against China’s grain tariff rate quota in 2019, both the market and political pressure for China to expand its corn TRQ is strong. Whether China’s corn would follow the trade liberalization path of soybeans, for which the TRQ was lifted in 2014, is an important question worth further attention.

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4 Wheat, rice, corn, and soybeans are the four major crops in China. China opened the soybean market in 2004 and used TRQ for wheat, rice, and corn to protect its grain self-sufficiency.
season-average price estimate by $.50/bushel. The October update included an additional boost in domestic demand and captured a bit of the late surge in soybean exports. However, the 2019/20 season-average price remained well below the January estimate.

The 2020 soybean market has seen the largest recovery from COVID-19. Compared to the June forecast of lower production and lower prices, the October update revealed not only higher production and prices but also higher production and prices than the original forecast in January (pre-COVID-19). Despite the derecho and drought, USDA projects soybean production to exceed 4.25 billion bushels, over 50 million bushels more than the January estimate. Domestic crush estimates moved from 2.135 billion in January to 2.145 billion in June and 2.18 billion in October. Similarly, soybean export projections have jumped from 1.895 billion bushels in January to 2.200 billion bushels in October. Over the past couple of months, China has made a series of sizable purchases in the soybean market, providing the data behind this shift. The continuing build-up of soybean usage has been enough to offset the increasing supplies. While USDA’s June season-average price estimate was $.65 lower than the January estimate of $8.85/bushel, the October estimate has roared past the January number and signaled that 2020 will actually be a better year than 2019 was. The new crop soybean market has recovered from the earlier COVID-19 losses and is now exceeding pre-pandemic highs for both production and prices.

The data show that while the initial impacts from COVID-19 struck nearly all US agricultural markets at the same time, the recoveries from that shock vary heavily and are still ongoing. For most of the meats and corn, the recovery thus far is partial—meats have seen better production, but lower prices, and corn has experienced lower production, but better prices, mostly due to factors other than COVID-19. Soybeans are the only commodity where we could argue the recovery is complete, as production and prices exceed pre-COVID-19 forecasts. However, 2020 is still a very challenging year in agriculture, but, at least, it’s not quite as challenging as first envisioned.

### Table 6. USDA 2020/21 Soybean Estimates

<table>
<thead>
<tr>
<th></th>
<th>January</th>
<th>June</th>
<th>October</th>
<th>January–June</th>
<th>January–October</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production</strong></td>
<td>4.200</td>
<td>4.125</td>
<td>4.268</td>
<td>-1.8%</td>
<td>1.6%</td>
</tr>
<tr>
<td><strong>Crush</strong></td>
<td>2.135</td>
<td>2.145</td>
<td>2.180</td>
<td>0.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td><strong>Exports</strong></td>
<td>1.895</td>
<td>2.050</td>
<td>2.200</td>
<td>8.2%</td>
<td>16.1%</td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td>8.85</td>
<td>8.20</td>
<td>9.80</td>
<td>-7.3%</td>
<td>10.7%</td>
</tr>
</tbody>
</table>

Source: USDA-WAOB.

Suggested citation
also accounted for 45.2% of China’s pork production, 47.5% of vegetables, and 42.5% of poultry and eggs (NBSC 2020). Table 1 also reports the share of key agricultural commodities produced by Heilongjiang, a province that produces 41.2% of China’s soybeans and 15.5% of China’s corn. Heilongjiang was also partially flooded in July and severely affected by a typhoon in early September.

There are no official data on the amount of crop and livestock products affected by the floods, and province-level agricultural production data are not adequate for estimating crop and livestock as not all impacted provinces are flood damaged. Therefore, we use NASA’s Near Real-Time Global Flood Mapping as of July 31, 2020, and the cropland map from the Global Food Security-support Analysis Data @30m (GFSAD30) to identify the flooded cropland. Figure 2 shows China’s cropland map in 2015 and the 14-day composite flooded area as of July 31, 2020.

Table 2 presents flooded and affected cropland area in Anhui, Jiangxi, Hunan, and Hubei provinces, where the floods are most serious, using data from the August 2020 CropWatch Bulletin (IRSDE 2020). Based on the report, flooding affected 731,000 hectares in the four provinces, 54.2% of which was planted with rice. Data on flooded cropland in Shandong and Sichuan from online news show that 0.3% of

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*Figure 2. China’s 2015 cropland cover map and 14-day composite flooded area as of July 31, 2020.*

*Notes:* The area in red represents flooded area as of July 31, 2020. Areas shaded in green are croplands. We collect flood area data from NASA’s Near Real-Time (NRT) Global Flood Mapping at https://flood-map.modaps.eosdis.nasa.gov/index.php. Flood is determined as water observations falling outside normal water levels, and the floodwater displayed here denoted the existence of water detections over the previous 14 days. Cropland cover data come from the Global Food Security-support Analysis Data @30m (GFSAD30) (Thenkabail et al. 2016).

*Figure 3. China daily wholesaling price indexes of grains, meat, and vegetables, 5/2019–9/2020.*

*Source:* Source: Data come from the Ministry of Agriculture and Rural Affairs of China (2020). Price indexes in 2015 are 100.

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Flooding and Food Security in China

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cropland in Shandong and 2.5% of cropland in Sichuan were flooded in August. In addition, a severe typhoon passed through Heilongjiang in early September, affecting 669,300, 348,000, and 6,000 hectares of soybeans, rice, and wheat, respectively.

**Impact on food prices and imports**

The flooding in China could affect food prices directly via agricultural production and indirectly via food product transportation. Figure 3 presents the daily price indexes of grains, meat, and vegetables from May 1, 2019, to September 9, 2020. While the price index of grains was relatively stable, the price indexes of meat and vegetables increased gradually starting in early June, and remained stable through late August, which indicates that the floods damaged the production and transportation of meat and vegetables.

To differentiate the floods’ impacts on food prices in affected and unaffected provinces, figures 4a and 4b show daily wholesale prices of pork and cucumber, which are representative of meat and vegetables, in affected and unaffected provinces from January 1, 2020, to September 9, 2020.

Figures 4a and 4b show that China’s pork price is about three times the US pork price, while China’s cucumber price is about half of the US cucumber price. There is evidence that the floods increased the pork and cucumber prices in both affected and unaffected regions.

We empirically test if the food price impact is greater in affected than unaffected provinces by regressing the logarithm of province-level daily price on the dummy of June/July flood and August flood and a set of year-by-month and province fixed effects. The regression results show that, compared with unaffected provinces, the June/July floods increased the pork price by 5.8% and the August floods increased the pork price by 10.2% in affected provinces. For cucumber, we find the June/July floods increased the price by 33% while the August floods increased the price by 11%. All the estimates are statistically significant at the 1% level.

Overall, the price analysis shows that the floods increased pork and vegetable prices in both affected and unaffected regions, with a stronger...
Federal Food Policy during COVID-19

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suspended on April 1, and will remain suspended until the end of the month after COVID-19 is declared to no longer be a public health emergency (Shahin 2020b).

The COVID-19 pandemic and resulting economic fallout have placed a strain on the resources available to US households for buying and/or receiving food. Due to the economic downturn associated with the pandemic, and the emergency policy provisions put into place, we have seen growth in the number of SNAP participating households and the amount of benefits allotted to SNAP beneficiaries. However, there have been significant challenges in providing free and reduced price meals via the NSLP and the SBP to children at risk for food insecurity. Hopefully, P-EBT benefits have successfully increased food access for free and reduced price eligible children who did not receive school meals due to school closures.

Ultimately, we are left with the resounding question of whether or not the various forms of aid that have been extended to food insecure families have been enough? Figure 4 presents the projected percent of food-insecure US households, as surveyed by HPS, from May 5 to July 21, 2020. Unfortunately, the national average remained relatively flat throughout this period and has consistently hovered around 23%.

Surely the counterfactual trend in food insecurity would be much worse in the absence of the many policy changes that have been enacted in response to COVID-19, but the rates depicted by current data are still cause for major concern. Which policies have been the most effective and whether they have provided enough aid to families during these unprecedented times, largely, remains an open question.

References


Suggested citation

impact on affected regions.

China’s agricultural imports, in particular corn and pork, are surging (He et al. 2020). Figure 5 shows China’s monthly imports of key agricultural commodities from July 2018 to July 2020. Wheat and corn are the main drivers of China’s surging grain imports. In addition, China also has a strong demand for pork and beef products. We should note that China’s growing corn imports are primarily driven by its efforts to rebuild its hog inventory following a 2018 outbreak of African swine fever.

We find the floods caused about 4.3% of summer crop failure and that the floods increased meat and vegetable prices, but not grain prices. The food price impact is stronger in flood-impacted provinces. Specifically, compared with unaffected provinces, the June/July floods increased the pork price by 5.8% and the cucumber price by 33%, and the August floods increased the pork price by 10.2% and the cucumber price by 11% in affected provinces. While the floods caused about 4.3% of summer crop failure, China increased its grain imports this year, which could partially counteract its grain production loss from floods and dampen the floods’ negative impacts on its food security.

References

Suggested citation

[7] Vietnam imposed rice export restrictions from March 24 to April 30, 2020, to make sure it has enough domestic supply to cope with the COVID-19 outbreak.
China’s Corn Tariff Rate Quota
continued from page 10

References


Suggested citation

Also Available from CARD
ISU Researchers to Investigate Ag Supply Chain Resiliency
CARD economists Keri Jacobs, John Crespi, Chad Hart, Dermot Hayes, and Lee Schulz, with Iowa State Associate Professor of Supply Chain Management Bobby Martens, have received a USDA grant that will allow them to study how the COVID-19 pandemic has impacted the US food supply chain with the goal of finding short- and long-term solutions to increase resiliency against future disruptions. To help understand how and why COVID-19 disrupted the agricultural supply chain the ways it did, and to help prevent similar things from happening in the future, Jacobs will lead the study “Agricultural Supply Chain Disruptions: Costs and Mitigation Strategies to Enhance Resiliency of Ag Supply Chains,” which aims to enhance the resiliency of the beef, pork, dairy, and egg supply chains in the Midwest. The project was recently awarded a two-year, $458,000 National Institute of Food and Agriculture COVID-19 Rapid Response Program grant.

“We will, among other things, explore potential risk-mitigating strategies that firms in the beef, pork, egg, and dairy supply chains can use to reduce the impact of the current pandemic or future similar disruptions,” Jacobs said. “Fundamentally, this disruption made it very apparent where we can benefit from better information, and that is what our project aims to do—generate more informed and synthesized market information to aid supply chains.”

You can read more about the grant at https://bit.ly/3n5E71Y.