

# Impacts of the COVID-19 Pandemic on U.S. and Virginia Farms and Agribusinesses: May 2020



COLLEGE OF AGRICULTURE AND LIFE SCIENCES  
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This report addresses various aspects of the impact the COVID-19 pandemic has had on Virginia’s farm and agribusiness sector as of the beginning of May 2020. At the time of this writing (May 7, 2020) the Centers for Disease Control and Prevention reports approximately 1.2 million cases of coronavirus disease 2019 (COVID-19) in the United States, and over 70,000 deaths.<sup>1</sup> Virginia’s Department of Public Health reports over 21,000 cases and over 700 deaths.<sup>2</sup> 33.5 million people have filed for unemployment claims in the United States since mid-March.<sup>3</sup> The economic impacts of the disease have been felt much more broadly, as businesses have been forced to close or operate under different conditions, and as consumer spending power declines. As we look ahead, there is tremendous uncertainty about how the pandemic will end and how it will affect the global economy and our individual lives and livelihoods both in the short term and permanently.

This report includes a general economic outlook, by Matthew Holt; overviews of the pandemic’s disruptions to the U.S. food supply chain and several major agricultural industries in Virginia, by John Bovay; an overview of agricultural policy under the pandemic, by Jennifer Friedel; a detailed analysis of effects of the pandemic on Virginia grain markets, by Olga Isengildina Massa and Patrick Kayser; an overview of results of a national survey of the impacts of the pandemic on aquaculture producers, with a focus on Virginia’s main aquaculture products, by Jonathan van Senten; and analysis of the current state of affairs for U.S.-China agricultural trade, by Jason Grant, David Orden, and Mary Marchant.

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<sup>1</sup> <https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html>

<sup>2</sup> <https://www.vdh.virginia.gov/coronavirus/>

<sup>3</sup> <https://www.npr.org/sections/coronavirus-live-updates/2020/05/07/851320519/3-2-million-more-are-out-of-work-as-jobless-claims-keep-piling-up>

# General Economic Outlook

*Matthew Holt*

The general economic outlook for the United States is difficult to predict with any certainty, as much will depend on whether the spread of the virus has been contained and whether there might be a second or even third wave of infections to follow. Even so, in late April the Congressional Budget Office (CBO) updated its predictions for macroeconomic performance through the end of 2021, which we review here.

## **Basic Pandemic Assumptions:**

The CBO did an extensive survey of various agencies, entities, and experts to predict how long the pandemic might last and how long restrictive social distancing measures might remain in place. The assumptions built into their forecasts are that current restrictions will largely remain in place through June, although there will be some regional variations. The restrictions are expected to ease significantly by the third quarter. Even so, the assumption now is that some form of social distancing requirements will remain in place in many states and regions through the first half of 2021, perhaps as a result of a possible second wave of infections.

## **GDP Growth:**

The CBO is forecasting a nearly 12-percent decline in real (i.e., adjusted for inflation) GDP growth in the second quarter of 2020 relative to the first. While they are predicting a strong bounce back in GDP growth during the third quarter, they are also forecasting overall a 5.6-percent decline in real GDP for 2020. Looking ahead to 2021, the CBO sees a modest increase of 2.8 percent in real GDP. At this point, the CBO is thinking that increases in consumer spending in the second half of 2020 will offset declines in business investment.

## **Unemployment:**

The CBO predicts that the unemployment rate nationally during the second quarter of 2020 will likely be near or even above 14-percent. Even more revealing is the prediction that unemployment will remain above 10-percent for a sustained period, declining to about 9.5-percent by the end of 2021. To put these numbers into perspective, the United States has not experienced quarter-over-quarter sustained unemployment rates above 10-percent since the Great Depression. Certain sectors are likely to continue to suffer sustained levels of unemployment into the foreseeable future, including the airline, entertainment, and hospitality sectors.

**Interest Rates:**

As a result of the aggressive actions of the Federal Reserve and other central banks, short- and intermediate-term interest rates continue to hover near historic lows. The rate on the three-month Treasury note is expected to remain near zero, that is, around 0.1-percent for the foreseeable future. Likewise, the rate on the ten-year Treasury note is predicted to rise slightly from 0.6- to 0.7-percent by the end of 2021. The expectation is that the Federal Reserve will continue to take aggressive action to maintain historically low borrowing costs and these will be actions that will, in turn, override any upward pressure on interest rates due to the expansion in federal debt. Beyond that, investors seeking a secure place to hold cash are expected to continue to accept minimal rates on U.S. Treasury notes in exchange for reduced uncertainty. Overall, borrowing costs will remain low for at least the next eighteen months.

**Energy Prices:**

The U.S. Energy Information Administration, or EIA, has updated its forecasts for energy prices based on the COVID-19 pandemic. They predict the price of West Texas Intermediate (WTI) crude oil will rise gradually from the low \$20 per barrel range to slightly above \$30 per barrel by the end of 2020. Specifically, the EIA predicts the average price for WTI to be near \$30 per barrel for 2020 and slightly above \$40 per barrel for 2021. They have also forecasted the price of gasoline and diesel fuel to remain low and to follow a general pattern similar to crude oil. In particular, they expect the average pump price for gasoline to be \$1.86 per gallon in 2020 and \$2.16 per gallon in 2021. The comparable values for diesel fuel are, respectively, \$2.35 and \$2.51 per gallon. In general, these predictions reflect the slow but steady economic recovery that is expected to occur over the next 18 months.

**Summary of Overall Economic Outlook:**

The global economy, including the U.S. economy, is expected to hit bottom during the second quarter of 2020. Even so, the best guess now is that the recovery will be long and slow, lasting well into 2021 and beyond. While GDP growth will start to recover during the second half of 2020, we still expect that 2020 will register an overall decline in real GDP. As is nearly always the case, unemployment will be slower to come down as the recovery takes hold, as some employers will have discovered more efficient ways of conducting business during the pandemic. As well, certain sectors will lag even further behind in the recovery, including the airline, hospitality, and entertainment sectors, among others. Regarding these sectors, and in addition to relevant safety concerns, part of the lag in their recovery will also be driven by falling household incomes and continuing employment uncertainties. Borrowing costs are expected to remain low into the foreseeable future, although uncertainties surrounding the potential for growth will continue to be an overall drag on business investment. Energy prices are also expected to remain stubbornly low for the next several years, although more uncertainty is present in the energy sector due to the nature of unpredictable geopolitical concerns and the knock-on potential for unexpected supply disruptions.

The biggest unknown that continues to cloud future prospects for economic performance and recovery is the coronavirus itself. Will there be a second or possibly even a third wave of infection associated with this pandemic, as there was in 1918 (1919)? If so, and due possibly to mutations, might one of these waves be even more deadly and disruptive than the first, as was also the case in 1918? Only time will tell and only time will reveal the answers to these questions. What is certain now is that how these questions are answered in the coming months and years will determine the nature, timing, and speed of our economic recovery.

To learn more about the CBO forecasts, visit:

<https://www.cbo.gov/publication/56335>

To see the EIA predictions for energy, go to:

<https://www.eia.gov/outlooks/steo/report/prices.php>

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# The Pandemic and Disruptions to the U.S. Food Supply Chain

*John Bovay*

The global pandemic has destroyed many millions of jobs in the United States and millions of businesses have been forced to close temporarily or permanently (Tappe, 2020; Swanek, 2020; U.S. Small Business Administration, 2018). The U.S. Bureau of Economic Analysis (2020) reports that gross domestic product fell by 4.8 percent (at an annual rate; that is about 1.2 percent) in 2020Q1 (January to March).<sup>1</sup> The decline can be attributed entirely to a decrease in spending on health care (e.g., elective medical procedures), food services and accommodations (i.e., restaurants and hotels), and recreation services (including theaters, museums, and gambling). While spending on food services and accommodations fell by about \$18.3 billion over the quarter, spending on food and beverages purchased for off-premises consumption, such as at grocery stores, increased by about \$14.4 billion. Hence, total spending on food and accommodations declined by about \$3.9 billion, with a substantial portion of this decline coming from reduced spending on accommodations. Even if total spending on food declined by, say, \$2 billion over the quarter, total consumption of food may have remained approximately the same. To understand why, we need to think carefully about the food supply chain.

According to Rhodes et al. (2015) and various other sources, the agricultural supply chain can be characterized as flowing downstream from input suppliers to farm producers to food processors and wholesalers, and finally to retailers and consumers. While goods flow downstream, payments flow upstream, with consumers paying retailers paying wholesalers, and so on. Figure 1 presents a more complex and nuanced picture, showing that the supply chain is more of a web than a stream. Note that food sales directly from farms to consumers totaled only \$2.8 billion in 2017 (based on the 2017 USDA Census of Agriculture) while the total value of food purchases by consumers was over \$1.7 trillion (USDA ERS, 2020); direct sales from farms to consumers account for less than 0.2 percent of total food sales and so are not represented in Figure 1.

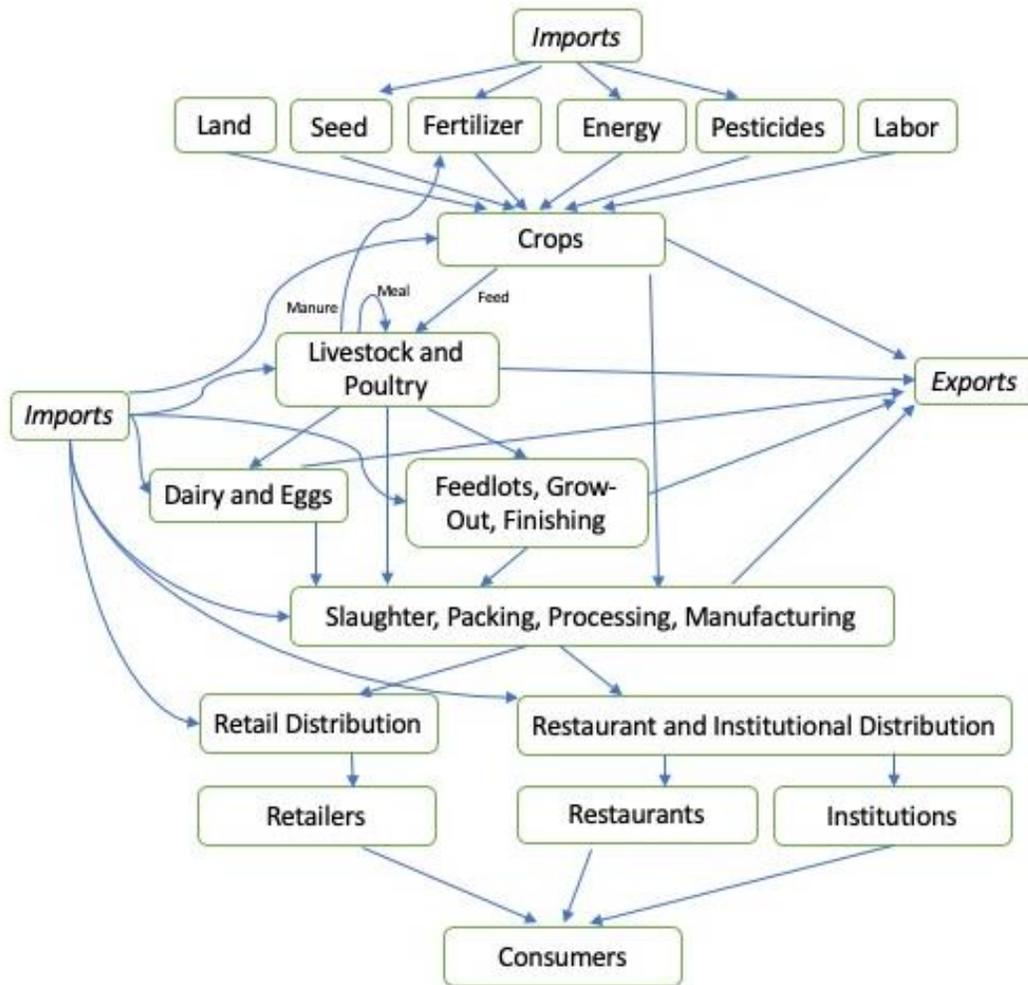
On average, for each transaction, payments must exceed costs to sellers if sellers are to remain in business. Thus, the value of consumer spending on food and other agricultural commodities greatly exceeds the value received by farm producers for raw agricultural commodities. Economists at the USDA Economic Research Service have estimated the share of consumers' food expenditures that ultimately reaches each stage of the supply chain (Canning, 2020). They find that in 2018, for each \$1 spent by consumers on food consumed at home, 23.6 cents went to the farmer and the remainder went to downstream marketers including processors, transportation companies, and retailers. For "food away from home", that is, food purchased at restaurants and similar establishments, the farm share was only 4.4 cents in 2018; meanwhile, the foodservice share was 75.6 cents. So, while spending on food services and accommodations fell by \$18.3 billion over 2020Q1, most of this revenue decline represented losses for restaurants and other foodservice establishments (not to mention hotels)—not losses for farmers. So, it appears that total consumer spending on food itself—not

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<sup>1</sup> For additional insight on the macroeconomic implications of the pandemic, see the article by Matthew Holt in this report.

including the premiums paid to restaurants to cover their staffing costs, rent, marketing, and other expenses—*actually rose* during 2020Q1. Then why has the pandemic caused so much suffering for farmers? Again, we need to think more about the details of the U.S. food supply chain.

Figure 1: A simplified schematic of the U.S. farm and food supply chain



Source: The author.

The pandemic is disrupting the U.S. farm and food supply chain in several ways. The most important of these is probably the way the pandemic has changed **consumer demand** for food at retailers and restaurants. To reiterate, because many restaurants are closed or operating in a limited capacity (such as delivery-only), and because many consumers are under stay-at-home orders or are staying at home voluntarily to protect themselves and others, demand for groceries is increasing dramatically while demand for restaurant food has shrunk correspondingly. This affects what types or varieties of food we consume. As discussed by AAEC’s Jonathan van Senten in another article in this report, restaurants are a major market for

U.S. aquaculture producers. If consumers wanted to buy significantly more seafood at grocery stores to replace what they could no longer buy at restaurants, it might be difficult. In particular, the wholesalers and distributors that supply grocery stores are not typically the same companies as those that supply restaurants. New contracts may need to be signed, and new transportation logistics determined. Retail packaging for consumer products is significantly different than restaurant packaging; what consumer wants to buy a 20-lb. box of salmon fillets? Another widely discussed example of a similar problem is how school closures have led to substantially reduced demand for milk; again, different distribution channels and different packaging requirements are an important consideration here. These are just two examples of the problems created by such a sudden shift in demand from restaurant to grocery distribution channels.

At the retail level, then, we see surging demand for certain products that may not typically be high-demand items at grocery stores as consumers shift away from restaurants and foodservice. Coupled with consumers' increasingly common tendencies to "stock up" on certain items, this has led to a widespread perception of food shortages. This in turn has led to what many have termed "panic buying" or "hoarding". This feedback loop---higher demand leading to (perceived or temporary) shortages, leading again to higher demand and more perceived or temporary shortages---may be a new normal, here to stay until the pandemic is over. Rest assured that our food supply is secure, with more than 1 million farms in the United States supplying our food and robust foreign trade. But the timing of our purchases, and the composition of our diets, may be temporarily changing. We might not be able to get exactly what we want at any moment, but the world's largest economy is not going to run out of food.

Moving upstream, the pandemic has caused disruption in **processing and wholesaling**, particularly in the market for meat. According to McCarthy and Danley (2020), 41 meat and poultry plants are closed, have closed, or had limited operations at some point between March 31 and May 1. The United Food and Commercial Workers International Union (2020) claims that plant closures have affected over 35,000 workers and reduced pork and beef slaughter capacity by 25 percent and 10 percent, respectively, as of April 28. These closures have been largely due to COVID-19 outbreaks at plants. What are the broader implications? Because of reduced plant capacity, retailers are not able to stock as much meat and poultry as they usually do. Coupling increased consumer demand for groceries with constrained supplies can lead to increased retail prices and has led consumers to perceive a shortage of meat and poultry. At the same time, since slaughterhouses are not buying as many live animals, the equilibrium prices for hogs and cattle have plummeted in recent weeks. There are now widespread reports of farmers euthanizing animals before they are mature enough to market, because they do not anticipate that the eventual price received for the animals will exceed the cost of raising the animals to maturity.

The shift in consumer demand (less demand for restaurant food and more demand for groceries) has implications for growers of **fruits and vegetables**, too. Since people are not going to grocery stores as often as before the pandemic, and since consumer incomes are lower, consumer demand for canned and frozen fruits and vegetables is surely much higher than it was two months ago (Ferrier and Zhen, 2017). Typically, farms grow many fruits and vegetables either for the fresh market or for processing, but not for both. For example, because tomatoes used in canning and sauces have certain desired attributes such as sugar content

and acidity, a fresh-market tomato grower would not be able to sell her tomatoes for processing when demand for fresh-market tomatoes is down. Similarly, some growers specialize in the restaurant market because restaurants and their distributors are willing to pay higher prices than consumers and retail distributors. Consider a high-end restaurant that uses a single strawberry to decorate each slice of cheesecake and sells each slice for \$9. Given the high markup prices charged, the buyer in charge of ordering produce for this restaurant is willing to pay a high price per strawberry and does so on a regular basis. If this restaurant and others like it shut down or experience a drastic slowdown in business, then the farmers who supply such restaurants may elect to destroy their berry crops—or not plant at all—rather than sell to other markets where prices are significantly lower.

The points discussed above are just a few examples of the ways that the pandemic is disrupting agricultural markets. And as these examples demonstrate, some of the market disruptions have created incentives for farmers to “**waste food**” by destroying crops, leaving crops unharvested, dumping milk, and euthanizing animals without marketing them. We have read worrying headlines about “Food Waste of the Pandemic” and “Trying to Prevent Massive Food Waste” (Yaffe-Bellany and Corkery, 2020; Corkery and Yaffe-Bellany, 2020). But if we take a step back and look at the data, we might find that these market disruptions are actually generating less “food waste” than before the pandemic. How is that possible?

As AAEC’s Wei Zhang and I report in a recent article (Bovay and Zhang, 2020), USDA Economic Research Service (2017) data indicates that at the national level, about 23% of dairy products purchased by consumers are thrown away without being eaten; 11% of dairy products bought by retailers are thrown away without being sold. Under normal circumstances, relatively little food is “lost” or “wasted” before it reaches the retailer: for dairy, the estimate is less than 1.5%. As a result of the pandemic and associated market disruptions, we are seeing relatively little shrink at retailers; presumably, consumers are becoming more conscientious about reducing food waste, too, in light of perceived scarcity. Farms are “wasting” more food than they normally do, to be sure. But in large part, “food waste” is merely shifting from retailers and consumers to the farm. When considering the dollar value paid for food at each stage of the supply chain, the economic losses associated with uneaten food are much greater at the downstream levels. (Remember that farmers’ share of the retail food dollar is only 23.6 cents and farmers’ share of the restaurant dollar is only 4.4 cents.) Thus, the total value of food “wasted” during the pandemic is likely to be lower than in normal times. All the outcry over farmers dumping milk is a distraction from the reality that in normal times, our country has a surplus of milk and many other agricultural commodities. We just need to replace our mental images of milk being dumped by farmers into fields with images of milk being dumped into drains or trash cans at elementary schools.

In conclusion, the pandemic has disrupted many stages of the agricultural supply chain, including by reducing the processing capacity of meat and poultry plants and by shifting consumers’ demand away from foodservice to grocery stores. There have been other disruptions, too, not discussed in this article, including changes in trade flows (see the article by AAEC’s Jason Grant, David Orden, and Mary Marchant in this report), negative shocks to consumers’ incomes, and concerns about labor availability on farms. Because the U.S. farm and food supply chain is such a complex web, and so tightly interlinked, disruptions at one stage of the chain can create issues for other stages of the chain. And while these disruptions may be difficult—even

catastrophic—for some individual businesses, the U.S. agricultural system should be resilient enough to deal with these supply chain disruptions and ensure that *real* food shortages do not occur.

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## References

- Bovay, John, and Wei Zhang. “A Century of Profligacy? The Measurement and Evolution of Food Waste.” Forthcoming, *Agricultural and Resource Economics Review*. <https://doi.org/10.1017/age.2019.16>.
- Canning, P. 2020. “Food Dollar Series.” USDA Economic Research Service. <https://www.ers.usda.gov/data-products/food-dollar-series/>.
- Corkery, M. and D. Yaffe-Bellany. 2020. “‘We Had to Do Something’: Trying to Prevent Massive Food Waste.” *The New York Times*, May 2, 2020. <https://www.nytimes.com/2020/05/02/business/coronavirus-food-waste-destroyed.html>.
- Ferrier, Peyton M., and Chen Zhen. 2017. “The Role of Income in Explaining the Shift from Preserved to Fresh Vegetable Purchases.” *Journal of Agricultural and Resource Economics* 42(3):329–349.
- Grant, Jason, David Orden, and Mary Marchant. 2020. “COVID-19 and Agricultural Exports under the U.S.-China Trade Deal.” Part of the report *Impacts of the COVID-19 Pandemic on U.S. and Virginia Farms and Agribusinesses: May 2020*, Department of Agricultural and Applied Economics, Virginia Tech.
- Holt, Matthew. 2020. “General Economic Outlook.” Part of the report *Impacts of the COVID-19 Pandemic on U.S. and Virginia Farms and Agribusinesses: May 2020*, Department of Agricultural and Applied Economics, Virginia Tech.
- McCarthy, R., and S. Danley. 2020. “Map: COVID-19 Meat Plant Closures.” <https://www.meatpoultry.com/articles/22993-covid-19-meat-plant-map>.
- Rhodes, V.J., J.L. Dauve, and J.L. Parcell. 2015. *The Agricultural Marketing System*, 7<sup>th</sup> edition. Holcomb Hathaway.
- Swanek, Thaddeus. 2020. “New Poll Says 1 in 4 Small Businesses on Brink of Permanent Closure.” U.S. Chamber of Commerce, April 3, 2020. <https://www.uschamber.com/series/above-the-fold/new-poll-says-1-4-small-businesses-brink-of-permanent-closure>.
- Tappe, Anneken. 2020. “30 million Americans have filed initial unemployment claims since mid-March.” *CNN Business*, April 30, 2020. <https://www.cnn.com/2020/04/30/economy/unemployment-benefits-coronavirus/index.html>.
- U.S. Bureau of Economic Analysis. 2020. Gross Domestic Product, First Quarter 2020 (Advance Estimate). <https://www.sba.gov/sites/default/files/advocacy/2018-Small-Business-Profiles-US.pdf>.
- U.S. Department of Agriculture, Economic Research Service. 2020. Food Expenditure Series. <https://www.ers.usda.gov/data-products/food-expenditure-series/>.
- U.S. Department of Agriculture, National Agricultural Statistics Service. 2017 Census of Agriculture. [https://www.nass.usda.gov/Publications/AgCensus/2017/index.php#full\\_report](https://www.nass.usda.gov/Publications/AgCensus/2017/index.php#full_report).
- U.S. Small Business Administration, Office of Advocacy. 2018 Small Business Profile. <https://www.sba.gov/sites/default/files/advocacy/2018-Small-Business-Profiles-US.pdf>.
- United Food and Commercial Workers International Union. 2020. “UFCW: Tyson and All Meatpacking Companies Must Act Immediately to Protect American Workers & Food Supply.” <http://www.ufcw.org/2020/04/28/protectfoodworkers/>.
- USDA Economic Research Service. 2017. Food Availability (Per Capita) Data System. Available at <https://www.ers.usda.gov/data-products/food-availability-per-capita-data-system/>. Updated July 26.

van Senten, Jonathan. 2020. "Impacts of COVID-19 on Virginia Aquaculture Businesses." Part of the report *Impacts of the COVID-19 Pandemic on U.S. and Virginia Farms and Agribusinesses: May 2020*, Department of Agricultural and Applied Economics, Virginia Tech.

Yaffe-Bellany, D., and M. Corkery. 2020. "Dumped Milk, Smashed Eggs, Plowed Vegetables: Food Waste of the Pandemic." *The New York Times*, April 11, 2020.

<https://www.nytimes.com/2020/04/11/business/coronavirus-destroying-food.html>.

# Impacts of the Pandemic on Virginia's Agricultural Industries

*John Bovay*

Virginia's agricultural industry is the largest in the state (VDACS, 2020a). Economic output from farms, food processors, and distributors was estimated at more than \$40 billion in 2015 (Rephann, 2017). Production agriculture employs more than 53,000 workers, and more than 70,000 are employed in processing and distribution of agricultural products (Rephann, 2017). Moreover, because individuals who are employed in agriculture spend money to support other sectors of the economy, the agricultural industry is estimated to create a total of \$70 billion in economic activity and more than 330,000 jobs (Rephann, 2017).

According to the U.S. Census of Agriculture, Virginia's farms sold \$3.96 billion worth of agricultural products in 2017. Poultry and eggs is the largest individual sector, with \$1.35 billion in farmgate sales in 2017; cattle and calves is second, with \$679 million in farmgate sales that year; collectively, feed grains and oilseeds (soybeans, corn, sorghum, and barley) are third, with \$469 million, and dairy is fourth, with \$336 million. The "green industry" (nurseries, greenhouses, floriculture, and sod) follows closely with \$328 million. In this article, I discuss impacts of the pandemic on these five industries and highlight impacts on two industry groups that are highly dependent on agritourism and selling their products directly to consumers: wineries and associated industries; and farmers' markets and their vendors.

As discussed in the preceding article, **livestock, poultry, and dairy markets** are experiencing tremendous turbulence as a result of the pandemic, with retail demand increasing and farm prices decreasing, driven by reduced capacity at slaughterhouses and reduced demand by institutional buyers. Moreover, depressed prices for livestock have led to reduced demand and reduced prices for feed, the state's third-largest sector. (See the article on feed markets by AAEC's Olga Isengildina Massa and Patrick Kayser in this report.)

Outbreaks of COVID-19 at meat and poultry slaughterhouses and processing plants have made national headlines. Research from CDC indicates that the crowded working conditions at such establishments promote the spread of COVID-19 (Dyal et al., 2020). Although reports indicate that some slaughterhouse or processing-plant workers in Virginia have contracted COVID-19, McCarthy and Danley (2020) report that (as of May 4) no Virginia plants have temporarily closed since the beginning of the pandemic. However, reductions in the available or utilized workforce have reduced plant capacities, which led one company in Delaware to order the euthanizing of two million chickens on its suppliers' farms in April (Hauser, 2020). It is possible that poultry farms in Virginia may face similar demands during the course of the pandemic, but members of the Virginia Poultry Federation are taking proactive measures to slow the spread of the virus at their facilities (Virginia Poultry Federation, 2020).

Although all meat and poultry plants in Virginia remain open, the national market situation is bleak. As of May 1, the USDA Agricultural Marketing Service (AMS, 2020a) reported that the national composite weighted average price for broilers and fryers was 60.63 cents/lb., compared with 100.46 cents/lb. one year earlier. Prices for hogs and cattle are also down significantly. Until the pandemic is contained, it may be

difficult for chicken slaughterhouses and processors to approach full capacity again. A recent Executive Order relates to the continued operation of meat and poultry processing plants, but it does not compel such plants to remain open and instead forces plants to prioritize federal contracts “necessary or appropriate to promote the national defense”. (See Hemel, 2020 for additional discussion.) So, this Executive Order should have much effect on meat and poultry markets.

Another effect of the pandemic has been the temporary closure of many livestock auction markets. On March 25, VDACS (2020b) issued guidance for livestock and other agricultural auctions, including recommendations that auction activities be conducted online or by telephone. At present, about half of the major feeder cattle livestock markets in Virginia were operating, although some additional markets had been closed previously.<sup>1</sup> This has forced farmers to hold onto their animals for longer, and incur additional feed expenses, or drive their animals longer distances to reach market; either option reduces farmers’ net revenues.

The dairy industry in Virginia has been under financial stress for several years. The pandemic has worsened the situation, as we are seeing reduced demand for milk and dairy products, largely through reduced demand by schools. Farm dairy prices have dropped as a result. The State Milk Commission sets monthly prices for skim and butterfat for each of three markets (Eastern, Western, and Southwestern). From March to May, the price for skim in each region has dropped by 10-11%; the price for butterfat has dropped by 34-35% (VDACS, 2020c). The weighted average Class I price has declined by 18% over these two months. At the time of this writing, the May price for Class II milk had not yet been announced, but the April Class II price was 17% lower than the March Class II price. The USDA ERS national all-milk price forecast for 2020, last updated on April 15, has been reduced from \$18.25 per cwt to \$14.35 per cwt, a reduction of 21% from the previous month. All of this is quite bad news for an industry that’s already been under significant financial stress.

Prices for meat, poultry, and dairy, as well as fruits and vegetables, will be bolstered somewhat by a new commodity-buying program that will soon be rolled out by USDA as part of its new authorities under the stimulus legislation. (See also the article by Jennifer Friedel included in this report.) While that program will help, it will not solve the problem for farmers: \$3 billion worth of commodities purchased from distributors and wholesalers over 10 months is a drop in the bucket for the hundreds of thousands of farms that sold over \$179 billion worth of these commodities in 2017 (based on the 2017 Census of Agriculture).

The pandemic probably represents mixed news for the floriculture, garden, nursery, and sod industries (collectively, the **green industry**). On the one hand, as economic activity continues to decline, disposable incomes are falling and people will prioritize the purchase of ornamental plants for indoor use or landscaping. On the other hand, with rising unemployment, people may be more interested in growing their own food in home gardens, or in spending time taking care of ornamental plants. I also note that many golf courses in Virginia have remained open during the pandemic, so demand for turfgrass should still be

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<sup>1</sup> 10 of the 16 in-person markets for which AMS reports data were open between April 21 and April 30 (USDA AMS, 2020b).

relatively strong. In summary, certain groups within the green industry may do better than others as the result of the recession; other groups will be hit hard because of falling demand.

The **winery, beer, cider, and distillery industries** in Virginia are closely linked with the agricultural industry. The bulk of the value generated by these industries is from processing of agricultural commodities and tourism rather than sales of the agricultural commodities themselves. According to a report commissioned by the wine industry, on-premise sales at wineries totaled \$108 million in 2015, making up 84% of the total value of sales of Virginia wine (Frank, Rimerman + Co., 2017).<sup>2</sup> In addition, the report indicates that wineries made nearly \$24 million from weddings and other events and \$18 million from sales of wine grapes in 2015 (presumably, most of the sales of wine grapes were to other wineries in Virginia). The report estimates that wine-tourism expenditures totaled an additional \$188 million that year. Without the ability to open their premises for wine tastings and events, wineries are potentially losing over 90% of their business, and nearby businesses are also suffering from wineries' closures. Moreover, some growers have reported that cold April temperatures destroyed some 60--90% of their grape crops. 2020 looks to be an especially difficult year for Virginia wineries.

Breweries, microbreweries, distilleries, and cideries face similar challenges as wineries in the context of the pandemic, as they also make significant revenue from on-premises sales. There is some room for cautious optimism, though. Virginia Alcoholic Beverage Control Authority (ABC) has loosened some regulations to allow wineries, breweries, and restaurants to deliver wine and beer curbside and to customers' homes after customers place orders online or by phone (Virginia Alcoholic Beverage Control Authority, 2020). This could pave the way for eased regulations in the future, and will also be the impetus for many wineries and breweries to adopt online-ordering platforms, which could help them to diversify their revenue streams in the future.

Like wineries and breweries, farmers who sell to **farmers' markets** are missing out on major sources of revenue as a result of the pandemic. According to the Census of Agriculture, Virginia farms sold \$102 million worth of food directly to consumers in 2017. As consumers stay home and practice social distancing, farmers' markets have had to adapt. Guidance from VDACS on April 14 does not require farmers' markets to close, instead indicating that farmers' markets should "establish a system for ordering ahead when possible" and "provide curbside pick-up, where possible" (VDACS, 2020d). As of May 2, the Virginia Farmers Market Association lists 118 farmers' markets. 28 are currently closed and 90 are currently open in some capacity; of these 90, 19 offer delivery, 77 offer curbside pick-up, and 49 offer online ordering (Virginia Farmers Market Association, 2020). In addition, some roadside stands are offering online ordering and delivery.

As with the winery and brewery industries, the challenges posed by the pandemic offer some opportunity for innovation that could help farmers' market vendors diversify their operations after the pandemic is over. While many consumers value in-person shopping at farmers' markets for social connections and to be able to sample produce, other consumers may be constrained by young children, time, or other reasons and may not

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<sup>2</sup> Note that retailers, restaurants, and distributors profit from their sales of wine, charging consumers a higher price than they paid, so on-premises sales make up an even higher share of Virginia wineries' sales of wine.

be able to enjoy in-person browsing as much. For the latter group of customers, online ordering may be preferable even once the pandemic is over.

In conclusion, all of Virginia's major agricultural industries face challenges as a result of the COVID-19 pandemic. For livestock and poultry farms, the main challenge may be reduced capacity at slaughter establishments, which reduces the demand for their animals and therefore reduces the prices farmers receive. Feed growers are challenged for the same reason. Nationally, including in Virginia, milk prices have plummeted in recent weeks as demand from schools and other institutional buyers has fallen. While some of the USDA aid programs will help certain farmers, it is unlikely that business will recover until the pandemic is brought under control and consumers return to a more normal pattern of life. This is especially true for wineries, breweries, and farmers' market vendors, which all depend on in-person business and social experiences. The pandemic is forcing businesses and policymakers to adopt new marketing strategies and regulations, and some of these changes may be good for business in the long run. Meanwhile, the pandemic will continue to bring suffering, anxiety, and stress for most of Virginia's agricultural businesses.

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## References

- Dyal J.W., Grant M.P., Broadwater K., et al. "COVID-19 Among Workers in Meat and Poultry Processing Facilities — 19 States, April 2020." *MMWR Morb Mortal Wkly Rep.* ePub: 1 May 2020. DOI: <http://dx.doi.org/10.15585/mmwr.mm6918e3>
- Frank, Rimerman + Co. 2017. "The Economic Impact of Wine and Wine Grapes on the State of Virginia – 2015." <https://vaw-public-prod.s3.amazonaws.com/a92755329aa0d04df3ca901cd999e6ec.pdf>.
- Friedel, Jennifer. 2020. "COVID-19 and Ag Policy in Virginia." Part of the report *Impacts of the COVID-19 Pandemic on U.S. and Virginia Farms and Agribusinesses: May 2020*, Department of Agricultural and Applied Economics, Virginia Tech.
- Hauser, Christine. 2020. "Nearly 2 Million Chickens Killed as Poultry Workers Are Sidelined." *The New York Times*, April 28, 2020. <https://www.nytimes.com/2020/04/28/us/coronavirus-chicken-poultry-farm-workers.html>.
- Hemel, Daniel. 2020. "No, Trump didn't order meat-processing plants to reopen." *The Washington Post*, May 4, 2020. <https://www.washingtonpost.com/outlook/2020/05/04/trump-meat-processing-order/>
- Isengildina Massa, O., and P. Kayser. 2020. "Virginia Grain Markets During the COVID-19 Pandemic." Part of the report *Impacts of the COVID-19 Pandemic on U.S. and Virginia Farms and Agribusinesses: May 2020*, Department of Agricultural and Applied Economics, Virginia Tech.
- McCarthy, R., and S. Danley. 2020. "Map: COVID-19 Meat Plant Closures." <https://www.meatpoultry.com/articles/22993-covid-19-meat-plant-map>.
- Rephann, Terance. 2017. "The Economic Impact of Virginia's Agriculture and Forest Industries." [http://www.dof.virginia.gov/Ag\\_Forestry\\_Study\\_Final\\_06\\_21\\_17.pdf](http://www.dof.virginia.gov/Ag_Forestry_Study_Final_06_21_17.pdf).
- U.S. Department of Agriculture, National Agricultural Statistics Service. 2017 Census of Agriculture. [https://www.nass.usda.gov/Publications/AgCensus/2017/index.php#full\\_report](https://www.nass.usda.gov/Publications/AgCensus/2017/index.php#full_report).
- USDA Agricultural Marketing Service (AMS). 2020a. "Broiler Market News Report." May 1, 2020. <https://www.ams.usda.gov/mnreports/pytbroilerfryer.pdf>.

- USDA Agricultural Marketing Service (AMS). 2020b. "Feeder and Replacement Cattle Auctions." Retrieved May 1, 2020. <https://www.ams.usda.gov/market-news/feeder-and-replacement-cattle-auctions#Virginia>.
- USDA Economic Research Service. 2020. Livestock, Dairy, and Poultry Outlook, April 2020. <https://downloads.usda.library.cornell.edu/usda-esmis/files/g445cd121/5d86pj126/bz60df867/LDP-M-310.pdf>.
- Virginia Alcoholic Beverage Control Authority. 2020. <https://www.abc.virginia.gov/library/covid19/bole-covid-19-response-v12.pdf?la=en>.
- Virginia Department of Agriculture and Consumer Services. 2020a. "Virginia's Top 20 Farm Commodities." <https://www.vdacs.virginia.gov/agriculture-top20.shtml>.
- Virginia Department of Agriculture and Consumer Services. 2020b. Guidance for Livestock and Other Agricultural Auctions. <https://www.vdacs.virginia.gov/pdf/covid-guidance-auctions.pdf>
- Virginia Department of Agriculture and Consumer Services. 2020c. State Milk Commission. (See Class I and Class II prices.) <https://www.vdacs.virginia.gov/food-state-milk-commission.shtml>
- Virginia Department of Agriculture and Consumer Services. 2020d. "Guidance for Farmers' Markets." <https://www.vdacs.virginia.gov/pdf/covid-guidance-farmers-markets.pdf>
- Virginia Farmers Market Association. 2020. "Market – Vendor Status." <https://docs.google.com/spreadsheets/d/1LKbJDneule-RC3offZgCd086PiUqv8kREsu4KhWxcbg/edit#gid=0>
- Virginia Poultry Federation. 2020. "Virginia Poultry Federation Statement on COVID-19 Response Measures." April 27, 2020. <https://www.vapoultry.com/documents/COVID-19-4-2020.pdf>.

## COVID-19 and Ag Policy in Virginia

*Jennifer Shaver Friedel*

Like many industries, Virginia Agriculture has taken a blow from COVID-19. This is in addition to existing challenges the industry already faced, most notably to dairy farmer and beef cattle operations. The long-standing trials of dairy farms is familiar to most and even pre-COVID-19, the beef industry faced a downward trend in market prices while packers are reaping record profits. Currently, cattle producers face a vanishing market for fat cattle with no relief in sight as processing plants across the country shut down due to COVID-19 outbreaks. Congress's economic relief programs for small businesses are proving to not be the savior many had hoped.

In its second economic relief package, Congress ensured that farmers are now eligible for the Economic Injury Disaster Loan (EIDL) assistance which provides an advance up to \$10,000 to small businesses experiencing a loss of revenue that does not have to be paid back. This program quickly exhausted available funding and remains unfunded despite Congress's second stimulus package.

Like EIDL, the Paycheck Protection Program (PPP) quickly exhausted available funding. However, the PPP fund was replenished with Congress's second economic relief package and a new application period opened on April 27<sup>th</sup>. The PPP continues to be plagued with hiccups from processing errors, to the questionable eligibility of larger corporations such as publicly traded companies. However, if eligible, PPP could provide welcome assistance to farmers (SBA, 2020).

For both EIDL and PPP, the farm must be a legal business entity (sole proprietorships qualify) and its most recent tax return must show a positive net income. For farms which are not a legal business entity or which operated in the red last year, these programs provide no relief (SBA, 2020).

Congress's second relief package also consisted of a buyout program. The Coronavirus Food Assistance Program (CFAP) provides direct support for actual losses due to depressed market prices and supply chain oversupply. The program offers to purchase fruits and vegetables, dairy products and meat for distribution to food banks and other food distribution non-profits (USDA, 2020a). It is not expected that the CFAP will completely compensate for the food chain oversupply. We continue to see milk dumping and kill-ready livestock unable to be processed. For vertically integrated industries, options are few. Cattle producers are having to determine whether to take a beating at the market or hold and incur additional feeding costs (Drovers, 2020).

USDA says it is committed to maintaining the security of the food chain. President Trump issued an executive order compelling the Secretary of Agriculture to work with meat packing plants, now designated as critical infrastructure, in an effort to continue operating and avoid closures of these facilities. This will include the government supplying personal protective equipment (USDA, 2020b). President Trump has also promised liability protections for plant operators though the specifics of those protections are unknown at this time (Hill, 2020). This will alleviate some effects, but likely not all, of the oversupply of market animals.

Governor Northam announced his administration's commitment to ensure that meat processing plants in Virginia continue to operate safely and with adequate personal protective equipment (C-Span, 2020). This, coupled with CFAP and EIDL (if funding continues) will give Virginia producers a little breathing room, however, producers will need to carefully strategize their next moves in preparation for both a limited market recovery and continued market stressors as we are likely to see market instability for the foreseeable future as government assistance programs come and go. While farmers are traditionally resistant to government buyouts, relief in the current market is a necessity for many producers in order to be able to continue operating.

Virginia has also seen a decrease in sales of fresh fruits and vegetables. As consumers rush to buy non-perishables, fresh greens and the like are in low demand. As restaurants remain closed, commercial and farm-to-table sales also plummeted. After some initial confusion, Virginia Farmers Markets remain able to operate though sales and participation have been impacted. Farmers Markets are likely to play an increasingly important role in the food supply chain in the immediate future (VAFM, 2020).

The State of Wyoming has modeled a direct-to-consumer sales program to alleviate shortages in the meat supply chain through herd-share agreements and for value added products. This will allow consumers to share in ownership of the herd before slaughter and then purchase cuts of meat directly from the farmer without USDA inspection (Western Livestock, 2020). Virginia has not indicated a move this way but if supply chain issues drag on, we could see similar programs grow in popularity.

Federal COVID-19 relief packages also incorporated changes to the Bankruptcy Code making it easier to file for reorganization under Chapter 11. Most farmers, however, rely on Chapter 12 for an adjustment of debts which remains unchanged.

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## References

- C-Span. 2020. "Virginia Governor Northam Coronavirus News Conference." April 29, 2020. <https://www.c-span.org/video/?471613-1/virginia-governor-northam-coronavirus-news-conference>
- Drovers. 2020. "Slowing Feedlot Cattle Gains Due to COVID-19 Pandemic." <https://www.drovers.com/article/slowing-feedlot-cattle-gains-due-covid-19-pandemic>
- The Hill. 2020. "Liability shield for businesses emerges as new fight over reopening." <https://thehill.com/business-a-lobbying/495288-liability-shield-businesses-new-fight-reopening>
- U.S. Department of Agriculture. 2020a. "USDA Announces Coronavirus Food Assistance Program." <https://www.usda.gov/media/press-releases/2020/04/17/usda-announces-coronavirus-food-assistance-program>
- U.S. Department of Agriculture. 2020b. "USDA To Implement President Trump's Executive Order On Meat and Poultry Processors." <https://www.usda.gov/media/press-releases/2020/04/28/usda-implement-president-trumps-executive-order-meat-and-poultry>

U.S. Small Business Administration. 2020. Coronavirus Relief Programs. <https://www.sba.gov/funding-programs/loans/coronavirus-relief-options/economic-injury-disaster-loan-emergency-advance>

Virginia Farmer's Market Association. 2020. "COVID-19 and Virginia's Farmer's Markets." <https://vafma.org/covid-19/>

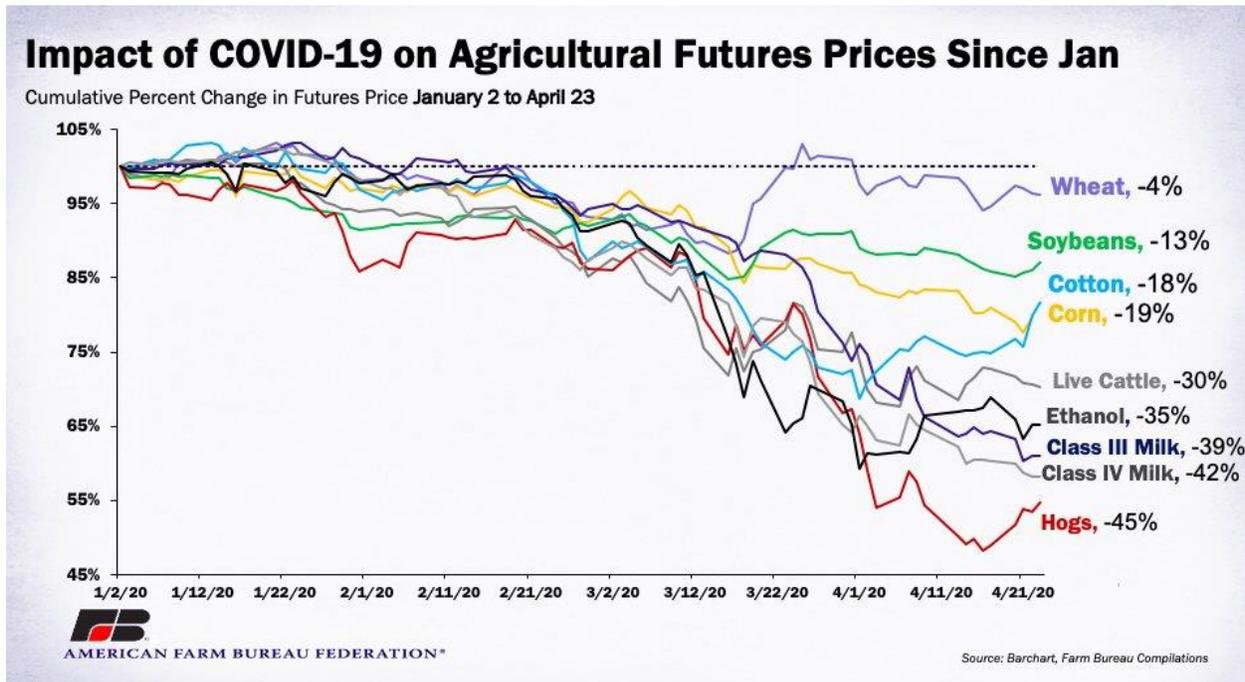
Western Livestock Journal. 2020. "Direct Sales. New Wyoming law to allow ranchers to sell meat directly. Amending Food Freedom Act." [https://www.wlj.net/top\\_headlines/new-wyoming-law-to-allow-ranchers-to-sell-meat-directly/article\\_9b8f8fc2-80c5-11ea-a6cf-93097893a422.html](https://www.wlj.net/top_headlines/new-wyoming-law-to-allow-ranchers-to-sell-meat-directly/article_9b8f8fc2-80c5-11ea-a6cf-93097893a422.html)

# Virginia Grain Markets during the COVID-19 Pandemic

*Olga Isengildina Massa and Patrick Kayser*

Soybeans, corn and wheat are important agricultural commodities in Virginia, ranking 6, 8 and 15, respectively based on total cash receipts in 2017 (<https://www.vdacs.virginia.gov/agriculture-top20.shtml>), jointly generating about \$443 million in annual sales.

The futures markets for these and other agricultural commodities have been devastated by the impacts of COVID-19 with prices falling drastically across the board according to the Farm Bureau calculations:



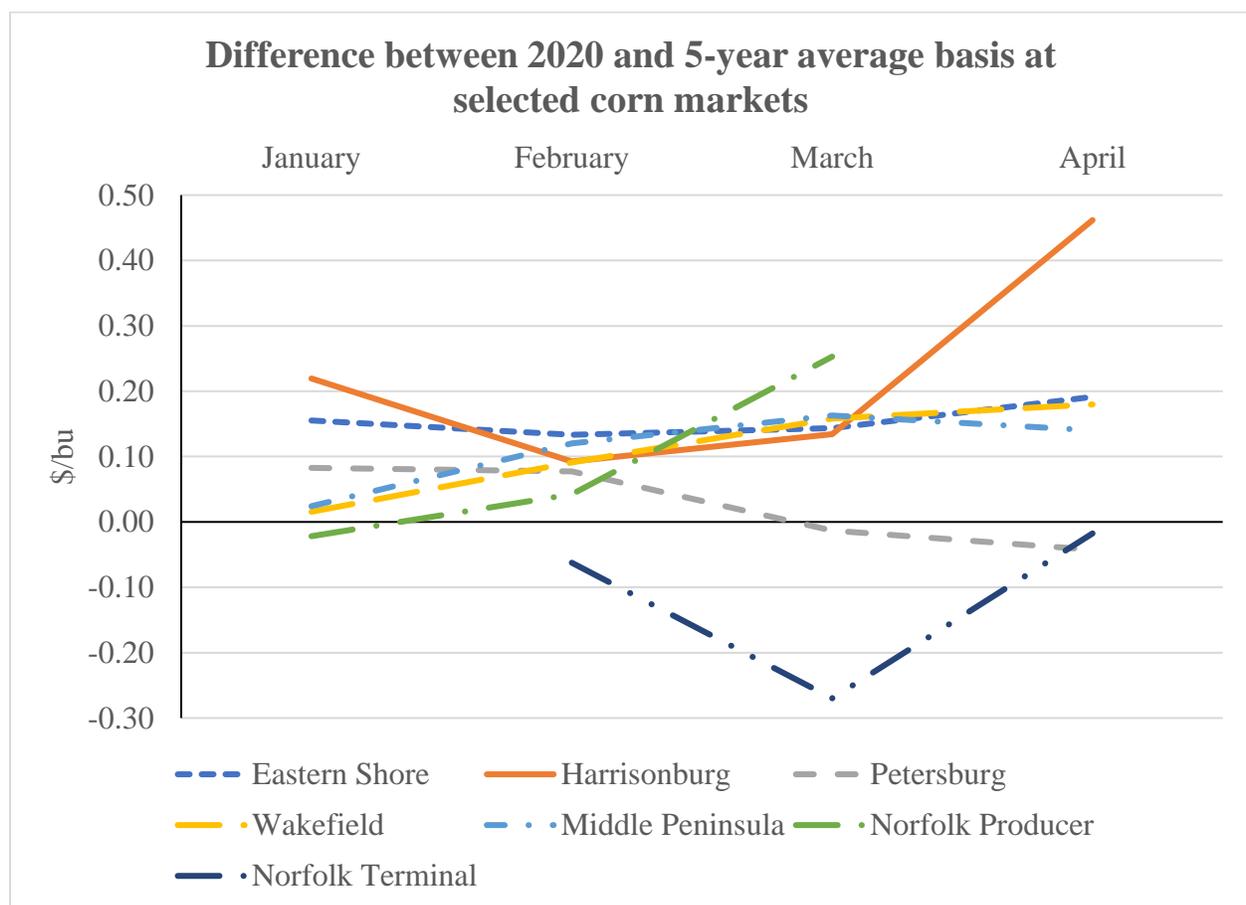
Source: John Newton@New10\_AgEcon, April 23

The purpose of this update is to review the state of Virginia grain and oilseed markets in this environment and to assess current cash market trends relative to historical seasonal patterns. To conduct this analysis, we evaluate the differences between Virginia cash prices and futures market prices in 2020 compared to what they have been over the last 5 years (2015-2019) to assess the relative strength or weakness in these markets. For example, the price of corn at Eastern shore cash market in March of 2020 averaged \$3.88/bu, 11 cents lower than it was last March (\$3.99). However, the corn futures prices dropped about 13 cents between March 2019 (\$3.73/bu) and March 2020 (\$3.60/bu). This illustrates that the cash price at this market did not drop as much as futures price. While the last year provides an interesting point of comparison, an average of these differences between cash and futures prices, called basis, over the last 5 years is a more general context for comparison. For the above example, the average basis (difference between cash and futures prices) for corn at Eastern Shore in March has been 13 cents, in 2020 it has been 28 cents (cash=3.88, futures=3.60),

which is 14 cents greater than a 5-year average, indicating a relative strength in the local cash market this year.

The graphs included in this update illustrate the difference between 2020 basis and 2015-2019 average basis (a 14 cent increase in March at Eastern Shore in the previous example). Positive differences illustrate relative strength of the local markets, while negative differences illustrate relative weakness. Futures price data are for the nearby CBOT contracts, collected from Barchart.com. Cash price data is from the AMS daily reports, collected from VDACS (<https://www.vdacs.virginia.gov/markets-and-finance-market-news-grain-stats.shtml>) and AMS ([https://mymarketnews.ams.usda.gov/filerepo/reports?field\\_slug\\_id\\_value=&name=RH\\_GR110&field\\_slug\\_title\\_value=&field\\_published\\_date\\_value=&field\\_report\\_date\\_end\\_value=&field\\_api\\_market\\_types\\_target\\_id=All](https://mymarketnews.ams.usda.gov/filerepo/reports?field_slug_id_value=&name=RH_GR110&field_slug_title_value=&field_published_date_value=&field_report_date_end_value=&field_api_market_types_target_id=All)). Monthly averages are used in all cases, except for April 2020, where an average for a week from April 20-24 is used for both cash and futures prices. It is important to recognize that actual basis values may vary widely from these reported average values depending on various factors affecting individual transactions.

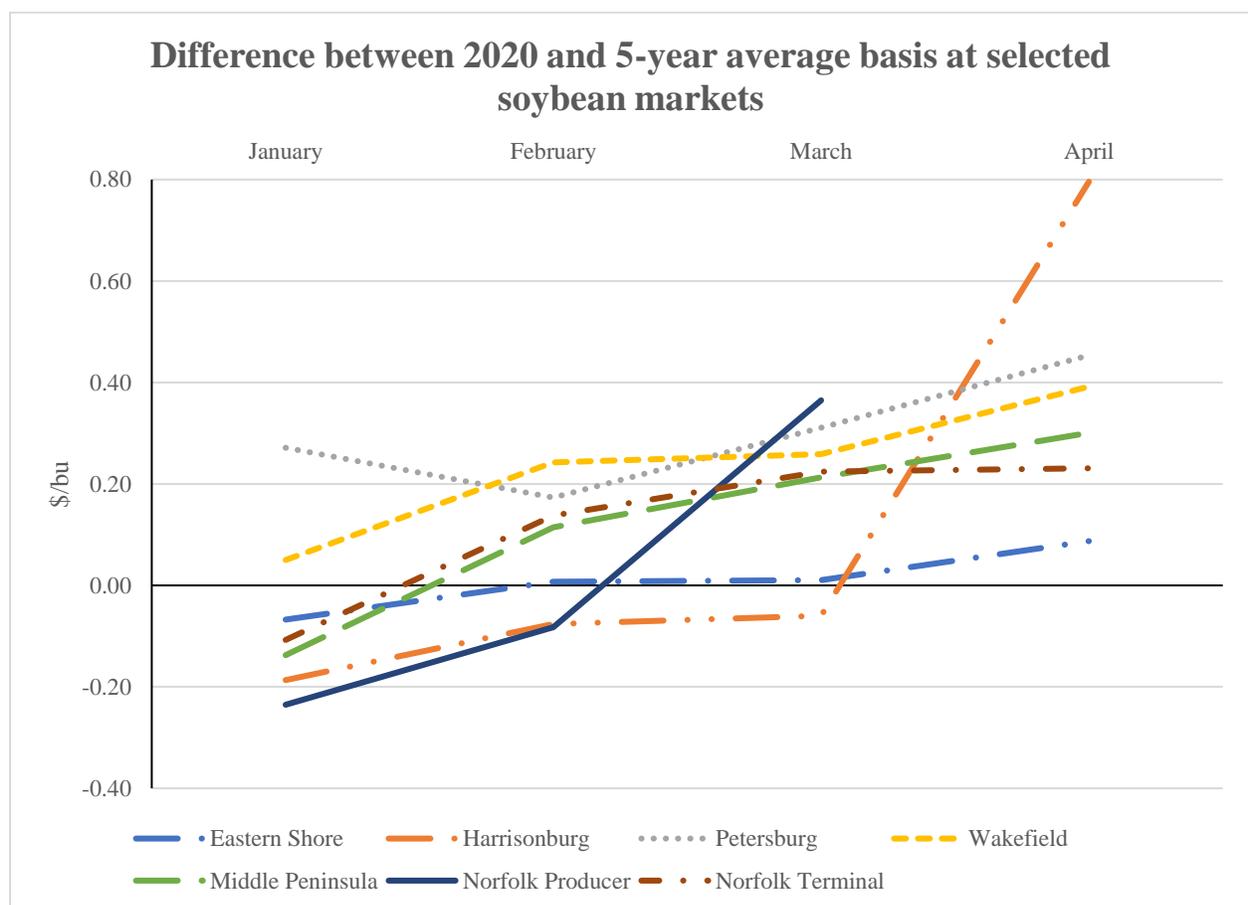
### Corn Markets



This figure demonstrates that most corn markets around the state remained relatively strong in 2020 with basis levels around 10 – 20 cents higher than 5-year average. The strongest basis was observed in Harrisonburg in April where cash bids of \$4.18 during the week of April 20 were \$1.02/bu higher than the futures of \$3.15, which is \$0.46/bu higher than the average basis of 0.56 at that market. Such strong bids are likely driven by the needs of the livestock businesses in that part of the state and transportation issues with bringing corn from the Midwest.

On the other hand, several markets, including Norfolk Terminal and Petersburg displayed relative weakness in March and April, which is likely associated with the lack of export demand from the Norfolk port.

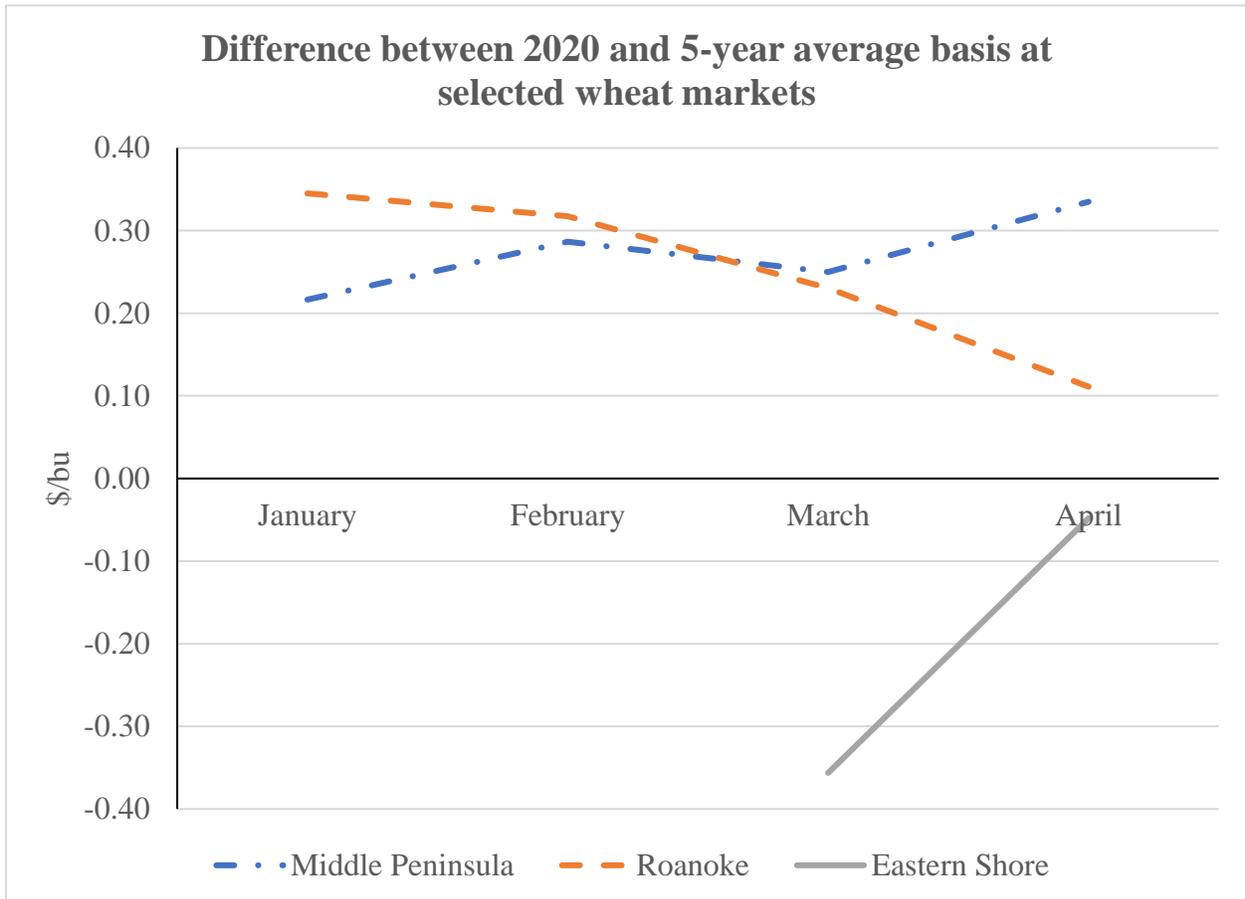
### Soybean Markets



This figure demonstrates that most soybean markets around the state also remained relatively strong through the pandemic months of March and April. While some markets, including Eastern Shore, Harrisonburg, Middle Peninsula and Norfolk, started the year with basis levels weaker than 5-years average (negative values for January on the graph), basis levels improved with all markets posting relative strength in April. The leader is once again Harrisonburg where local cash bids were local cash bids in April averaged

\$8.32/bu, which is \$0.03/bu higher than the futures price of \$8.28/bu and \$0.79/bu better than the historic average of \$-0.76/bu. This case once again demonstrates how the needs of the local livestock sector support the relative strength of the grain markets in the state.

### Wheat Markets



This figure shows that the relative strength of the wheat markets in Virginia is more mixed than what we have seen in soybeans and corn. Middle Peninsula and Roanoke markets started the year very strong with 2020 basis levels \$0.22/bu and \$0.35/bu stronger than historic average. However, in April, Middle Peninsula market strengthened, while Roanoke market weakened. April cash bids at Middle Peninsula averaged \$5.42, on par with futures prices, which was \$0.33 cents better than the average basis of \$-0.33/bu. On the other hand, Eastern Shore market has experienced considerable weakness in March with local cash prices of \$4.62/bu coming \$0.73/bu below futures prices of \$5.35/bu, which is \$0.35/bu worse than the average basis of \$-0.38/bu. While this market has recovered some relative strength in April, it still remains below the historical average.

Overall, our findings indicate that Virginia grain markets have maintained various levels of relative strength through the COVID-19 pandemic likely due to the needs of the local livestock and poultry industry that

relies on these grains as a source of feed. While these findings are positive, there is no question that the grain markets have been hit really hard in the last two months with prices plummeting across the board. What our findings show is that the futures market reaction shown in the first graph may be slightly exaggerating the actual reaction taking place in the cash markets, at least for most locations in Virginia.

As we continue to learn and re-evaluate the impact of the pandemic on agricultural commodity prices, new estimates are becoming available for marketing year average (MYA) prices of principle crops. Due to cash price declines, the April WASDE report revised 2019/20 MYA prices down for corn by 6.5% to \$3.60/bu, for soybeans by 1.1% to \$8.65/bu, for wheat up by 1.1% to \$4.6/bu, for cotton by 4.8% to \$0.59/lb.

Furthermore, futures-based models of MYA prices developed by Economic Research Service (ERS) of USDA, suggest that the effects of COVID-19 pandemic on commodity markets will linger into the next several marketing years:

**Table 3. Estimates of 2019-2020 Market Year Average (MYA) Prices Using Models of Economic Reporting Service (ERS)**

| Date of Estimate <sup>1</sup>                     | Crop   |          |       |        |
|---|--------|----------|-------|--------|
|   | Corn   | Soybeans | Wheat | Cotton |
| <b>Panel A. Estimates of 2019-2020 MYA prices</b> |        |          |       |        |
| 1-Feb-20  | 3.74   | 8.60     | 4.63  | 62     |
| 1-Mar-20  | 3.71   | 8.67     | 4.57  | 61     |
| 1-Apr-20  | 3.55   | 8.55     | 4.60  | 58     |
| 24-Apr-20   | 3.48   | 8.49     | 4.61  | 59     |
| Change  | -7.0%  | -1.3%    | -0.4% | -4.5%  |
| <b>Panel B. Estimates of 2020-2021 MYA prices</b> |        |          |       |        |
| 1-Feb-20  | 3.88   | 8.94     | 4.92  | 65     |
| 1-Mar-20  | 3.73   | 8.92     | 4.78  | 61     |
| 1-Apr-20  | 3.43   | 8.37     | 4.96  | 48     |
| 24-Apr-20   | 3.30   | 8.15     | 4.94  | 54     |
| Change  | -14.9% | -8.8%    | 0.4%  | -17.1% |
| <b>Panel C. Estimates of 2021-2022 MYA prices</b> |        |          |       |        |
| 1-Feb-20  | 3.87   | 9.01     | 5.15  | 63     |
| 1-Mar-20  | 3.77   | 8.92     | 5.08  | 61     |
| 1-Apr-20  | 3.52   | 8.22     | 5.20  | 51     |
| 24-Apr-20   | 3.42   | 8.07     | 5.15  | 53     |
| Change  | -11.6% | -10.4%   | 0.0%  | -15.7% |

<sup>1</sup> Estimated made using Economic Research Service (ERS) spreadsheets using futures contract settlement prices from date of estimate.

Source: [Schnitkey, G., K. Swanson, T. Hubbs, C. Zulauf, N. Paulson, J. Coppess "Estimates of MYA Prices for 2019 through 2021, Pre and Post COVID-19, Corn and Soybeans." farmdoc daily \(10\):78, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, April 28, 2020.](#)

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# Impacts of COVID-19 on Virginia Aquaculture Businesses

*Jonathan van Senten*

## **Background and Introduction**

On March 23<sup>rd</sup>, 2020 Virginia Tech Seafood AREC and The Ohio State University Extension initiated an online survey of the U.S. aquaculture, aquaponics, and allied businesses. This survey was designed to capture and quantify the effects of the coronavirus disease pandemic (COVID-19) on the U.S. aquaculture, aquaponics, and allied industries. The survey closed on April 10<sup>th</sup>, 2020 with a total of 652 responses, of which 537 were sufficiently complete to be usable for further analysis; approximately 18% of all U.S. aquaculture producers (USDA 2019). It should be noted that respondents self-selected for participation in this study, therefore it is possible that the results are biased towards those farms and businesses that have been more affected by the pandemic. This project is ongoing, and a new survey will be distributed at the conclusion of every quarter for 2020 in an attempt to capture the evolving impacts of COVID-19 on the industry over time.

Specific information on survey methods and an overall summary of the results of the Quarter 1 survey are detailed in the Virginia Cooperative Extension / Virginia Sea Grant Fact Sheet VCE-AAEC-218 / VSG-20-02 available at: <https://www.pubs.ext.vt.edu/AAEC/AAEC-218/AAEC-218.html>

In order to protect respondent identities, the survey did not request any personally identifiable information. Nor did the survey ask respondents to identify the state in which their farm or business was located; as in some cases that information is sufficient to identify the respondent. Given the participation of mollusk producers in the Quarter 1 survey, it is highly likely that Virginia farms and businesses are represented in the data. Virginia is the leading producer of hard clams in the United States, and the largest producer of oysters on the Atlantic coast. Other aquaculture products grown in Virginia include trout, sportfish, crustaceans, and ornamental fish. According to the 2018 USDA Census of Aquaculture (2019), Virginia accounts for 17% of all U.S. mollusk farms and 44% of Southern aquaculture region mollusk farms. Even if no Virginia producers participated in the Quarter 1 survey, it is highly likely that Virginia farms and businesses have experienced similar impacts to what other aquaculture producers within the Southern region and U.S. industry have experienced and described. The primary challenge facing the aquaculture industry has been the loss of major market channels (restaurants and food service) in response to the COVID-19 pandemic. As a result, aquaculture and aquaponics producers have been unable to generate revenue, creating a ripple effect of additional impacts and consequences throughout their farm or business.

## **Key Findings**

Results discussed here are based primarily on the **184 mollusk farm participants** from the Quarter 1 survey; which represents approximately 21% of the U.S. mollusk farms reported in the 2018 Census of Aquaculture (USDA, 2019). It is important to note that 50% percent of mollusk respondents sold their

products to a distributor, 16% sold to restaurants, 12% to a processor, and 5% to other aquaculture farms (Table 1). Only 9% of respondent farms sold their products direct to consumers. The National Oceanographic and Atmospheric Administration estimates that approximately 68% of all seafood consumed in the U.S. is consumed outside of the home (NOAA 2018). According to the USDA Census of Aquaculture (2019), only 4% of mollusk farms reported their first point of sale was direct to consumers.

*Table 1. Primary marketing channel for mollusk respondents.*

| Category                | Percentage |
|-------------------------|------------|
| Distributor             | 50%        |
| Restaurants             | 16%        |
| Processor               | 12%        |
| Direct to consumers     | 9%         |
| Other aquaculture farms | 5%         |

Forty-one percent of responding mollusk farms were located within the Southern aquaculture region; which includes Virginia.

**Ninety-seven (97%) percent of mollusk respondents reported that their farm or business had been impacted by the COVID-19 pandemic.** When asked whether their farm or business would survive the next 3 months without external intervention (such as government assistance), 59% percent reported that their farm or business would “maybe” survive 3 months without external assistance. Only 24% said, “yes”, their farm or business would survive, and **17% said that their farm or business would not survive 3 months without external assistance.** When this period was extended to the next 6 months, only 10% of respondents said that their farm or business would survive, 48% said “maybe,” and **41% said that their farm/business would not survive the next 6 months without external assistance.** Extending the period further still to 12 months without external assistance, **62% of respondents indicated that they would not survive,** 31% said that their farm or business would “maybe” survive, and only 7% said that they would survive.

*Lost Sales*

**Ninety-eight percent (98%) of mollusk farm respondents indicated that they had lost sales due to the COVID-19 pandemic.** Fourteen percent of mollusk respondents indicated that they had lost sales to international or export markets outside the U.S. Survey respondents noted that spring is normally a strong period for sales; with sales typically picking up in March. Reported lost sales included canceled private and government contracts; **90% percent of mollusk farm respondents reported losing private contracts**

for sales and 6% reported losing government (state or federal) contracts for sales. **Ninety-nine percent (99%) of mollusk farm respondents indicated that they expected to lose sales in 2020.** Participants were also asked how long they thought their farm or business could survive without sales before suffering longer term cash flow effects, 51% of respondents said between 1 and 3 months, 17% between 4 and 6 months, 14% said less than 1 month, 12% did not respond to this question, 3% said between 7 and 10 months, and another 3% reported more than 10 months. **It should be noted that this report was prepared 3 weeks after the survey closed on April 10<sup>th</sup>.**

#### *Labor*

**Forty-two percent (42%) of respondents reported that they had laid off employees as a result of the COVID-19 pandemic.** Another 24% of respondents indicated that they “will have to soon” lay off employees as a result of the pandemic. Thirty-four percent had not laid off employees at the time of the Quarter 1 survey. The majority of respondents (56%) had laid off between 1 and 3 employees. Twenty percent had laid off between 4 and 6 employees, 11% between 11 and 15 employees, 7% greater than 20 employees, and 4% between 7 and 10 employees. **An individual respondent reported having laid off as many as 329 employees.** Another respondent reported having to move in excess of 290 employees to standby, in addition to implementing pay cuts for employees earning above a set salary level and owners working without pay.

Respondents were also asked how many weeks before they would have to decide whether to lay off employees. **Sixty-four percent (64%) of mollusk respondents indicated that they would have to decide within 1 to 3 weeks whether to lay off employees.** Only 2% of respondents indicated they had more than 10 weeks before their farm or business would have to make a decision about laying off employees. **Again, it should be noted that the data collection period was open for 3 weeks, which means that some respondents completed the survey 7 weeks before the preparation of this report.**

#### *Challenges to the Farm or Business*

**Nearly half (48%) of mollusk respondents indicated that they could hold market-ready product for 1 to 3 months before it would interfere with future crops.** Twenty-two percent said that they could hold market-ready product for 4 to 6 months before it would become a problem for future crops or plantings, and 11% said that they could hold market-ready product for less than 1 month before experiencing consequence for future crops. Only 7% of respondents could hold market-ready product for more than 10 months before experiencing issues with new crops or plantings. Several respondents indicated concerns about a lack of space for new seed. A few respondents noted that holding market ready product was increasing the density of product in their culture units, potentially leading to increased mortalities. Some respondents noted that their products were sensitive to the warmer water temperatures which could increase

mortalities if products are not harvested soon; resulting in fewer sales. Larger shellfish are often less marketable and bring lower prices. Many respondents commented that products (especially half-shell oysters) would grow beyond the target market size before markets opened back up, making them less valuable. Clam farms and businesses also noted that holding product would lead to reduced value. Several respondents commented on reduced quality of larger products, which would affect price, and general increased risk of keeping product in the water longer.

### *Marketing of Products*

**Sixty-nine percent (69%) of respondents indicated that holding market-ready product would make it less marketable in the future. Seventy-nine percent (79%) responded that holding product would result in a reduced quantity sold and 74% responded it would result in a reduced price for products.** A few respondents expressed concerns that the ideal marketing period for their product had already passed (March – April). Several respondents expressed challenges in switching to a new marketing channel.

### **Discussion and Conclusion**

Based on the responses to by mollusk farms and businesses to the Quarter 1 survey and the overall effects and impacts being experienced by the U.S. aquaculture industry, it is safe to assume that the Virginia aquaculture sector has been severely impacted by the COVID-19 pandemic. Almost all (98%) of the responding mollusk farms or businesses had experienced lost sales, with 90% having had orders from private companies canceled and 6% having had government (state/federal) orders canceled. Lost sales and a lack of revenue were the immediate impact for aquaculture/aquaponics farms and allied businesses. Other challenges that were mentioned by respondents included production challenges, financial challenges, and interruptions to essential services that are critical to survival of the farm or business. A majority of respondents (69%) indicated that holding market ready product would make it less marketable in the future; resulting in both lower sales volumes and lower sales prices. Many respondents discussed challenges with preparing for future crops; ranging from seed purchases, to gear and equipment repair, or the inability to harvest or manage their products. Increased risk for disease and mortality by holding market ready product for extended periods was also discussed by respondents. These challenges suggests longer term consequences for Virginia farms and businesses that will likely extend beyond 2020.

For additional and more detailed results, please visit: [https://www.arec.vaes.vt.edu/arec/virginia-seafood/research/Impacts\\_of\\_COVID19.html](https://www.arec.vaes.vt.edu/arec/virginia-seafood/research/Impacts_of_COVID19.html)

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## References

- National Marine Fisheries Service. 2018. Fisheries of the United States, 2017. U.S. Department of Commerce, NOAA Current Fishery Statistics No. 2017 Available at:  
<https://www.fisheries.noaa.gov/resource/document/fisheries-united-states-2017-report>
- United States Department of Agriculture. 2019. 2018 Census of Aquaculture. National Agricultural Statistics Service, USDA, Washington, District of Columbia, USA. Available at:  
[https://www.nass.usda.gov/Surveys/Guide\\_to\\_NASS\\_Surveys/Census\\_of\\_Aquaculture/index.php](https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Aquaculture/index.php)

# COVID-19 and Agricultural Exports under the U.S.-China Trade Deal

Jason Grant, David Orden, and Mary Marchant

## Background

- In 2018, the U.S. became engulfed in trade disputes with some of its largest and most significant trading partners including China, Canada, Mexico, the European Union (EU), Turkey and India. The trade dispute with China which began in 2018 witnessed several rounds of tariff increases between the two countries.
- U.S. agriculture was particularly hard hit by China's retaliatory tariffs.<sup>1</sup> All told, nearly \$30 billion of U.S. agricultural trade was facing retaliatory tariffs.
- As a result, U.S. agricultural exports to China decreased by 54%, from \$20 billion in 2017 to \$9.2 billion in 2018 and the difference between U.S. agricultural exports and imports – the agricultural trade surplus – fell to just \$10 billion down from \$18 billion in 2017 (Figure 1).
- 2019 saw a slight uptick to \$13.8 billion in U.S. agricultural exports to China. However, exports are still well behind 2017 values prior to the trade conflict and the overall agricultural trade surplus narrowed to just over \$5 billion (Figure 1).
- After nearly two years of trade conflict, the U.S. and China signed the U.S.-China Trade Deal on January 15, 2020. The agreement entered into force February 14, 2020.<sup>2</sup>

## COVID-19

- At the time the Trade Deal was signed, few could have predicted that a global pandemic was on the horizon.
- The global coronavirus pandemic and the illness, deaths and economic devastation it has wrought are the most severe test of the resilience of the North American food system since World War II.<sup>3</sup>
- The novel coronavirus that causes Covid-19 is rapidly changing world trade, including domestic and international supply chains, and has impacted the U.S. just as China was starting to offer tariff waivers to facilitate agricultural import purchases from the U.S.<sup>4</sup>

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<sup>1</sup> Grant, J.H, S. Arita, C. Emlinger and S. Sydow. 2020. "The 2018/19 Trade Conflict: A One-Year Assessment and Impacts on U.S. Agricultural Exports," *Choices* 34(4): 1-8.

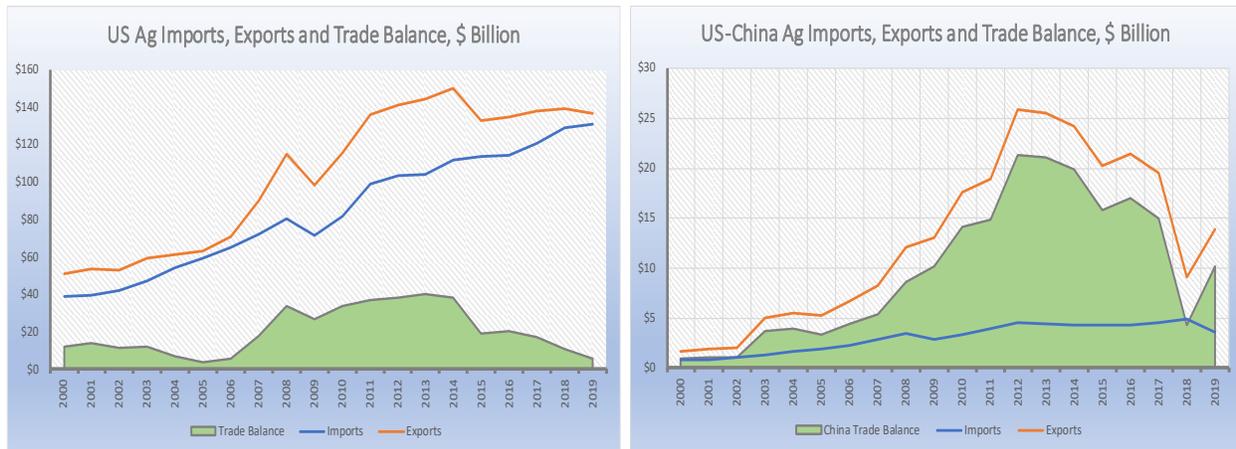
<sup>2</sup> USTR.2020. Economic and Trade Agreement Between the Government of The United States of America and the Government of The People's Republic Of China, Phase One, Washington, DC, January 15. <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2020/january/economic-and-trade-agreement-between-government-united-states-and-government-peoples-republic-china>

<sup>3</sup> Orden, D. 2020. "Resilience Test of the North American Food System," *Canadian Journal of Agricultural Economics*, Special Issue, DOI: 10.1111/cjag.12238. <https://onlinelibrary.wiley.com/doi/10.1111/cjag.12238>

<sup>4</sup> Grant, J.H, C. Emlinger, and M. Marchant. 2020. "COVID-19 could alter agricultural trade relationships; change view of globalization and interdependency for food." [https://vtnews.vt.edu/articles/2020/04/agriculturetrade\\_expert.html](https://vtnews.vt.edu/articles/2020/04/agriculturetrade_expert.html)

- The U.S. economy shrank 4.8% (at an annual rate) in the first quarter (Q1, January-March) of 2020, according to official numbers from the Commerce Department.
- In March, Goldman Sachs predicted U.S. Gross Domestic Product (GDP) could shrink 5% in the second quarter (Q2) of 2020. Later that same month, as stay-at-home or shelter-in-place orders began surfacing and the U.S. economy was heading towards shutdown, Goldman revised its April-June Q2 projection to an alarming 24% drop in U.S. GDP (Figure 2).<sup>5</sup> More recently, CBO has forecast a nearly 12% decline in Q2 real GDP (see General Economic Outlook above).

**Figure 1. Narrowing of US Agricultural Trade Balance Related to U.S.-China Trade Dispute**



Source: Authors' Calculations, FAS/GATS: <https://apps.fas.usda.gov/gats/default.aspx>

### 2020 First Quarter Agricultural Imports by China

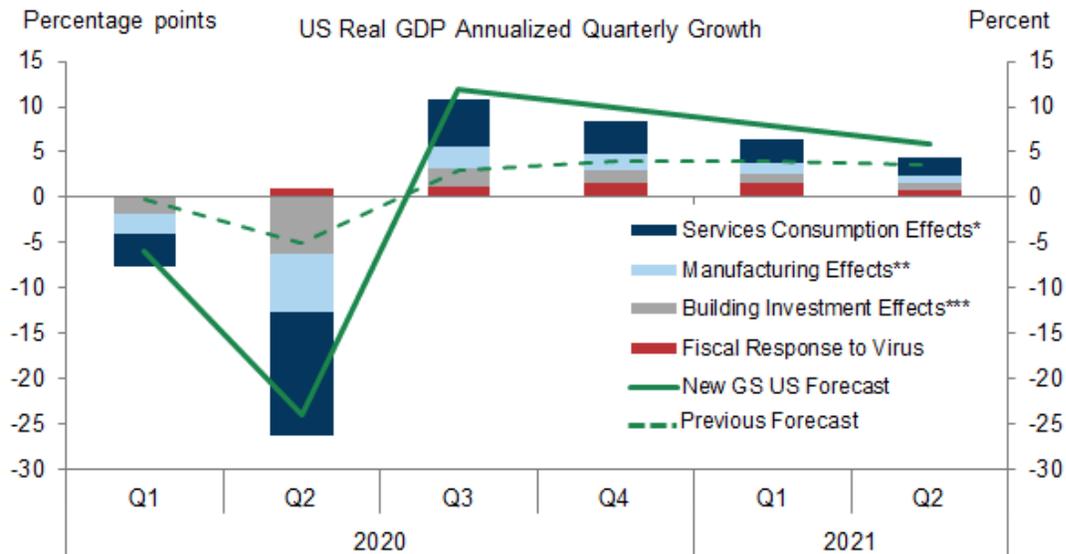
- Figure 3 plots China's total 2020Q1 (January-March) agricultural imports from the United States for each of four years 2017-2020 for total agriculture and for five sectors (Cereals, Cotton, Meat, Oilseeds and Other Ag).
- The Trade Deal stipulates that China will buy \$12.5 billion more worth of total agricultural and seafood imports compared to 2017 baseline imports from the U.S. in 2020 and \$19.5 billion more in 2021.<sup>6</sup>
- While improving on 2019 totals during the depths of the trade dispute, 2020Q1 totals in Figure 3 suggest U.S. agricultural exports continue to run behind 2017 values.
- Through March 2020, China's agricultural purchases from the U.S. stood at \$5.08 billion – only 55% of 2017 value of \$9.09 billion.
- Figure 3 also makes it clear that China's imports of U.S. soybeans in 2020Q1 – while ahead of 2019Q1 values – are still well short of a normal year. U.S. soybean imports by China made up nearly two-thirds of China's total imports of U.S. agricultural products in 2017.

<sup>5</sup> <https://thebasispoint.com/u-s-economic-growth-to-shrink-24-april-to-june-2020-goldman-sachs/>

<sup>6</sup> [https://ustr.gov/sites/default/files/files/agreements/phase%20one%20agreement/Phase\\_One\\_Agreement\\_Ag\\_Summary\\_Long\\_Fact\\_Sheet.pdf](https://ustr.gov/sites/default/files/files/agreements/phase%20one%20agreement/Phase_One_Agreement_Ag_Summary_Long_Fact_Sheet.pdf)

- With the Trade Deal just coming into effect February 14, 2020 a lag before China’s imports from the U.S. rise could be expected.
- On the other hand, the global COVID-19 pandemic has likely decreased buying activity in China in the first quarter of 2020 and could impact the U.S.-China Trade Deal well into 2020.

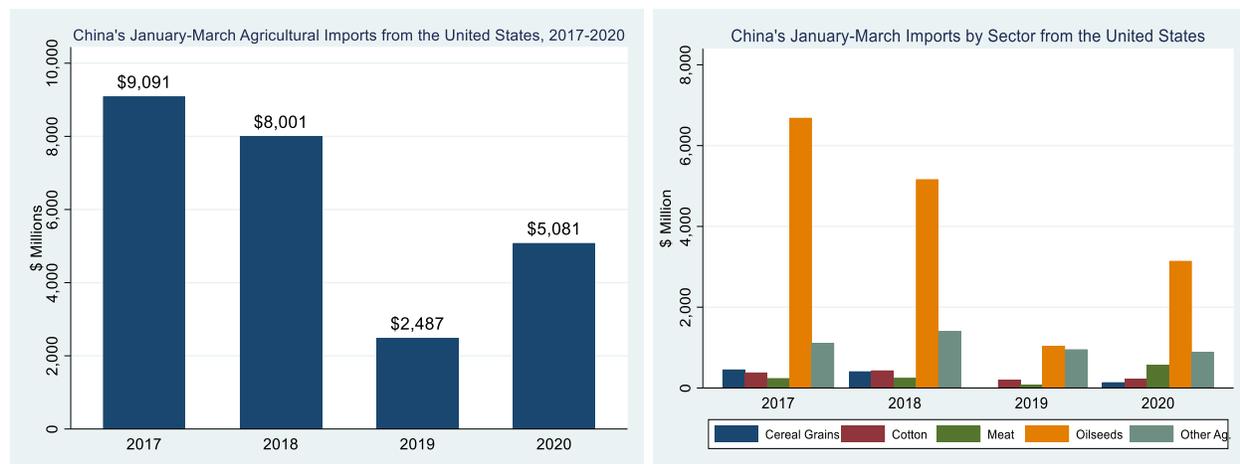
**Figure 2: Goldman Sachs Revised GDP Forecast Due to COVID-19**



\* Includes cutbacks to consumption categories requiring face-to-face interaction.  
 \*\* Includes reduced domestic and foreign demand for goods, supply chain disruptions, and plant shutdowns.  
 \*\*\* Includes cutbacks to structures investment, homebuilding, and home sales.

Source: Goldman Sachs Global Investment Research, retrieved from: <https://thebasispoint.com/u-s-economic-growth-to-shrink-24-april-to-june-2020-goldman-sachs/>

**Figure 3. China Q1 (January-March) Agricultural & Sectoral Imports from the United States**



Source: Authors’ calculations from China Customs Statistics

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