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COVID-19 Working Paper: U.S.-Mexico Agricultural Trade in 2020

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Abstract

Agricultural trade between the United States and Mexico underwent many changes in 2020 in the face of the Coronavirus (COVID-19) pandemic. Overall, U.S. agricultural exports to Mexico declined in April 2020 and did not recover until November 2020. Meanwhile, U.S. agricultural imports from Mexico declined in April and May 2020 before resuming their long-term upward trend. Beef and veal, cotton, and pork were the U.S. agricultural exports to Mexico with the largest decreases in export value between calendar years 2019 and 2020. The agricultural imports from Mexico with the largest increases in import value were tequila, fresh tomatoes, and beer. The economic downturn and shift away from food expenditures at hotels, restaurants, and institutional establishments because of the pandemic explain some of these changes. However, a larger set of supply and demand determinants was at play, including conventional factors unrelated to the pandemic, such as the long-term expansion of Mexico's horticultural export sector and year-to-year changes in crop production.

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Keywords: COVID-19, coronavirus, Mexico, United States, U.S., agricultural trade, trade, export, import, exchange rate, peso, depreciation, recession, income, hotel, restaurant, beef, cotton, pork, tequila, tomatoes, beer.

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Contents

Errata
On February 18, 2022, figure 7 was revised to correctly label U.S. beef imports, and other colors were modified to improve Section 508 readability requirements. No text or other figures were impacted.

Summary

What Is the Issue?

The Coronavirus (COVID-19) pandemic affected many aspects of the global agri-food system—including agricultural trade between the United States and Mexico. To understand how and why U.S.-Mexico agricultural trade changed between calendar years 2019 and 2020, an ERS economist conducted an economic analysis using detailed trade statistics—including quantities, values, and unit values at the product level. These questions are highly important to U.S. agriculture as Mexico is a leading U.S. agricultural trade partner—ranking second among destinations for U.S. agricultural exports and first among suppliers of U.S. agricultural imports in 2019.

What Did the Study Find?

Overall, the study found that U.S. agricultural exports to Mexico declined in April 2020—less than 3 weeks after COVID-19 was declared a pandemic by the World Health Organization (WHO) and a national emergency by the United States—and did not exit that slump until November 2020. In contrast, U.S. agricultural imports from Mexico experienced a shorter decline that was mainly limited to April and May 2020; in June 2020, imports resumed the long-term upward trend that has been seen for the past quarter century. During April-October 2020—the main "slump period" for U.S. agricultural exports to Mexico—the value of exports decreased by 13.8 percent, compared with the same period in 2019. During April-May 2020—the main slump period for U.S. agricultural imports from Mexico—these imports decreased by 5.9 percent, compared with April-May 2019. When all of calendar year 2020 is considered, U.S. agricultural exports to Mexico saw a year-to-year decrease of 5.3 percent, while U.S. agricultural imports from Mexico increased by 8.9 percent.

At the product level, the study found that changes in quantities and unit values of agricultural trade between calendar years 2019 and 2020 varied by product and direction of trade (i.e., exports or imports). The U.S. agricultural exports to Mexico with the three largest decreases in export value were beef and veal, cotton, and pork, with exports of beef and veal and cotton decreasing in both quantity and unit value, and exports of pork experiencing a decrease in unit value that outweighed the increase in export quantity. The U.S. agricultural imports from Mexico with the three largest increases in import value were tequila, fresh tomatoes, and beer.

A wide variety of demand and supply determinants—some related to the pandemic, others not—were behind the changes in trade. For U.S. agricultural exports to Mexico, the pandemic-related decline in Mexican income and shift away from food expenditures in the hotel, restaurant, and institutional establishment (HRI) sector altered the level and composition of Mexican food expenditures. Mexican consumers tended to switch toward more affordable sources of protein instead of more expensive beef and veal, beef variety meats, and turkey meat—all products imported from the United States. Mexican consumption of both sugar and high-fructose corn syrup (HFCS) declined in 2020, with implications for U.S. HFCS exports to Mexico. This decrease was caused not only by Mexico's weakened economy. It also reflected an effort of Mexican beverage and food manufacturers to rely less on caloric sweeteners amid government campaigns for healthier diets, a new front-of-pack labeling law, and concerns that high levels of obesity, diabetes, and heart disease among the Mexican population were connected to the large number of COVID-19 cases and deaths. In addition, emergency closures of textile plants, especially during the early months of the pandemic, resulted in fewer U.S. cotton exports to Mexico.

Factors unrelated to the pandemic also placed downward pressure on some U.S. agricultural exports to Mexico. For example, improved U.S. trade relations with China and the effort to rebuild China's swine sector following an outbreak of African Swine Fever (ASF) appeared to draw some U.S. exports of sorghum and distiller's dried grains with solubles (DDGS) away from Mexico and toward China.

For U.S. agricultural imports from Mexico, it is more difficult to discern the impact of the pandemic from that of other demand and supply determinants. The increase in U.S. fruit and vegetable imports from Mexico in 2020 is consistent with both the long-term upward trend in these imports and a shift toward greater food preparation and consumption at home. Increased U.S. imports of tequila and beer from Mexico suggest a turn toward greater alcohol consumption in the United States during the pandemic, as well as a shift in consumer preferences toward spirits and flavored products, while increased U.S. sugar imports from Mexico reflected a decrease in U.S. sugar production. Moreover, economic stimulus from the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) provided extensive income support—thereby facilitating imports in general.

How Was the Study Conducted?

The study relied on agricultural trade data collected by the U.S. Department of Commerce's Bureau of the Census and compiled by USDA's Foreign Agricultural Service (FAS) to explore changes in U.S.-Mexico agricultural trade between calendar years 2019 and 2020. Overall, annual and monthly data were used to identify year-to-year differences in U.S. agricultural exports to Mexico and U.S. agricultural imports from Mexico. At the product level, annual data were used to identify products that either decreased in export value or increased in import value, and these products were further distinguished according to the direction and magnitude of their percentage changes in quantity and unit value. An analysis of demand and supply determinants—some of which were outcomes of the COVID-19 pandemic—was then conducted to provide explanations of the changing levels of trade.

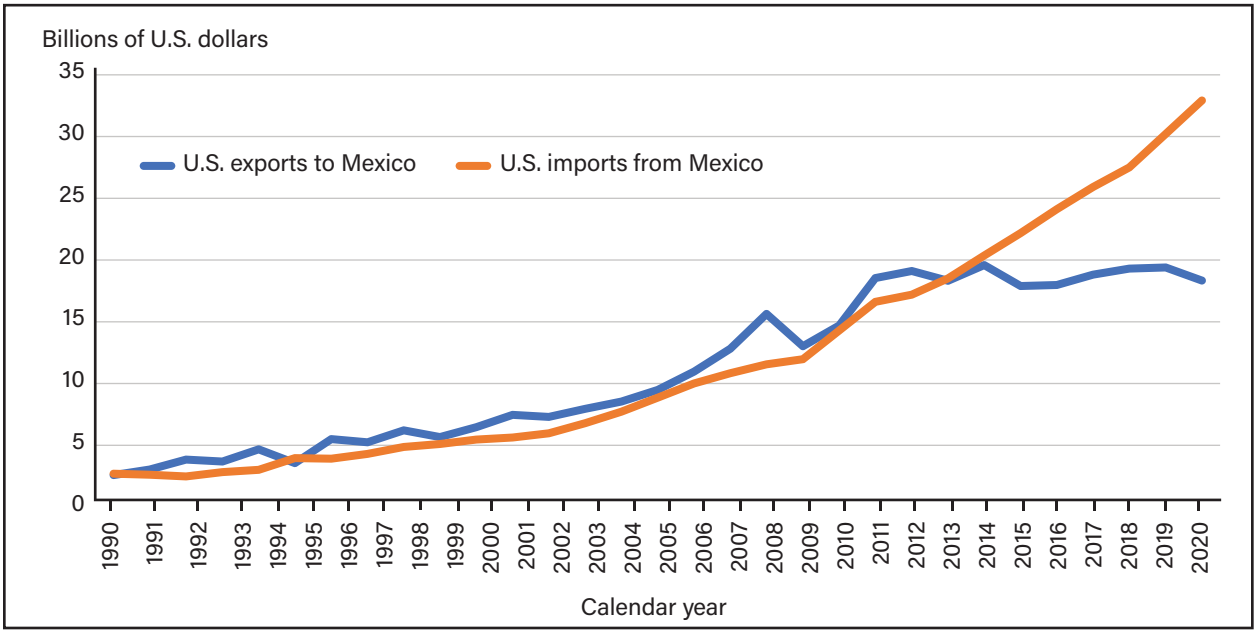
U.S.-Mexico Agricultural Trade in 2020

Introduction

The Coronavirus (COVID-19) pandemic has had a substantial impact on Mexico and the United States. In both countries, the pandemic brought sickness, death, and economic hardship to many households. As of December 15, 2021, Mexico had recorded about 4.1 million cases of COVID-19 and 311,000 resulting deaths, while the United States had recorded about 50.2 million cases and 798,000 deaths (Secretaría de Salud, Subsecretaría de Prevención y Promoción de la Salud, 2021; U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2021a). Estimates based on the number of excess deaths from all causes suggest a higher death toll. Rounding to the nearest thousand, Mexico's Instituto Nacional de Salud Pública (INSP—National Institute of Public Health) estimates that the number of excess deaths in Mexico during the period from January 1, 2020, to November 9, 2021 was about 645,000 (Palacio Mejía and Hernández Ávila, 2021), while the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (2021b) estimates that the number of excess deaths in the United States during the period from February 1, 2020, to December 15, 2021 was about 917,000. Both countries' economies contracted in 2020, with Mexico's real per capita gross domestic product (GDP) falling by 9.2 percent and U.S. real per capita GDP falling by 3.9 percent (calculated using estimates from World Bank [2021] and U.S. Department of Commerce, Bureau of Economic Analysis [2021b]).

Looking only at aggregate statistics for bilateral agricultural trade, it is not readily apparent that the pandemic interrupted the broad trends in U.S.-Mexico agricultural trade that were already underway (figure 1). Between 2019 and 2020, U.S. agricultural exports to Mexico fell from $19.4 billion to $18.4 billion (a 5.3-percent decrease), continuing a pattern seen over the past decade (2011–20), when the annual value of exports fluctuated around $18 billion to $20 billion. Meanwhile, U.S. agricultural imports from Mexico expanded from $30.2 billion to $32.9 million (an 8.9-percent increase), marking the 23rd consecutive annual increase in these imports. By comparison, total U.S. agricultural exports increased between 2019 and 2020, from $141.1 billion to $149.7 billion (a 6.1-percent increase)—partly due to a near-doubling of U.S. agricultural exports to China—while total U.S. agricultural imports climbed from $141.6 billion to $146.3 billion (a 3.3-percent increase)—partly because of rising imports from Mexico and Canada (based on data from U.S. Department of Commerce, Bureau of the Census, as compiled by USDA, Foreign Agricultural Service, 2021a).

Figure 1
U.S.-Mexico agricultural trade, 1990–2020



Note: Agricultural trade is classified using the definition of the World Trade Organization. Trade values are presented in nominal terms (i.e., not adjusted for inflation).

Source: USDA, Economic Research Service presentation of U.S. Department of Commerce, Bureau of the Census data, as compiled by USDA, Foreign Agricultural Service (2021a).

To understand how and why U.S.-Mexico agricultural trade changed during the pandemic year of 2020, the trade data must be examined more closely—using value, quantity, and unit value data at the product level—and to consider both the economic effects of the pandemic and the impact of other economic and policy factors. This paper finds that some U.S. agricultural exports to Mexico were adversely affected by the pandemic-induced downturn in the Mexican economy, as well as much lower food expenditures at Mexico's hotels, restaurants, and institutional establishments (HRI). In contrast, U.S. agricultural imports from Mexico seemed much less affected, although both exports and imports with Mexico experienced an initial downturn during April and May 2020. At that time, the United States and Mexico initiated their initial lockdowns to slow the spread of COVID-19, shortly after the virus was declared a pandemic by the World Health Organization (WHO) and a national emergency by the United States in March 2020 (Executive Office of the President, 2020). There was great diversity across products in the year-to-year changes in trade values, quantities, and unit values for both exports and imports.

To explore these changes, this paper relies on a descriptive analysis of economic data—especially agricultural trade data from the U.S. Department of Commerce, Bureau of the Census, as compiled by the USDA, Foreign Agricultural Service (FAS) in its Global Agricultural Trade System database (USDA, FAS, 2021). Agricultural trade is classified using the definition of the World Trade Organization (WTO)—which includes those products in Chapters 1-24 of the Harmonized Commodity Description and Coding System (HS), less fish and fish products, plus a handful of products in other chapters, such as cotton, essential oils, and hides and skins.[1] For its reporting on international agricultural trade, USDA adopted the WTO's definition of agricultural products, beginning with the monthly statistics for January 2021 (USDA, FAS, 2021c).

[1] See annex 1 of the 1994 Uruguay Round Agreement on Agriculture (WTO, 2021) for the precise definition.

Macroeconomic Changes During the Pandemic

Basic economic theory postulates that supply and demand are influenced by several factors. For demand, the main determinants include income, the price of the good in question, the prices of related goods, consumer preferences, consumer expectations, and the number of consumers. For supply, the determinants include the price of the good in question, the prices of inputs used to produce that good, the current state of production technology, producer expectations, and the number of producers in the market (Georgia State University, Experimental Economics Center, 2006).

On the demand side, two main determinants—income and consumer preferences—changed as a result of the pandemic.

Changes in Income

Both countries suffered a contraction in income and a sharp initial increase in unemployment and underemployment that lasted for several months. Then, during the remainder of the calendar year, the unemployment and underemployment rates gradually fell but ended the year at a higher level than was seen before the pandemic.[2] In the United States, the unemployment rate spiked from 3.8 percent in February 2020 to 14.4 percent in April 2020 and then gradually fell to 6.5 percent by December 2020. As of December 2021, this rate stood at 3.9 percent (U.S. Department of Labor, Bureau of Labor Statistics, 2021). In Mexico, the unemployment rate climbed from 3.5 percent in February 2020 to 5.5 percent in June 2020 and then declined to 3.8 percent in December 2020. In October 2021, Mexico's unemployment rate equaled 4 percent (Instituto Nacional de Estadística y Geografía [INEGI], 2021a).

The underemployment rate provides insights into how the economic contraction triggered by the pandemic affected workers with part-time jobs or jobs with variable hours—particularly in Mexico, where the informal sector accounts for about 23 percent of the value added in the economy (Instituto Nacional de Estadística y Geografía [INEGI], 2021c).[3] In the United States, the U-6 rate—which measures "the total unemployed, plus all persons marginally attached to the labor force, plus total employed part time for economic reasons, as a percent of the civilian labor force plus all persons marginally attached to the labor force"—jumped from 7.4 percent in February 2020 to 22.4 percent in April 2020 and then fell to 11.6 percent by December 2020. In November 2021, this rate equaled 7.4 percent (U.S. Department of Labor, Bureau of Labor Statistics, 2021).

In Mexico, the underemployment rate—which measures the number of persons aged 15 years or older who have the need and availability to supply more hours of work than their current employment allows, as a percent of the economically active population (Instituto Nacional de Estadística y Geografía [INEGI], 2021b)—increased from 8.9 percent in February 2020 to 28.9 percent in May 2020 and then receded to 15.4 percent by December 2020. As of October 2021, Mexico's underemployment rate had dropped further to 11.6 percent (Instituto Nacional de Estadística y Geografía [INEGI], 2021a).

Because of these severe economic conditions, some consumers in each country had less money to spend on food, regardless if that food was produced domestically or imported. The adverse income effects, however, were distributed unevenly across the populations of each country. The incomes of some consumers were unaf-

[2] Seasonally adjusted rates are used in the subsequent discussion of unemployment and underemployment.

[3] The informal economy may be thought of as "diversified set of economic activities, enterprises, jobs, and workers that are not regulated or protected by the state" (Women in Informal Employment: Globalizing and Organizing [WIEGO], 2021). In Mexico, the informal sector includes unsalaried workers who are not part of the country's social security system and whose number of work hours can vary substantially across time.

fected, the incomes of others increased, while still others saw decreases in income, reduced hours of employment, and outright job losses.

The U.S. and Mexican governments implemented fiscal policies to counter the economic downturn resulting from the pandemic, but the U.S. response was far more robust. The centerpiece of the U.S. effort was the Coronavirus Aid, Relief, and Economic Security Act (CARES Act)—a massive stimulus package that included:

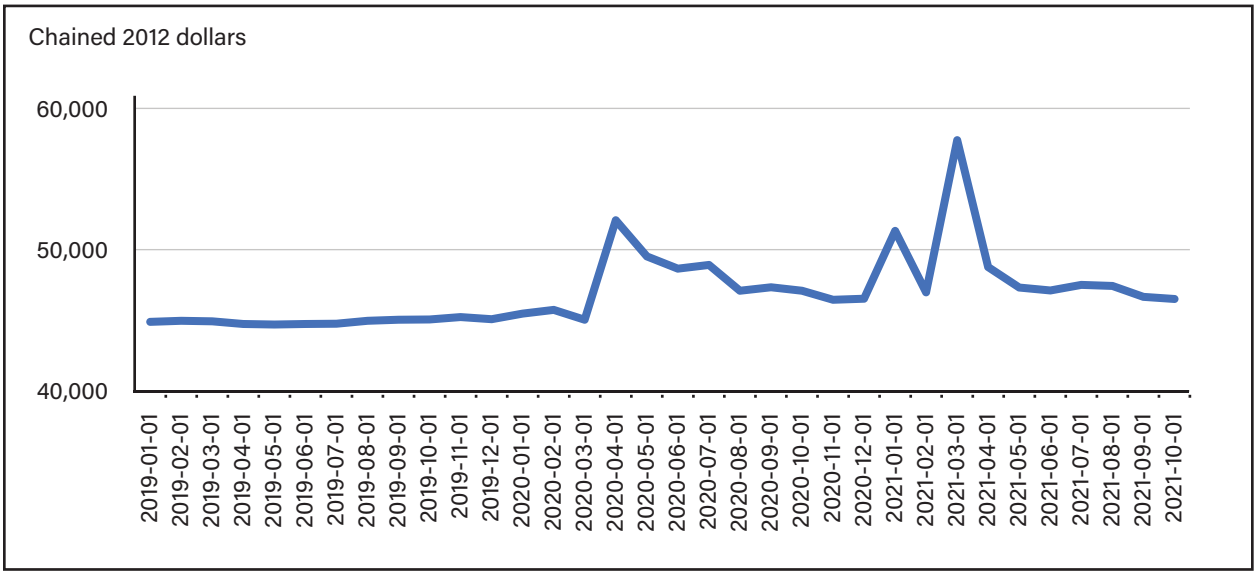
- Loans, guarantees, and other measures to prevent corporate bankruptcies;
- Loans and guarantees for small businesses;
- One-time tax rebates for individuals;
- Expanded unemployment benefits; and
- Additional food security assistance.

Mexico's fiscal response consisted of a smaller set of diverse measures, including increased health expenditures, the frontloading of pension payments, and the provision by development banks of guarantees and liquidity support (International Monetary Fund, 2021).

The International Monetary Fund (IMF) estimates that the stimulus provided by the CARES Act alone corresponded to about 11 percent of U.S. GDP in 2020, while Mexico's entire fiscal policy response to the pandemic amounted to about 2 percent of Mexican GDP.[4] Indeed, the overall size of the U.S. fiscal response has been so large that real monthly disposable income per capita in the United States has been well above 2019 levels since April 2020 (figure 2). The stimulus is likely to have partly offset the downturn in the U.S. economy and to have reinforced the long-term upward trend in U.S. agricultural imports from Mexico. Moreover, the U.S. stimulus may have provided some support to the Mexican economy by strengthening U.S. demand for nonagricultural imports from Mexico and by bolstering the incomes of people of Mexican origin in the United States who send remittances (i.e., money or goods) to family members and friends in Mexico.

[4] The International Monetary Fund (IMF, 2021) has prepared an extensive tracker of the economic policy responses taken to address the economic and human impacts of the COVID-19 pandemic, with extensive, country-specific detail for the United States, Mexico, and 195 other economies throughout the world.

Figure 2
Real disposable personal income per capita in the United States: Chained 2012 dollars, monthly, seasonally adjusted annual rate, 2019–21



Notes: Chained dollars are inflation-adjusted estimates in which the current-dollar value in the base period is multiplied by the change in the chained-type quantity index number for the series since the base period. For details, see U.S. Department of Commerce, Bureau of Economic Analysis (2021a) and Landefeld et al. (2003).

Source: USDA, Economic Research Service presentation of data from U.S. Department of Commerce, Bureau of Economic Analysis, as compiled by Federal Reserve Bank of St. Louis (2021).

Changes in Consumer Preferences

Consumer preferences shifted toward food prepared and consumed at home and away from food consumed at hotels, restaurants, and institutional establishments (HRI) as people sought to limit their possible exposure to COVID-19. Moreover, restrictions were placed on the HRI sector by government entities in the United States and Mexico in response to the pandemic that limited the opportunities for those who still wanted to consume food away from home. These restrictions included closings, capacity limitations, reduced hours of operation, and other restrictions. Given that the portion sizes and types of food consumed at home differ from those of food purchased from the HRI sector, this pivot in consumer preferences is likely to have affected trade somewhat and may also have further depressed GDP in the two countries. Using simulation modeling, Beckman and Countryman (2021) suggest that the decline in food away from home (FAFH) expenditures in 2020 reduced U.S. GDP by 1.2 percent and Mexican GDP by 2.4 percent.

The contraction of the HRI sector was particularly challenging for Mexico, given the importance of tourism to the country's economy. In 2019, Mexico received about 45 million international tourists who, on average, spent about $500 per tourist in Mexico (Secretaría de Turismo, 2020). Lara (2020) reported that Mexico's HRI sector "has almost come to a stop, as pandemic emergency measures continue throughout Mexico, preventing the HRI sector from resuming operations. Industry sources estimate [that] at least 40 percent of Mexico's restaurants closed during the COVID-19 outbreak, many of which may never reopen." Data are not yet available to evaluate if the net number of international visitors to the United States and Mexico increased or decreased in 2020, which would correspond to another determinant of demand: a change in the number of consumers. Overall, however, the number of international visitors to the United States declined from 79.3 million to 19.4 million between 2019 and 2020—a decrease of 75.5 percent (U.S. Department of Commerce, International Trade Administration, National Travel and Tourism Office, 2021a, 2021b).

On the supply side, the public and private sectors sought to prevent the pandemic from interrupting economic activity in the agricultural and food sectors while attempting to reduce the cross-border transmission of COVID-19. In an action coordinated with the governments of Mexico and Canada, the U.S. Government closed its land borders and ferry crossings to nonessential traffic on March 21, 2020. This order was scheduled to remain in effect through January 21, 2022, but a two-stage reopening was announced on October 16, 2021 (U.S. Department of Homeland Security, Office of the Secretary, and U.S. Department of Homeland Security, Customs and Border Protection, 2021a; U.S. Department of Homeland Security, 2021a, 2021b). On November 8, the United States reopened its land borders and ferry crossings to nonessential travelers from outside the United States who could demonstrate that they had been vaccinated against COVID-19. In January 2022, the vaccination requirement will be extended to essential travelers from outside the United States. Agricultural trade was classified as essential at the very beginning of this closure and thus was exempted. In addition, the closure of the land borders focused on border crossings by cars, trucks, and pedestrians and did not affect freight rail, which is commonly used for cross-border shipments of bulk agricultural commodities.

Workers and employers at farms and food processing facilities in the United States and Mexico took measures to limit the spread of COVID-19—including wearing personal protective equipment (PPE) such as face masks and gloves, requiring people to be physically more distant from one another, erecting physical barriers such as plexiglass sheets between workstations, installing air filtration equipment, testing employees for the virus, and barring sick employees from the workplace. These measures can be viewed as changes in production technology that increase the costs of producing agricultural products, and often, they were built upon and integrated within existing systems of workplace safety, food safety, and sanitary and phytosanitary standards. Mexico's animal processing sector, for instance, drew upon its experiences with the H1N1 swine flu outbreak in 2009 and the existing system of Tipo Inspección Federal (TIP—Federal Type Inspection) meat processing plants (Lara, 2021).

Even with these preventative measures—or perhaps because of shortcomings in some of these measures or their implementation—there were still COVID-19 outbreaks among agri-food workers or linked to specific workplaces in the agri-food sector (see, for instance, Douglas, 2021; Perez, 2021; Sheridan, 2020; Stuesse, 2020). There were also efforts by agri-food employers to combat COVID-19 by providing incentives for vaccinations (see, for example, Tyson, 2021). Still, in the face of the many challenges presented by COVID-19, U.S.-Mexico agricultural trade persisted in 2020 and even increased above 2019 levels for many products.

Bilateral agricultural trade in 2020 was also affected by supply conditions in place before the pandemic. These conditions included the size of crops harvested in 2019, supply determinants affecting U.S. produce imports from Mexico, the signing and implementation of the United States-Mexico-Canada Agreement (USMCA), Mexico's lifting of retaliatory tariffs that had been imposed on selected U.S. agricultural products, and movements in the U.S.-Mexico exchange rate.

Size of crops harvested in 2019

The quantities and unit values of many agricultural products traded internationally during a given calendar year are partly determined by the size and quality of the most recent harvest. For some products, the most recent harvest occurred during the previous calendar year. For this reason, the production, marketing, and disposition of many agricultural commodities are recorded in terms of a marketing year that begins around the time when the harvest usually begins. For instance, the U.S. marketing years for corn for grain, sorghum for grain, and soybeans all begin on September 1. Thus, for these commodities, the first 8 months of calendar year 2020 were part of the 2019/20 marketing year—as crops harvested in the fall of 2019 were marketed primarily from September 1, 2019, through August 31, 2020. For wheat, the U.S. marketing year starts on June 1; sugar's starting date is October 1.

Table 1 lists estimates of the quantities of corn, soybeans, sorghum, sugar, and wheat produced in the United States and Mexico in U.S. marketing years 2018/19 and 2019/20. Between these two marketing years, corn, soybean, and sorghum production increased in both the United States and Mexico—making supplies more ample—while production of wheat and sugar decreased in both countries—making supplies tighter. In calendar year 2019, corn, soybeans, and wheat were among the top 5 U.S. agricultural exports to Mexico in terms of export value; sugar was among the top 15 U.S. agricultural imports from Mexico in terms of import value (appendix table 1).

Table 1
Production estimates for selected U.S. and Mexican agricultural commodities: U.S. marketing years 2018/19 and 2019/20

Commodity	Country	2018/19	2019/20	Change
		Metric tons (thousands)		*Percent*
Corn	Mexico	26,658	27,346	2.6
	United States	345,962	358,447	3.6
Soybeans	Mexico	235	246	4.7
	United States	96,667	114,749	18.7
Sorghum	Mexico	4,328	4,348	0.5
	United States	8,673	9,474	9.2
Wheat	Mexico	3,270	2,965	-9.3
	United States	52,581	49,751	-5.4
Sugar, centrifugal	Mexico	6,812	5,596	-17.9
	United States	8,164	7,392	-9.5

Source: USDA, Economic Research Service, using data from USDA, Foreign Agricultural Service (2021b).

Supply determinants affecting U.S. produce imports from Mexico

U.S. produce imports from Mexico continued to be affected by supply determinants that helped Mexican growers export increasingly larger quantities of a more diverse range of fresh fruit and vegetables to U.S. consumers, especially when U.S. production is not in season. Among these determinants are:

- Intraregional free trade, as originally established by the North American Free Trade Agreement (NAFTA) and continued by the United States-Mexico-Canada Agreement (USMCA);
- Greater availability of farm labor in Mexico relative to the United States, which helps to keep down labor costs in Mexican agriculture;
- Extensive application of protected cultures (i.e., greenhouses, screen houses, and tunnels) to fruit and vegetable cultivation in Mexico;[5] and
- Entry of new growers, packers, marketers, and related firms into Mexico's horticultural export sector.

The long-term trade effects of these determinants are readily apparent in the rising levels of U.S. imports from Mexico of fresh fruit and vegetables over the past half century (figure 2). Between 1968 and 2019, the approximate annual volume of these imports increased from 419,000 metric tons to 10.1 million metric tons.

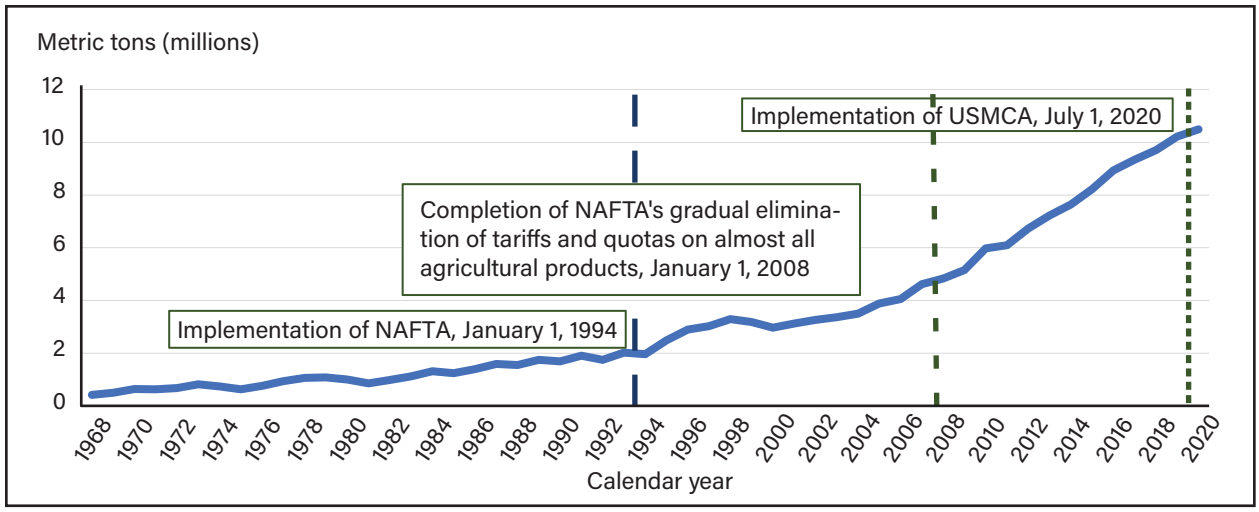
[5] See Agehara, et al. (2020) for an overview of the different types of protective structures used in the production of vegetables and small fruit.

Moreover, imports from Mexico accounted for a much larger percentage of the U.S. supply of fresh fruit and vegetables, with the share rising from 4 percent in 1990 to 20 percent in 2018.[6]

Among these imports is a growing amount of certified organic product, which embody a higher value added and command a price premium on the market. While U.S. statistics do not provide information on organic trade for all types of produce, the available data confirm that this trade is substantial. Between 2019 and 2020, U.S. imports from Mexico of certified organic avocados, bananas, blueberries, peppers, and squash increased from a total of 197,000 metric tons to 238,000 metric tons (USDA, Foreign Agricultural Service, 2021a).

Creation of a free-trade area in North America is a key determinant of this long-term increase in U.S. produce imports from Mexico. At the start of 1994, the United States, Mexico, and Canada implemented the North American Free Trade Agreement (NAFTA), which gradually removed almost all the tariff and quota barriers that had formerly governed intraregional trade. For agricultural products, this trade liberalization took place over a 14-year transitional period that began on January 1, 1994 and ended on January 1, 2008. Since the completion of this transition, U.S. imports from Mexico of fresh fruit and vegetables (measured in metric tons, figure 3) have grown at a faster rate, with a compound annual growth rate of 7 percent between 2008 and 2019 (the period after the transition), compared with 6 percent between 1993 and 2008 (the transitional period).

Figure 3
U.S. imports of fresh fruit and vegetables from Mexico, 1968–2020



Source: USDA, Economic Research Service calculations using data from U.S. Department of Commerce, Bureau of the Census, as compiled by USDA, Foreign Agricultural Service (2021a).

The United States-Mexico-Canada Agreement

The signing of the United States-Mexico-Canada Agreement (USMCA)—NAFTA's replacement accord—and its subsequent ratification and implementation reassured the agri-food sector that free trade in North America would continue, even in the face of the COVID-19 pandemic. Ratification and implementation of the USMCA took place just as the COVID-19 crisis was unfolding. Canada was the last of the three member countries to ratify the agreement, with the Canadian Parliament quickly doing so on March 12, 2020, and

[6] These shares were calculated using food disappearance data from USDA, Economic Research Service (2020), population data from U.S. Department of Commerce, Bureau of the Census (2020), and import data from U.S. Department of Commerce, Bureau of the Census, as compiled by USDA, Foreign Agricultural Service (2021a).

then adjourning for 3 weeks to limit the spread of the virus (Ljunggren, 2020). The USMCA took effect on July 1, 2020.

In the area of agricultural trade liberalization, the USMCA largely preserved one of NAFTA's major elements: All agricultural products that had zero tariffs under NAFTA still have zero tariffs under the USMCA. Unlike NAFTA, however, the USMCA includes a sunset provision that requires member governments to extend or modify the agreement periodically if it is to continue. Under the new agreement, the member countries will conduct their first joint review of the USMCA on July 1, 2026, the sixth anniversary of the agreement's entry into force.[7]

Lifting of retaliatory tariffs

U.S. agricultural exports to Mexico may have benefitted from the Mexican Government's lifting of tariffs levied in retaliation for tariffs imposed by the United States on steel and aluminum imports under Section 232 of the Trade Expansion Act. Mexico's retaliatory tariffs covered imports from the United States of steel, aluminum, and a handful of agricultural products—including pork, ham, certain types of cheese, fresh apples, frozen french fries, prepared or preserved cranberries, and whiskey. These tariffs took effect on June 5, 2018, and were removed on May 20, 2019 (Secretaría de Gobernación, 2018, 2019; Parrish, 2018; U.S. Department of Agriculture, Foreign Agricultural Service, Office of Agricultural Affairs, Mexico City, 2018).

Mexican imports of the U.S. products subject to the retaliatory tariffs may have been higher in 2020 than in 2019—particularly during the months of January through May since the tariffs were still in effect from January 1, 2019, to May 19, 2019 —due to the lifting of the retaliatory tariffs. For many of the agricultural products covered by the tariffs, Mexican imports from the United States were indeed of a higher quantity during January-May 2020 than during January-May 2019, according to Mexican trade data (table 2). In a gravity-model analysis of these and other retaliatory tariffs, Grant et al. (2021) estimated that Mexico's retaliatory tariffs resulted in a $342 million loss in U.S. agricultural exports to Mexico, including $306 million in lost U.S. pork exports to Mexico, during the entire period when they were in effect (June 5, 2018, to May 19, 2019).

[7] For details about the USMCA's sunset provisions, see Article 34.7 of the agreement (Agreement between the United States of America, the United Mexican States, and Canada 7/1/20 Text) on the website of the Office of the United States Trade Representative (USTR, 2020).

Table 2

Mexican agricultural imports from the United States subject to retaliatory tariffs, January-May 2019 and January-May 2020

Mexican tariff code	Description	Tariff rate	January-May 2019			January-May 2020			Change		
			Value	Quantity	Unit value	Value	Quantity	Unit value	Value	Quantity	Unit value
			Millions of dollars	*Thousands of metric tons*	*Dollars per kilogram*	*Millions of dollars*	*Thousands of metric tons*	*Dollars per kilogram*	*Percent*		
0203.12.01	Hams, shoulders, and cuts, thereof, bone in, fresh or chilled	20	316.6	239.7	1.32	363.3	248.3	1.46	14.8	3.6	10.8
0203.19.99	Swine meat, fresh or chilled, other than carcasses, half carcasses, and hams, shoulders, and cuts thereof, bone in	20	28.4	14.7	1.94	51.1	26.3	1.94	79.7	79.3	0.2
0203.22.01	Hams, shoulders, and cuts, thereof, bone in, frozen	20	1.7	0.8	2.10	0.7	0.3	2.32	-56.9	-61.0	10.4
0203.29.99	Swine meat, frozen, other than carcasses, half carcasses, and hams, shoulders, and cuts thereof, bone in	20	48.6	28.7	1.69	74.1	32.0	2.32	52.5	11.3	37.0
0406.10.01	Fresh cheese (unripened), including whey cheese and curd	25	10.2	2.5	4.08	11.1	2.6	4.30	8.5	3.0	5.4
0406.20.01	Cheese of any type, grated or in powder	20	77.3	20.1	3.85	102.0	21.8	4.68	32.0	8.7	21.5
0406.90.04	Grana or Parmesan-reggiano, with a fat content by weight less than or equal to 40%, with a water content by weight, of nonfat matter, less than or equal to 47%; Danbo, Edam, Fontal, Fontina, Fynbo, Gouda, Havarti, Maribo, Samsoe, Esrom, Itálico, Kernhem, Saint-Nectaire, Saint-Paulin, or Taleggio, with a fat content by weight less than or equal to 40%, with a water content by weight, of nonfat matter, greater than 47% and less than 72%	20	5.7	1.6	3.55	13.6	3.1	4.39	136.0	90.7	23.7
0406.90.99	Other cheeses not elsewhere specified or indicated	25	34.5	7.8	4.42	47.9	10.1	4.74	38.8	29.3	7.3
0808.10.01	Apples, fresh	20	124.5	110.7	1.13	111.2	118.0	0.94	-10.8	6.6	-16.3
1601.00.02	Sausages and similar products, of swine, swine offal or blood; food preparations based on these products	15	37.4	7.7	4.83	37.7	6.9	5.46	1.0	-10.7	13.1
1602.41.01	Ham and cuts of ham, prepared or preserved	20	6.8	1.9	3.54	5.5	1.1	4.84	-18.6	-40.3	36.4
1602.42.01	Shoulders and cuts of shoulders of swine, prepared or preserved	20	0.020	0.004	4.66	0.051	0.019	2.64	159.0	356.8	-43.3
2004.10.01	Potatoes, including french fries, prepared or preserved otherwise than by vinegar or acetic acid, frozen	20	38.8	33.0	1.18	44.9	36.6	1.23	15.7	11.1	4.1
2008.93.01	Cranberries, prepared or preserved, not elsewhere specified or indicated	20	9.8	2.9	3.32	15.1	22.4	0.67	54.5	660.7	-79.7
2106.90.99	Other food preparations [not elsewhere specified or indicated]	15	186.3	24.3	7.68	158.2	21.0	7.55	-15.1	-13.6	-1.7
2208.30.04	"Tennessee" whiskey or bourbon.	25	4.0	1.1	3.63	1.6	0.5	3.25	-61.0	-56.4	-10.5
	Total		930.6	--	--	1,038.0	--	--	11.5	--	--

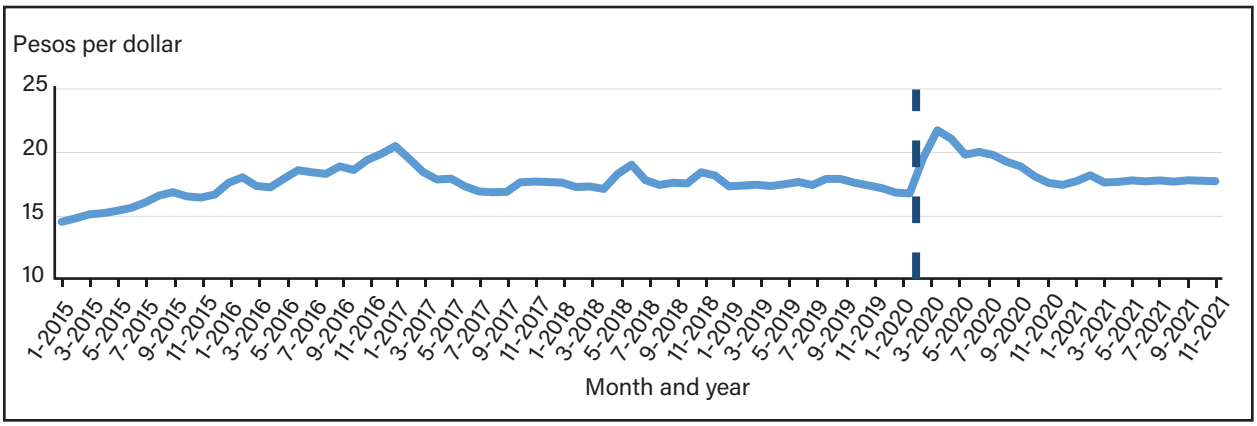
Notes: Quantity of "Tennessee" whiskey or bourbon is measured in millions of liters, and unit value of this product is measured in dollars per liter. Import data for hams and cuts of ham (HS 1602.41.01) are drawn from U.S. export data due to a possible error in Mexico's trade data for 2019. All other import data are drawn from Mexican trade data.

Source: USDA, Economic Research Service calculations using Mexican import data from Secretaría de Economía, as compiled by Trade Data Monitor LLC (2021) and U.S. export data from U.S. Department of Commerce, Bureau of the Census as compiled by USDA, Foreign Agricultural Service (2021a). List of retaliatory tariffs is based on author's unofficial translation of Secretaría de Economía (2018).

Exchange-rate movements

Bilateral agricultural trade in 2020 was also affected by movements in the U.S.-Mexico exchange rate. Shortly after the onset of the pandemic in North America, the Mexican peso sharply depreciated against the U.S. dollar, losing about 23 percent of its value between February and April 2020 (figure 4). During the rest of the calendar year, the peso gradually appreciated and returned to about 95 percent of its pre-pandemic (February 2020) level against the dollar by the end of the year. Relative to the exchange rates of January and February 2020, the depreciated value of the peso during the remainder of the calendar year made U.S.-made products more expensive to Mexican buyers and Mexican-made products more affordable to U.S. buyers, thereby discouraging U.S. exports to Mexico and facilitating U.S. imports from Mexico.

Figure 4
Monthly real U.S.-Mexico exchange rate: January 2015 – December 2021



Notes: Base year is 2015. Vertical line indicates approximate onset of the Coronavirus (COVID-19) pandemic in the United States and Mexico.

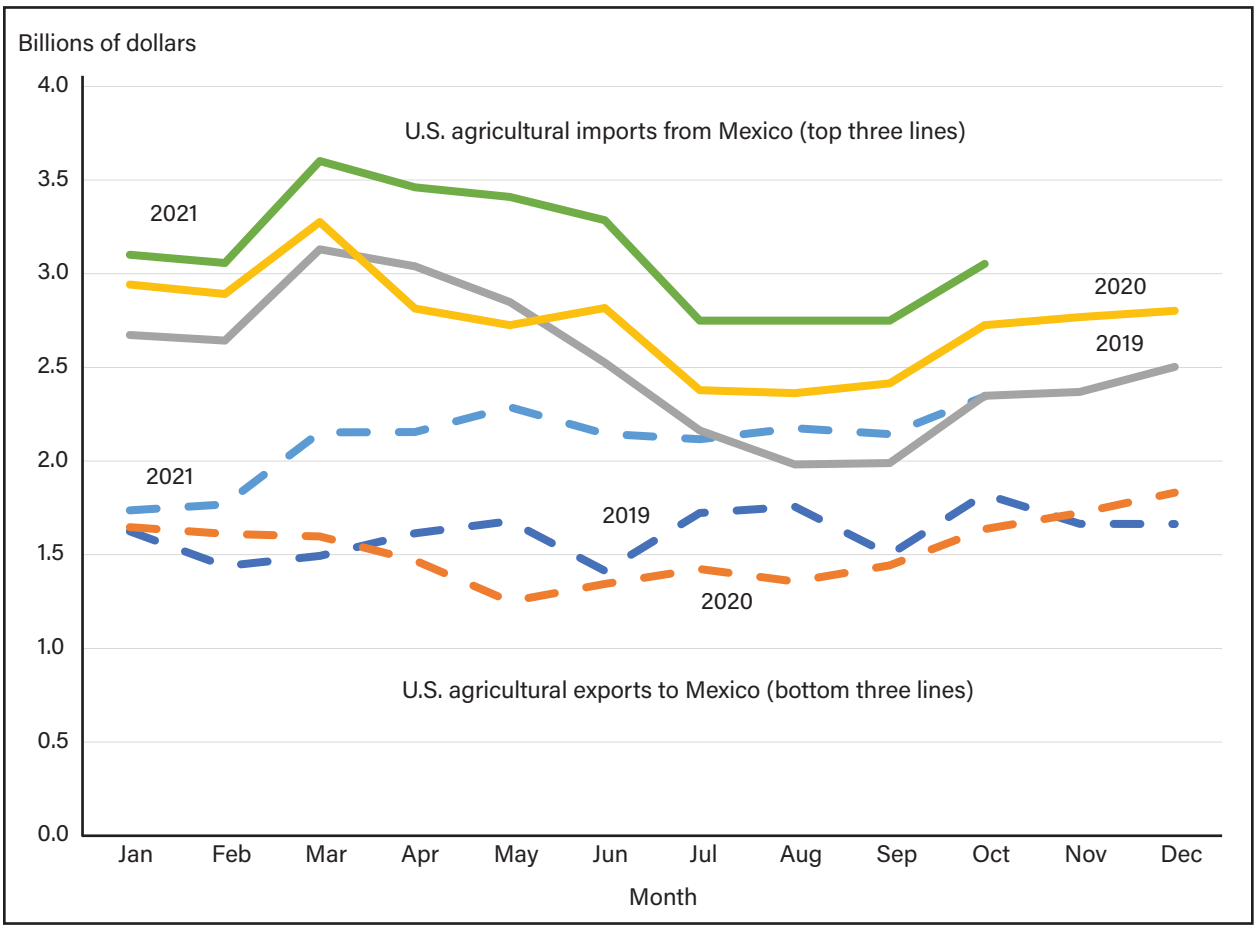
Source: USDA, Economic Research Service (2021b).

Change in Bilateral Trade

A close look at monthly trade data (rather than the annual data shown in figure 1) reveals that U.S.-Mexico agricultural trade underwent many changes between the pre-pandemic year of 2019 and the first pandemic year of 2020 (figure 5). In general, U.S. agricultural exports to Mexico suffered a downturn that lasted for more than half a year, while U.S. agricultural imports from Mexico experienced a much shorter downturn that started at roughly the same time as the downturn in U.S. agricultural exports to Mexico but lasted only several months.

Focusing first on U.S. agricultural exports to Mexico, these exports saw year-to-year increases in January, February, and March 2020—with sales in the first quarter of 2020 being 6.5 percent higher than sales in the first quarter of 2019. During the next 7 months (April-October 2020), exports saw year-to-year decreases instead, with total sales being 13.8 percent lower than total sales during the corresponding months of 2019. Exports then rebounded in November and December 2020, totaling 6.8 percent higher than during November and December of 2019. Export sales improved during the first 10 months of 2021, suggesting that the pandemic's worst effects on U.S. agricultural exports to Mexico have passed.

Figure 5
U.S.-Mexico agricultural trade by month, January 2019-October 2021



Source: USDA, Economic Research Service calculations using trade data from U.S. Department of Commerce, Bureau of the Census, as compiled by USDA, Foreign Agricultural Service (2021a).

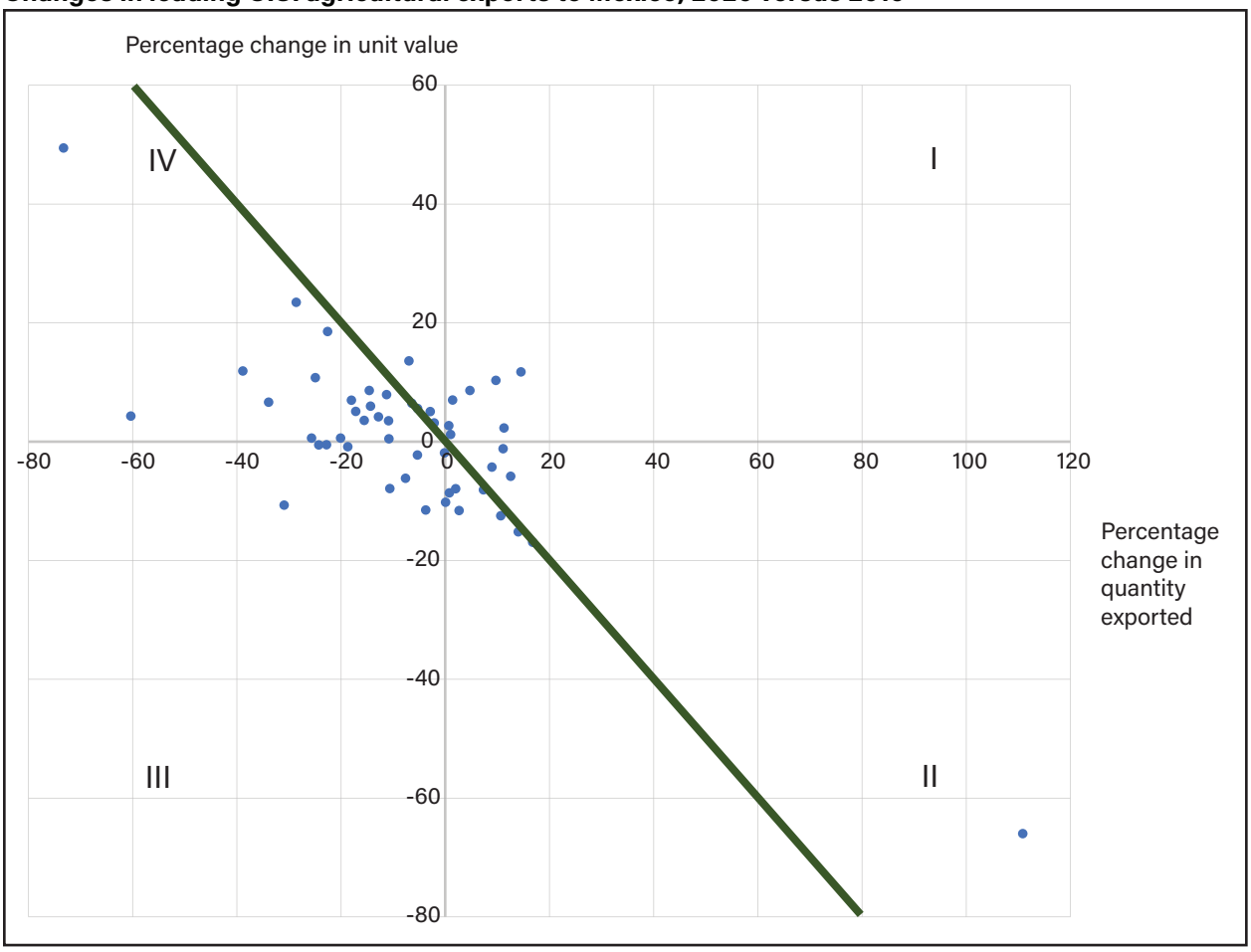
Like U.S. agricultural exports to Mexico, U.S. agricultural imports from Mexico saw year-to-year increases in January, February, and March 2020—with sales in the first quarter of 2020 being 7.9 percent higher than

sales in the first quarter of 2019. During the next 2 months (April-May 2020), imports saw year-to-year decreases with total sales being 5.9 percent lower than total sales during the corresponding months of 2019. Import growth then resumed in June 2020, with year-to-year growth each month from June 2020 through at least through October 2021. From June through December 2020, U.S. agricultural imports from Mexico were 15 percent higher than during the corresponding months of 2019.

U.S.-Mexico agricultural trade is made up of many bulk, intermediate, and consumer-ready products. Not surprisingly, the changes in the prices and quantities traded of these products between 2019 and 2020 varied from product to product. For this reason, it is necessary to explore the changes in bilateral agricultural trade at the level of individual products.

Appendix table 1 describes the values, volumes (quantities), and unit values for the leading U.S. agricultural exports to Mexico—focusing on those products whose export value in 2019 exceeded $50 million. Percentage changes in the unit values and quantities traded are then graphed in figure 6. A similar exploration of U.S. agricultural imports from Mexico is conducted later in the paper.

Figure 6
Changes in leading U.S. agricultural exports to Mexico, 2020 versus 2019



Note: The green line with a slope of negative one and running through the origin divides the products into two groups: those with increases in export value (above the line) and those with decreases (below). The four quadrants are demarcated by the x- and y-axes.

Source: USDA, Economic Research Service calculations using data from U.S. Department of Commerce, Bureau of the Census, as compiled by USDA, Foreign Agricultural Service (2021a).

Fifty-one of the agricultural products exported by the United States to Mexico had export values of $50 million or more in 2019. The types of products range from nonalcoholic beverages, not elsewhere specified or indicated ($52 million), to corn ($2.7 billion), with soybean oil ($113 million) being the median case. Of these 51 products, 13 saw an increase in the value exported in 2020 (represented by the points in figure 5 above the dashed, diagonal line), and 38 saw a decrease (points below the dashed line). The changes in export value ranged from a decrease of $205 million (beef and veal) to an increase of $52 million (preparations used in animal feeding, other than pet food). The percentage changes in export value ranged from a decrease of 60 percent (beer) to an increase of 28 percent (preparations used in animal feeding). The larger changes in export value tended to be decreases. Among the 13 products that saw an increase in export value, preparations used in animal feeding was the only one with an increase greater than $50 million. In contrast, 6 of the 38 products with a decrease in export value had a decrease greater than $50 million: beef and veal (decrease of $205 million), cotton ($110 million), pork ($85 million), sorghum ($72 million), nonfat dry milk (NFDM, $71 million), and corn ($56 million).

The 38 products with a lower export value in 2020 fall into 3 groups, as illustrated in figure 6:

1. Products that saw decreases in both unit value and export quantity (quadrant III);
2. Products that saw a decrease in unit value and an increase in export quantity (below the diagonal line in quadrant II); and
3. Products that saw an increase in unit value and a decrease in export quantity (below the diagonal line in quadrant IV).

The four quadrants in figure 6 are demarcated by the figure's x- and y-axes. The products in quadrant I are not discussed, since they experienced a year-to-year increase (rather than a decrease) in export value in 2020.

Nine products saw decreases in both unit value and export quantity leading to outright decreases in their export value. These products are beef and veal ($205 million decrease in export value); beef variety meats ($49 million); cotton ($110 million); corn ($56 million); turkey meat ($40 million); pork variety meats ($34 million); pecans, fresh or dried ($19 million); peanuts, shelled ($16 million); and onions and shallots, fresh ($5 million). That the decrease in unit value (i.e., price) recorded in 2020 was insufficiently large to motivate Mexican buyers to purchase larger quantities of these exports suggests that a leftward shift in demand had occurred. Possible sources of this demand shift include a decrease in income, a decrease in the number of foreign visitors, a shift away from food consumption in HRI establishments, and in the case of corn, an increase in Mexican production during the previous crop year (table 1).

The sharp decline in Mexican income in 2020 broadly affected the composition of Mexican protein consumption, leading to changes in the quantities and unit values of U.S. meat exports to Mexico. As Lara and Alvarado (2021) observe: "In 2020, at the household level, a shift was seen away from beef to more affordable animal proteins, such as chicken, or eggs—and even beans, lentils, and other plant-based proteins—due to the negative economic effects of the pandemic." USDA's Production, Supply, and Demand (PSD) Estimates suggest that the shift away from beef consumption was small in percentage terms and should be viewed in the context of a pivot toward domestically produced beef (table 3). Between 2019 and 2020, domestic consumption of beef and veal in Mexico declined by 0.2 percent, while domestic production increased by 2.6 percent. With Mexican consumers generally shifting slightly away from beef, and substituting domestically produced beef for some imported beef, the quantity of U.S. beef exports to Mexico dropped by 24 percent between 2019 and 2020, and their unit value fell by 0.5 percent (appendix table 1).

Table 3
Mexican meat production and domestic consumption, 2016–21

Commodity	Attribute	2016	2017	2018	2019	2020	2021	Unit description
Meat, beef and veal	Production	1,879	1,925	1,980	2,027	2,079	2,120	(1000 MT CWE)
	Domestic consumption	1,833	1,868	1,902	1,901	1,898	1,990	(1000 MT CWE)
Meat, chicken	Production	3,275	3,400	3,485	3,600	3,725	3,815	(1000 MT)
	Domestic consumption	4,061	4,198	4,301	4,469	4,560	4,698	(1000 MT)
Meat, swine	Production	1,211	1,267	1,321	1,408	1,451	1,495	(1000 MT CWE)
	Domestic consumption	1,913	1,983	2,116	2,159	2,052	2,220	(1000 MT CWE)

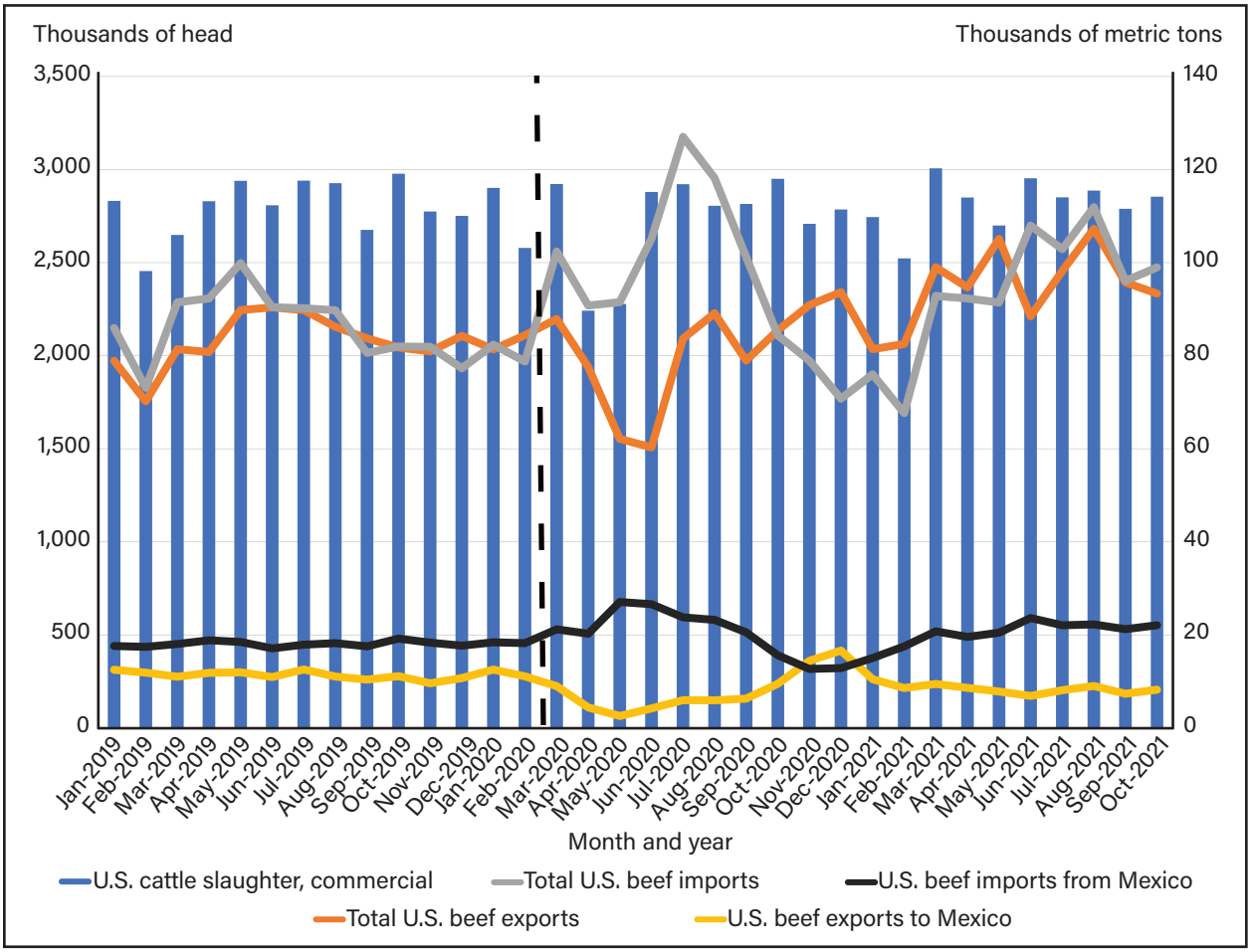
Notes: MT = metric tons. CWE = carcass weight.

Source: USDA, Foreign Agricultural Service (2021b).

COVID-related disruptions in U.S. meatpacking operations in the spring of 2020 also affected U.S.-Mexico beef trade. Specifically, a decline in commercial slaughter numbers in April and May 2020 was offset by fewer U.S. beef exports during May and June 2020 and more beef imports during March-September 2020, compared with the same months of 2019 (figure 7). U.S.-Mexico beef trade followed a similar pattern; however, the periods when the United States exported less beef to Mexico and imported more beef from Mexico were longer—roughly March-October 2020 for exports to Mexico and March-September 2020 for imports from Mexico, again compared with the same months of 2019. These longer periods suggest that U.S.-Mexico beef trade was affected not only by the short-term, COVID-related supply disruptions in the U.S. meatpacking sector, but also by the longer macroeconomic downturn in Mexico.[8] Moreover, these changes in bilateral beef trade help to explain Mexico's shift toward domestically produced beef during 2020.

[8] The extent to which COVID-19 has affected Mexican meat packing operations is difficult to ascertain. Alire García and Huffstutter (2020) report that, through at least mid-May of 2020, Mexico's beef packers largely avoided disruptions of the type experienced in the U.S. meat packing sector because of COVID-19. In terms of quantity, Mexico's monthly total beef exports (to all countries) were higher during January-September 2020 and lower during October-December 2020, compared with the corresponding months of 2019 (Secretaría de Economia data, as compiled by Trade Data Monitor, 2021).

Figure 7
U.S. commercial cattle slaughter and beef trade, January 2019–October 2021



Source: USDA, Economic Research Service (ERS) calculations using commercial cattle slaughter data from USDA, National Agricultural Statistics Service, as compiled by USDA, ERS (2021a), and trade data from U.S. Department of Commerce, Bureau of the Census, as compiled by USDA, Foreign Agricultural Service (2021a).

Another beef-related change in trade occurred starting in the summer of 2020. U.S. cattle exports to Mexico increased well above their pre-pandemic levels—with the monthly average climbing from about 1,900 head during calendar year 2019 to about 4,300 head during the period July 2020-June 2021. While Mexico customarily imports cattle for breeding purposes, most of the additional cattle from the United States were slaughtered and processed soon after their arrival in Mexico. Still, U.S. cattle exports to Mexico in 2020 were much smaller in quantity than corresponding imports from Mexico —about 33,000 head versus 1.4 million head, respectively (USDA, Foreign Agricultural Service, 2021a). U.S. cattle imports from Mexico tend to be feeder animals that are fed to the desired finishing weight in the United States and then slaughtered.

The decrease in U.S. cotton exports to Mexico was linked to emergency measures that temporarily closed many textile plants in Mexico, along with pandemic-related declines in foreign and domestic demand for cotton-based textiles and textile products. Emergency measures enacted by the Mexican Government on March 23, 2020, deemed the textile industry to be nonessential, except for facilities manufacturing PPE and other items for the health sector (Otero, 2020). Facilities that incorporated items for the health sector—such as masks, gowns, and sheets—into their portfolio of products were allowed to remain open under the emergency measures. Mexican exports of cotton yarn and fabric rebounded quickly after slumping during the months of April, May, and June 2020 (Otero, 2020, 2021).

Nine products experienced a decrease in unit value and an increase in export quantity and still saw a decrease in export value: pork (decrease in export value of $85 million); chicken meat ($36 million); fresh apples ($25 million); whole bovine hides ($24 million); unmanufactured tobacco ($8 million); almonds, fresh or dried ($3 million); sausages and similar products of poultry other than chicken ($2 million); sausage casings ($2 million); and dog or cat food ($1 million). While the decrease in unit value made these products more affordable to Mexican buyers, it is important to consider that export quantities for these products might have been even larger had the pandemic not occurred. For example, U.S. pork exports to Mexico might have increased by an even larger amount, had domestic pork consumption not decreased slightly in 2020 (table 1). As was previously discussed, U.S. pork exports to Mexico benefitted from the lifting of Mexico's retaliatory tariffs on pork. Lara and Alvarado (2021) mention that pandemic-related changes in meat consumption at HRI establishments had a more profound downward impact on pork consumption than on beef.

Twenty products experienced an increase in unit value and a decrease in export quantity and still saw a decrease in export value. For the products in this group, the percentage increase in unit value between 2019 and 2020 was less than the percentage decrease in export quantity, resulting in lower export values for each product in the group. The 5 products in this group with the largest decreases in export value were sorghum (decrease of $73 million), nonfat dry milk (NFDM, $71 million), high-fructose corn syrup (HFCS, $45 million), distiller's dried grains with solubles (DDGS, $39 million), and beer ($35 million). Coupled with the economic downturn, the increase in unit value may have further discouraged Mexican buyers from importing these products, and the depreciation of the Mexican peso against the U.S. dollar sharpened the impact of these increases.

For nonfat dry milk, the increase in the U.S. product's unit value, the reduction in Mexican income, and the depreciation of the peso together offer a plausible explanation for the decrease in U.S. exports to Mexico. For many other products in this group, the decreases in exports are also linked to other factors. Particularly, economic and policy developments in China have greatly affected international markets for sorghum and DDGS over the past half decade. Trade tensions with the United States resulted in much higher duties on several U.S. agricultural products. From July 2018 to March 2020, China applied a retaliatory tariff of 25 percent (instead of the usual tariff of 2 percent) on sorghum imports from the United States (Macke, 2020), and U.S. DDGS exports to China have been subject to antidumping and countervailing duties since September 2016.[9] In addition, an outbreak of African Swine Fever (ASF) during 2018-20 killed about half of China's swine herd. Together, these developments rearranged global trade patterns for pork, sorghum, DDGS, and other agricultural commodities. With China requiring smaller quantities of sorghum and DDGS, U.S. sorghum exports to Mexico increased to an unusually high level—665,000 metric tons in 2019—while U.S. DDGS exports to Mexico remained at 2 million metric tons, roughly the same quantity as in 2018.

The signing of the Economic and Trade Agreement between the United States and China in February 2020 lessened trade tensions between the two countries, resulting in a waiver of the retaliatory tariff on U.S. sorghum but not the antidumping and countervailing duties on U.S. DDGS, and efforts to rebuild China's swine herd following the ASF outbreak boosted feed demand in China. In this changed economic and policy context, U.S. feedstuff exports to China recovered, drawing away some exports that might have gone to Mexico. As a result, U.S. sorghum and DDGS exports to Mexico declined to 264,000 metric tons and 1.7 million metric tons, respectively, in 2020.[10]

Since the onset of the pandemic, Mexican demand for sugar and sweeteners has declined in response to multiple factors—including the country's weakened economy, higher rates of inflation, government

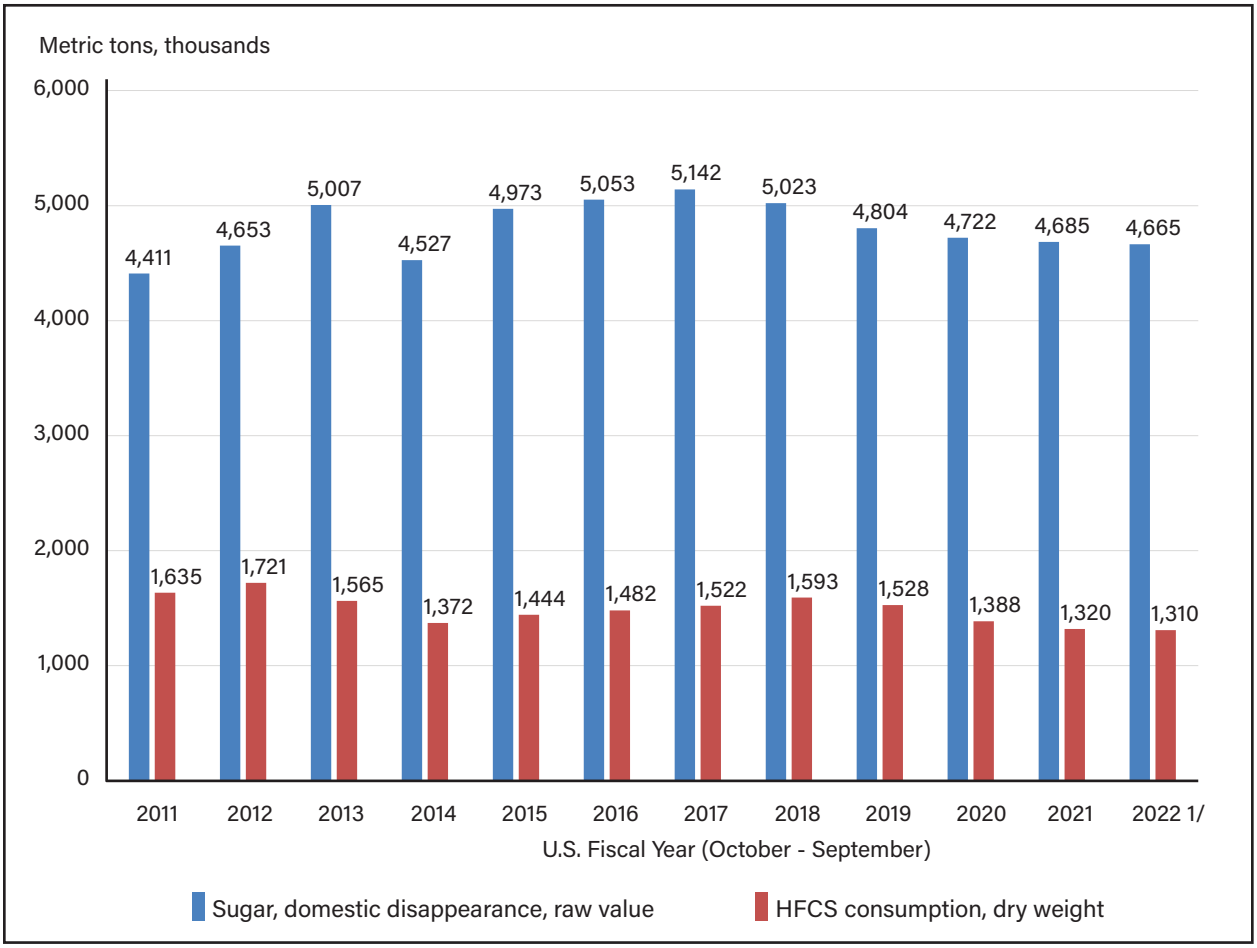
[9] See De Oliveira (2018) for an analysis of the initial effects of China's trade policies on imports of U.S. DDGS.

[10] Gale (2021) explores the surge in 2020 in Chinese imports of corn and corn substitutes in greater detail.

campaigns against the consumption of soft drinks and other high-calorie foods, and concerns that the large numbers of COVID-19 cases and deaths in Mexico are linked to high rates of obesity, heart disease, and diabetes in the Mexican population (Osoyo, 2021). As a result, domestic sugar disappearance in Mexico decreased by 2 percent between U.S. fiscal years 2019 and 2020, and Mexican consumption of high fructose corn syrup (HFCS) decreased by 9 percent (figure 8).

These demand-side factors largely explain the decline in U.S. HFCS exports to Mexico between calendar years 2019 and 2020 and appear to be motivating Mexico's beverage and processed food sectors to reformulate their products so that they either contain less sugar and HFCS or rely on noncaloric sweeteners instead (Osoyo, 2021). These changes in sugar and sweetener demand may also be long-lasting. USDA forecasts issued in December 2021 suggest that Mexico's domestic disappearance of sugar and domestic consumption of HFCS will remain near these new, lower levels in fiscal year 2022 (figure 8).

Figure 8
Domestic disappearance of sugar and domestic consumption of high-fructose corn syrup in Mexico, fiscal years 2011–22



Notes: 1/ = forecast. HFCS = high-fructose corn syrup.

Source: USDA, Economic Research Service (2021b), using data from USDA, Foreign Agricultural Service, and USDA, World Agricultural Outlook Board.

Three actions stand out among the efforts by Mexico's Federal and State Governments to discourage the consumption of soft drinks and other high-calorie foods (Osoyo, 2020b). First, in June 2020, Mexico's Procuraduría Federal del Consumidor (PROFECO—Federal Prosecutor for the Consumer) launched a nutri-

tion campaign called La Nueva Mesa ("The New Table"). This campaign had two main messages: to orient the Mexican people "toward a truly nutritious diet" and to acquaint them with the foods supplied by different parts of the country (El Financiero Editorial Staff, 2020). As part of this campaign, PROFECO broadcast a series of public service announcements for 6 months on radio, television, and social media, in partnership with five cabinet-level ministries.[11]

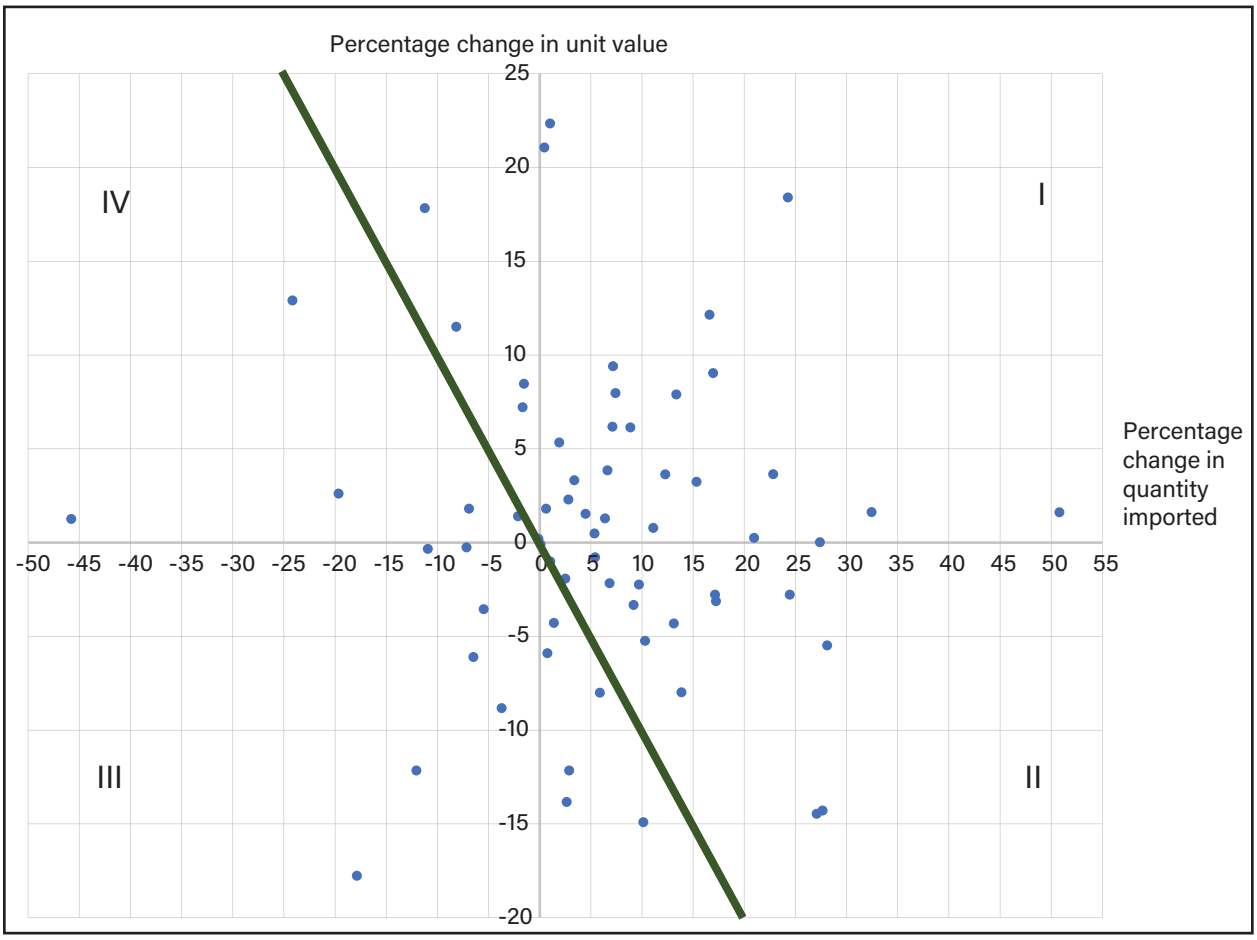
Second, a new front-of-pack labeling law took effect on October 1, 2020. Among this law's provisions is the requirement that cautionary labeling be displayed on the packaging of foods that contain specific nutrients that exceeds thresholds defined by the law. For example, Coca-Cola products that include cane sugar or HFCS now bear the advisory "Contiene Edulcorantes: No Recomendable en Niños" ("Contains Sweeteners: Not Recommended for Children"). The law also prohibits the use of games, digital downloads, pictures of athletes or celebrities, graphics, characters, and cartoons on processed foods and beverages aimed toward children (Cortez, 2020; Osoyo, 2020b).

Third, on September 8, 2020, the Governor of Oaxaca approved an amendment to the State's Law on Rights for Children and Adolescents that bans the sale, distribution, and donation of chatarra (junk food), including sugary drinks and highly processed foods, to people under the age of 18. Similar legislation submitted by the Governor of Tabasco was approved by that State's legislature in August 2020 (Gobierno de Tabasco, 2020); the Congress of the State of Colima prohibited the sale of such food to minors on school grounds in May 2021 (Quiles, 2021); and other measures of this type were being contemplated in Mexico City and the States of Chihuahua, Guanajuato, Jalisco, and Mexico. The economic effects of these three actions, however, have not been formally assessed quantitatively.

Appendix table 2 presents the values, quantities, and unit values for the leading products that make up U.S. agricultural imports from Mexico, focusing on those products with an import value in 2019 that exceeded $50 million. Percentage changes in the unit values and quantities imported are graphed in figure 9.

[11] The five ministries are Secretaría de Agricultura y Desarrollo Rural (SADER—Secretariat of Agriculture and Rural Development), Economía (SE—Secretariat of Economy), Salud (Secretariat of Health), Educación Pública (SEP—Secretariat of Public Education), and Bienestar (Secretariat of Welfare).

Figure 9
Changes in leading U.S. agricultural imports from Mexico, 2020 versus 2019



Notes: The green diagonal line with a slope of negative one and running through the origin divides the products into two groups: those with increases in import value (above the line) and those with decreases (below). The four quadrants are demarcated by the x- and y-axes.

Source: USDA, Economic Research Service calculations using data from U.S. Department of Commerce, Bureau of the Census data, as compiled by USDA, Foreign Agricultural Service (2021a).

Sixty-five of the agricultural products imported by the United States from Mexico had import values of $50 million or more in 2019, ranging from frozen cauliflower ($50 million) to beer ($3.9 billion).[12] The median case was nonfrozen pastries, cakes, similar sweet baked products, and puddings ($166 million). Of these 65 products, 46 products saw an increase in import value in 2020 (represented by the points above the dashed, diagonal line in figure 8), and 19 products saw a decrease (points below the line). The changes in import value ranged from a decrease of $236 million fresh avocados—which saw lower unit values due to higher quantities of production in Mexico (Osorio, 2020b)—to an increase of $817 million (tequila). Percentage changes in import value ranged from a decrease of 45 percent (orange juice)—driven by a drought-related reduction in orange production of nearly 40 percent in marketing year 2019/20 (Osoyo and Elms, 2020))—to an increase of 53 percent (pork). The 5 products with the largest year-to-year increases in import value between 2019 and 2020 were tequila (increase of $817 million), fresh tomatoes ($423 million), beer ($204 million), cane or

[12] U.S. trade data provide separate categories for beer and tequila imports, distinguished by the size and type of container. In this working paper, those categories are aggregated into a single category for beer and a single category for tequila. In a previous version of this paper (Zahniser, 2021), the disaggregated categories were used. In addition, this working paper uses a more recent version of U.S. trade data than the one used in the previous paper. Thus, there are minor differences between the two papers in the trade data.

beet sugar ($172 million), and beef and veal ($149 million). Of these 5 products, the year-to-year growth in import quantity between 2019 and 2020 was faster than the compound annual growth rate (CAGR) during 2009–19 for tequila and sugar (table 4).

Table 4
Comparison of compound annual growth rate during 2009-19 and year-to-year growth rate between 2019 and 2020 (in terms of quantity) for the five agricultural imports from Mexico with the largest increases in import value between 2019 and 2020

Product	Compound annual growth rate, 2009—20	Year-to-year growth rate between 2019 and 2020
	Percent	
Raspberries, fresh	22.7	17.2
Tomatoes, fresh	4.7	0.4
Sugar, cane or beet	-0.3	16.6
Tequila	6.7	24.3
Beer	7.0	2.8

Source: USDA, Economic Research Service calculations using import quantity data from U.S. Department of Commerce, Bureau of the Census, as compiled by USDA, Foreign Agricultural Service (2021a).

Similar to the product-level analysis of exports, the products that had an increased import value in 2020 can be divided into three groups, as figure 7 illustrates:

1. Products that saw increases in both unit value and import quantity (quadrant I);
2. Products that saw a decrease in unit value and an increase in import quantity (above the diagonal line in quadrant II); and
3. Products that saw an increase in unit value and a decrease in import quantity (above the diagonal line in quadrant IV).

The four quadrants in figure 8 are demarcated by the figure's x- and y-axes. The products in quadrant III are not discussed, since the products in that quadrant experienced a year-to-year decrease (rather than an increase) in import value in 2020.

Twenty-six products saw increases in both unit value and import quantity—including all 5 of the products that had the largest increases in import value (listed earlier), as well as fresh squash, bell peppers, fresh cucumbers, frozen strawberries, and pork. That an increase in unit value (i.e., price) did not deter U.S. buyers from purchasing larger quantities of these imports suggests the occurrence of a rightward shift in demand—possibly in combination with a rightward shift in supply. A rightward shift in demand could have been caused by a pandemic-related shift toward food preparation and consumption at home and toward products that could be stored for longer periods of time. A rightward shift in supply, in turn, could have been part of the continuing growth in Mexican produce exports. In addition, an increase in price would motivate Mexican producers to supply more to the U.S. market.

For tequila and beer, the pandemic coincided with some long-term trends in alcoholic beverage consumption in the United States and may have been a driving factor behind higher levels of consumption and higher levels of excessive drinking. Generally, 2020 was a growth year in the U.S. alcoholic beverage market—despite the reduced purchases of food away from home and the alcohol that sometimes accompanies these purchases. Total consumption saw a year-to-year increase of 2 percent in volume terms, with consumption of

spirits based on agave (i.e., tequila and mescal) increasing by 15.9 percent, beer consumption declining by 2.8 percent, and imports gaining a larger share of the U.S. beer market (IWSR Drinks Market Analysis Limited, 2021). The shift by consumers away from beer and toward distilled spirits continues a trend underway well before the pandemic (Giammona and Reinicke, 2019). In the case of U.S. beer imports, there was some substitution among foreign suppliers between 2019 and 2020. Imports from Mexico increased by 2.8 percent in volume, compared with 1.3 percent for imports from all countries. In the case of U.S. tequila imports, Mexico was the sole supplier in 2019 and 2020, except for a minor amount purchased from France. Imports from Mexico increased by 24 percent in volume between 2019 and 2020 (USDA, FAS, 2021a).

Researchers studying substance abuse observed signs that problematic consumption of alcoholic beverages in the United States had increased during the pandemic, including a larger number of days per month when adults consumed alcohol (Pollard et al., 2020) and an increase in heavy drinking by women responding to pandemic-induced stressors (Pollard et al., 2020; Tingley, 2021). More research is needed to distinguish how these patterns evolved over the course of the pandemic and the extent to which they are connected to international trade. Internationally, though, concerns about the harmful consumption of alcoholic beverages during the pandemic were sufficiently high to prompt the Organisation for Economic Co-operation and Development (OECD, 2021) to identify a comprehensive policy package containing four elements: "…pricing policies, policing to counter drunk-driving, primary care-based counseling for heavy drinkers, and regulating alcohol promotion activities."

For fresh tomatoes, the increase in import value was due to a higher unit value resulting from a 2-percent decrease in Mexican tomato production between agricultural years 2019 and 2020 (Secretaría de Agricultura y Desarrollo Rural, Servicio de Información Agroalimentaria y Pesquera, 2021).

For sugar, the increase in import value reflected a decrease in U.S. sugar production in marketing year 2019/20 and took place within the framework that governs U.S. sugar imports from Mexico. Since 2014, these imports have been subject to a pair of agreements that suspend U.S. antidumping and countervailing duties on sugar imported from Mexico. The countervailing duty suspension agreement spells out a formula for calculating an Export Limit for Mexican sugar exports to the United States, with refined sugar not allowed to account for more than 30 percent of the quantity shipped under this Limit. The antidumping duty suspension agreement specifies minimum reference prices for these exports (Sowell, 2021). To allow for an increase in sugar imports from Mexico to offset the 9.5-percent decrease in U.S. production that occurred between marketing years 2018/19 and 2019/20, the United States modified the Export Limit for marketing year 2019/20 to accommodate more imports of refined sugar. In November 2019, the U.S. Department of Commerce (USDOC)—after consulting with USDA—announced an increase of 100,000 short tons, raw value (STRV) for refined sugar. In March 2020, the USDOC added another 200,000 STRV of refined sugar to the Export Limit (McConnell and Olson, 2020).

Fifteen products experienced a decrease in unit value and an increase in import quantity and still saw an increase in import value. The increases in import value ranged from less than $100,000 (fresh papayas) to $128 million (fresh raspberries). Other products in this group included fresh blueberries—whose imports increased by $61 million—and nonfrozen sweet biscuits not containing peanuts or peanut products, and cattle and calves—each with increases in import value of $49 million between 2019 and 2020. Again, for the fresh produce in this group, the increases in import quantities are consistent with a continuation in the rightward shift in the export supply of Mexican produce.

Just five products experienced an increase in unit value and a decrease in import quantity while seeing an increase in import value. The increases in import value ranged from less than $100,000 (instant coffee) to $15 million (frozen broccoli). For these imports, the percentage increase in unit value was larger than the percentage decrease in import quantity—suggesting the possibility of demand inelasticity in either income or price. However, none of the products in this group are staple foods or absolute necessities (with the possible exception of coffee).

Conclusion

The question "How did U.S.-Mexico agricultural trade change in 2020?" is relatively easy to answer given the availability of detailed bilateral trade statistics at the aggregate and product levels. Overall, U.S. agricultural exports to Mexico started to slump in April 2020—soon after the COVID-19 pandemic arrived in North America—and did not exit that slump until November 2020. In contrast, U.S. agricultural imports from Mexico experienced a much shorter decline that was mainly limited to the months of April and May 2020. Starting in June 2020, imports resumed the general upward trend that has been seen for the past quarter century. Depreciation of the peso generally discouraged U.S. agricultural exports to Mexico and favored U.S. agricultural imports from Mexico. At the product level, the changes in quantities and unit values varied by product and the direction of trade (i.e., exports or imports). Among U.S. agricultural exports to Mexico, the products with the three largest decreases in export value were beef and veal, cotton, and pork. Among U.S. agricultural imports from Mexico, the products with the three largest increases in import value were tequila, fresh tomatoes, and beer.

The question "Why did U.S.-Mexico agricultural trade change in 2020?" is harder to answer given the wide variety of demand and supply determinants affecting bilateral agricultural trade and the diversity of products that make up this trade. For U.S. agricultural exports to Mexico, the pandemic-related decline in Mexican income and shift away from food expenditures in the hotel, restaurant, and institutional establishment (HRI) sector altered the level and composition of Mexican food expenditures. Consumers tended to switch toward more affordable sources of protein at the expense of imported beef and veal, beef variety meats, and turkey meat. In addition, emergency closures of Mexican textile plants (especially during the early months of the pandemic) temporarily resulted in fewer U.S. cotton exports to Mexico.

Mexican consumption of both sugar and high-fructose corn syrup (HFCS) declined in 2020, with implications for U.S. HFCS exports to Mexico. This decrease was caused not only by Mexico's weakened economy but also by an effort of Mexican beverage and food manufacturers to rely less on caloric sweeteners amid government campaigns for healthier diets, a new front-of-pack labeling law, and concerns that high levels of obesity, heart disease, and diabetes among the Mexican population were connected to the large number of COVID-19 cases and deaths.

Factors unrelated to the pandemic placed downward pressure on U.S. exports to Mexico of some agricultural products. For example, improved U.S. trade relations with China and the effort to rebuild China's swine sector following an outbreak of African Swine Fever (ASF) appeared to draw some U.S. sorghum and DDGS exports away from Mexico and toward China.

For U.S. agricultural imports from Mexico, it is more difficult to discern the effect of the pandemic from that of other factors. The increase in U.S. fruit and vegetable imports from Mexico in 2020 is consistent with both the long-term upward trend in these imports and a shift toward greater food preparation and consumption at home. Increased U.S. imports of tequila and beer from Mexico are consistent with long-term trends in the sector but may suggest greater excessive alcohol consumption during the pandemic. Increased sugar imports from Mexico reflected a decrease in U.S. sugar production, rather than some pandemic-related factor.

The overall resilience in U.S.-Mexico agricultural trade in the face of the COVID-19 pandemic is testimony to the efforts of the public and private sectors in both countries to ensure this cross-border relationship continues. A more thorough examination of the efforts to facilitate the continuation of agricultural trade and to protect the health of agri-food workers in the face of COVID-19 is likely to generate useful insights in preparation for possible future crises of the magnitude presented by COVID-19, as well as to improve the ongoing response to the current pandemic.

Future research could also relate efforts to manage the macroeconomic shocks caused by the pandemic to the trade performance of agricultural exporters and importers. The difference between the medium-term reduction in U.S. agricultural exports to Mexico and the short-term reduction in U.S. agricultural imports from Mexico revealed the differing capacities of the high-income economy of the United States and the upper-middle-income economy of Mexico to manage the effects of a global public health crisis and its accompanying income shocks. U.S. agricultural imports from Mexico generally fared better than U.S. agricultural exports to Mexico because the macroeconomic contraction resulting from the pandemic in the U.S. economy, albeit severe, was smaller in percentage terms than the corresponding shock to the Mexican economy—in part because of a massive injection of fiscal stimulus by the U.S. Government.

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Appendix Table 1

Selected U.S. agricultural exports to Mexico, 2020 versus 2019

	UOM	2019			2020			Change		
Product		Value	Quantity	Unit value	Value	Quantity	Unit value	Value	Quantity	Unit value
		Millons of dollars	*Thousands of units of measure*	*Dollars per unit of measure*	*Millons of dollars*	*Thousands of units of measure*	*Dollars per unit of measure*	*Percent*		
Total agricultural exports	MT	19,399	37,081	0.52	18,336	34,992	0.52	-5.5	-5.6	0.2
Animals and products	--	5,844	--	--	5,204	--	--	-11.0	--	--
Pork	MT	1,074	578	1.86	990	583	1.70	-7.9	0.8	-8.6
Pork variety meats	MT	149	113	1.32	114	87	1.31	-23.2	-22.8	-0.5
Beef and veal	MT	830	136	6.10	625	103	6.07	-24.7	-24.3	-0.5
Beef variety meats	MT	277	101	2.75	228	90	2.53	-17.7	-10.7	-7.9
Milk and cream in powder, granules, or other solid forms, of a fat content, by weight, not exceeding 1.5 percent	MT	779	329	2.37	708	287	2.47	-9.2	-12.8	4.2
Chickens, fresh or frozen	MT	588	685	0.86	552	698	0.79	-6.1	2.0	-7.9
Cheese	MT	419	96	4.39	428	93	4.61	2.1	-2.9	5.1
Turkeys, fresh or frozen	MT	299	145	2.07	259	134	1.94	-13.3	-7.6	-6.1
Fertilized eggs for incubation of fowls of species Gallus domesticus	KDOZ	149	45	3.34	137	40	3.46	-7.7	-10.9	3.5
Whey, fluid or dried	MT	112	67	1.66	79	45	1.77	-29.5	-33.9	6.6
Tallow, edible	MT	94	119	0.79	87	102	0.86	-7.2	-14.6	8.6
Tallow, inedible	MT	93	131	0.71	93	122	0.76	-0.4	-6.4	6.5
Bovine hides, whole	PCS	84	2,023	0.04	60	4,265	0.01	-28.2	110.8	-66.0
Sausages and similar products of poultry other than chicken	MT	79	21	3.74	77	23	3.27	-3.1	10.7	-12.5
Sausage casings	MT	58	18	3.22	56	21	2.67	-3.0	16.8	-16.9
Ice cream	MT	53	21	2.52	54	21	2.55	2.2	1.0	1.2
Other animal products	--	706	--	--	657	--	--	-7.1	--	--
Grains and feeds	MT	5,519	23,003	0.24	5,322	21,591	0.25	-3.6	-6.1	2.7
Corn	MT	2,736	14,518	0.19	2,680	14,496	0.18	-2.0	-0.2	-1.9
Distillers' dried grains with solubles	MT	420	2,023	0.21	381	1,732	0.22	-9.2	-14.4	6.0
Wheat, unmilled	MT	812	3,547	0.23	778	3,148	0.25	-4.2	-11.3	7.9
Wheat flour	MT	92	202	0.45	100	205	0.49	8.5	1.4	7.0

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Product	UOM	2019			2020			Change		
		Value	Quantity	Unit value	Value	Quantity	Unit value	Value	Quantity	Unit value
		Millons of dollars	*Thousands of units of measure*	*Dollars per unit of measure*	*Millons of dollars*	*Thousands of units of measure*	*Dollars per unit of measure*	*Percent*		
Rice-paddy, milled	MT	278	860	0.32	245	614	0.40	-11.9	-28.6	23.5
Malt, not roasted	MT	206	383	0.54	181	314	0.58	-12.3	-18.0	7.0
Preparations of a kind used in animal feeding, other than dog or cat food, bird seed, and other pet food put for retail sale	MT	186	88	2.10	238	101	2.35	28.0	14.5	11.7
Grain sorghums	MT	124	665	0.19	51	264	0.19	-58.6	-60.3	4.3
Dog or cat food	MT	103	49	2.13	102	52	1.95	-1.4	7.3	-8.1
Mixes and doughs	MT	74	44	1.67	84	49	1.71	13.9	11.3	2.3
Other grains and feeds	MT	489	624	0.78	482	616	0.78	-1.4	-1.3	-0.1
Fruits and preparations	MT	746	564	1.32	703	530	1.33	-5.7	-6.0	0.3
Apples, fresh	MT	265	245	1.08	241	252	0.95	-9.2	2.6	-11.6
Grapes, fresh	MT	105	58	1.80	116	65	1.78	9.8	11.1	-1.2
Pears, fresh	MT	92	87	1.06	69	65	1.06	-25.2	-25.7	0.6
Other fruit and preparations	MT	284	173	1.64	278	148	1.88	-1.9	-14.3	14.4
Fruit juices	KL	51	46	1.11	47	43	1.11	-6.9	-7.4	0.5
Nuts and preparations	MT	452	146	3.09	425	134	3.17	-5.8	-8.1	2.5
Pecans, fresh or dried	MT	126	26	4.94	107	25	4.37	-14.8	-3.8	-11.5
Peanuts, shelled	MT	83	77	1.08	67	62	1.07	-19.4	-18.7	-0.9
Almonds, fresh or dried	MT	82	12	7.04	80	13	5.97	-3.3	14.0	-15.2
Other nuts	MT	160	32	4.96	171	34	5.03	6.9	5.4	1.4
Vegetables and preparations	MT	735	618	1.19	801	702	1.14	9.0	13.7	-4.1
French fries, frozen	MT	117	94	1.24	124	106	1.16	6.0	12.6	-5.8
Sauces and preparations	MT	95	44	2.17	79	33	2.41	-16.8	-24.9	10.8
Onions and shallots, fresh	MT	63	127	0.50	59	121	0.49	-7.5	-5.3	-2.2
Dried common beans	MT	62	80	0.78	75	88	0.86	21.0	9.7	10.3

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Product	UOM	2019			2020			Change		
		Value	Quantity	Unit value	Value	Quantity	Unit value	Value	Quantity	Unit value
		Millons of dollars	*Thousands of units of measure*	*Dollars per unit of measure*	*Millons of dollars*	*Thousands of units of measure*	*Dollars per unit of measure*	*Percent*		
Other vegetables and preparations	MT	399	273	1.46	466	355	1.31	16.8	30.3	-10.4
Oilseeds and products	MT	3,151	7,575	0.42	3,179	7,278	0.44	0.9	-3.9	5.0
Soybeans	MT	1,878	5,175	0.36	1,878	4,901	0.38	-0.01	-5.3	5.6
Soybean meal	MT	642	1,759	0.37	664	1,770	0.38	3.4	0.7	2.7
Soybean oil	MT	113	134	0.84	98	111	0.88	-13.0	-17.2	5.1
Protein concentrates and textured protein substances	MT	60	17	3.50	68	18	3.80	13.8	4.7	8.6
Other oilseeeds and products	MT	458	489	0.94	471	478	0.99	2.7	-2.4	5.2
Tobacco, unmanufactured	MT	77	14	5.49	69	14	4.93	-10.1	0.1	-10.2
Cotton, excluding linters	MT	288	160	1.80	178	110	1.61	-38.3	-30.9	-10.7
Essential oils	MT	139	9	16.09	145	9	15.40	4.3	8.9	-4.3
Seeds, field/garden	MT	224	119	1.89	211	75	2.81	-5.8	-36.8	49.2
Sugar and tropical products	MT	1,005	1,490	0.67	877	1,365	0.64	-12.7	-8.4	-4.7
High-fructose corn syrup	MT	431	915	0.47	386	816	0.47	-10.4	-10.8	0.5
Glucose and glucose syrup, not containing fructose or containing in the dry state less than 20 percent by weight of fructose	MT	109	193	0.56	95	163	0.58	-12.5	-15.6	3.6
Cocoa preparations in bulk form, other than confectioners' coatings	MT	61	18	3.43	49	14	3.45	-19.6	-20.1	0.6
Confectionery not containing synthetic sweetening agents instead of sugar	MT	55	18	3.10	38	11	3.47	-31.6	-38.9	11.9
Other sugar and tropical products	MT	348	346	1.01	308	360	0.85	-11.5	4.2	-15.1
Other horticultural products	MT	724	171	4.24	698	167	4.18	-3.5	-2.2	-1.3

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Product	UOM	2019			2020			Change		
		Value	Quantity	Unit value	Value	Quantity	Unit value	Value	Quantity	Unit value
		Millons of dollars	*Thousands of units of measure*	*Dollars per unit of measure*	*Millons of dollars*	*Thousands of units of measure*	*Dollars per unit of measure*	*Percent*		
Soups and broths and preparations therefor, dried	MT	235	87	2.71	238	85	2.80	1.0	-2.1	3.2
Other other horticultural products	MT	488	84	5.81	461	82	5.61	-5.7	-2.3	-3.4
Nursery and greenhouse	--	80	--	--	81	--	--	1.3	--	--
Trees, shrubs, and bushes, grafted or not, of kinds which bear edible fruit or nuts	K	55	18	3.10	58	17	3.52	5.7	-7.0	13.6
Other nursery and greenhouse	--	25	--	--	22	--	--	-8.5	--	--
Beverages, excluding juice	--	207	--	--	179	--	--	-13.7	--	--
Beer made from malt	KL	59	87	0.68	23	23	1.01	-60.1	-73.3	49.4
Nonalcoholic beverages, not elsewhere specified or indicated	KL	52	28	1.87	48	21	2.22	-8.2	-22.6	18.6
Other beverages, excluding juice	--	96	--	--	108	--	--	11.7	--	--
Distilled spirits	LITPF	72	34,063	0.00	67	60,587	0.00	-7.5	77.9	-48.0
Other agricultural products	--	84	--	--	149	--	--	77.0	--	--

Notes: UOM = Unit of measure. MT = metric tons. K = thousands. KL = kiloliters. LITPF = liters of proof spirits (proof liters). KDOZ = thousands of dozens. THNDS = thousands. LITER = liters. PCS = pieces. Volume of high fructose corn syrup is expressed in dry weight. Some volumes for major product categories (in bold) are approximations due to some products not being measured in metric tons. Quantities of whey measured in liters are converted using the ratio of 1.04 grams per cubic centimeter, drawn from AVCalc LLC (2022).

Source: USDA Economic Research Service, using trade data from U.S. Department of Commerce, Bureau of the Census, as compiled by USDA, Foreign Agricultural Service (2021a).

Appendix Table 2

Selected U.S. agricultural imports from Mexico, 2020 versus 2019

Product	UOM	2019			2020			Change		
		Value	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*
		Millons of dollars	*Thousands of units of measure*	*Dollars per unit of measure*	*Millons of dollars*	*Thousands of units of measure*	*Dollars per unit of measure*	*Percent*		
Total agricultural imports	MT	30,216	14,910	2.03	32,919	15,690	2.10	8.9	--	--
Animals and products	--	2,577	--	--	2,866	--	--	11.2	--	--
Beef and veal	MT	1,246	217	5.75	1,395	241	5.79	12.0	11.1	0.8
Cattle and calves	NO	881	1,320	0.67	930	1,441	0.65	5.5	9.2	-3.3
Beef variety meats	MT	65	15	4.22	78	19	4.23	21.3	21.0	0.3
Pairings and similar waste of raw hides or skins; glue stock, not elsewhere specified or indicated	MT	66	10	6.31	63	11	5.94	-5.2	0.7	-5.9
Pork	MT	65	20	3.30	100	30	3.35	53.3	50.8	1.6
Anhydrous milk fat	MT	53	9	5.87	36	7	4.83	-32.5	-17.9	-17.8
Other animal products	--	201	--	--	264	--	--	31.1	--	--
Grains and feeds	MT	1,585	1,090	1.45	1,792	1,301	1.38	13.1	19.3	-5.2
Sweet biscuits, not frozen, not containing peanuts or peanut products	MT	598	346	1.73	648	391	1.66	8.2	13.1	-4.3
Pastries, cakes, and similar sweet baked products; puddings; not frozen	MT	166	76	2.19	166	76	2.18	-0.005	0.1	-0.1
Corn chips and savory snacks	MT	165	71	2.34	193	79	2.43	16.4	12.3	3.6
Prepared foods obtained by the swelling or roasting of cereals or cereal products, containing cane and/or beet sugar	MT	136	53	2.57	148	67	2.20	8.7	27.1	-14.5
Corn flour	MT	95	176	0.54	121	225	0.54	27.4	27.4	0.02
Other grains and feeds	MT	425	369	1.15	518	462	1.12	21.9	25.3	-2.7
Fruits and preparations	MT	8,072	4,641	1.74	7,956	4,746	1.68	-1.4	2.3	-3.6
Avocados, fresh	MT	2,453	976	2.51	2,217	1,005	2.21	-9.6	2.9	-12.1

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Product	UOM	2019			2020			Change		
		Value	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*
		Millons of dollars	*Thousands of units of measure*	*Dollars per unit of measure*	*Millons of dollars*	*Thousands of units of measure*	*Dollars per unit of measure*	*Percent*		
Avocados, prepared	MT	426	110	3.89	378	98	3.88	-11.2	-10.9	-0.3
Strawberries, fresh	MT	842	184	4.57	821	195	4.20	-2.6	5.9	-8.0
Strawberries, frozen	MT	134	79	1.71	171	92	1.86	27.5	16.9	9.0
Raspberries, fresh	MT	939	91	10.33	1,067	107	10.01	13.6	17.2	-3.1
Grapes, fresh	MT	589	210	2.80	517	196	2.63	-12.2	-6.5	-6.1
Tahitian limes, Persian lives, and other limes of the Citrus latifolia variety, fresh or dried	MT	453	608	0.75	425	669	0.63	-6.3	10.1	-14.9
Blackberries, fresh	MT	374	77	4.87	409	98	4.17	9.4	27.7	-14.3
Blueberries, fresh	MT	291	41	7.06	352	51	6.86	21.0	24.5	-2.8
Mangoes, fresh (excluding guavas)	MT	271	325	0.83	283	343	0.83	4.6	5.4	-0.8
Mangoes, frozen	MT	61	34	1.82	75	38	1.96	22.3	13.3	7.9
Mangoes, dried	MT	69	7	9.62	73	7	9.77	6.1	4.5	1.5
Watermelons, fresh	MT	309	680	0.45	282	642	0.44	-8.8	-5.5	-3.5
Bananas, fresh	MT	207	425	0.49	197	396	0.50	-5.2	-6.9	1.8
Papayas, fresh	MT	87	148	0.59	87	149	0.58	0.02	1.0	-1.0
Grapefruit, fresh or preserved	MT	63	30	2.07	63	30	2.10	-0.7	-2.1	1.4
Other fruit and preparations	MT	504	616	0.82	541	629	0.86	7.3	2.1	5.2
Fruit juice	KL	418	824	0.51	284	520	0.55	-32.1	-36.9	7.7
Orange juice	KL	334	699	0.48	183	379	0.48	-45.1	-45.8	1.3
Other fruit juice	KL	84	125	0.68	101	141	0.72	19.5	12.8	6.0
Nuts and preparations	MT	764	130	5.88	649	115	5.66	-15.1	-11.9	-3.6
Pecans, fresh or dried	MT	687	89	7.72	566	72	7.92	-17.6	-19.7	2.6
Other nuts and preparations	MT	77	41	1.88	82	43	1.92	7.3	5.1	2.0
Vegetables and preparations	MT	7,396	7,049	1.05	8,335	7,914	1.05	12.7	12.3	0.4
Tomatoes, fresh	MT	1,958	1,661	1.18	2,381	1,668	1.43	21.6	0.4	21.1

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Product	UOM	2019			2020			Change		
		Value	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*
		Millons of dollars	*Thousands of units of measure*	*Dollars per unit of measure*	*Millons of dollars*	*Thousands of units of measure*	*Dollars per unit of measure*	*Percent*		
Cucumbers, fresh	MT	556	774	0.72	597	789	0.76	7.3	1.9	5.3
Asparagus, fresh	MT	433	166	2.61	383	170	2.25	-11.6	2.6	-13.8
Onions, fresh	MT	329	315	1.05	344	347	0.99	4.5	10.3	-5.2
Bell peppers	MT	737	436	1.69	816	465	1.76	10.7	6.6	3.9
Chili peppers	MT	307	427	0.72	298	433	0.69	-3.0	1.4	-4.3
Other peppers	MT	187	122	1.53	192	112	1.71	2.4	-8.2	11.5
Squash, fresh	MT	371	470	0.79	459	475	0.97	23.6	1.0	22.3
Lettuce, fresh	MT	315	317	0.99	358	340	1.06	13.7	7.1	6.2
Broccoli, fresh or chilled	MT	211	218	0.97	244	237	1.03	15.5	8.9	6.1
Broccoli, frozen	MT	270	198	1.37	285	195	1.46	5.4	-1.7	7.2
Cauliflower, fresh	MT	103	81	1.28	104	83	1.25	0.5	2.5	-1.9
Cauliflower, frozen	MT	50	39	1.27	59	45	1.31	19.1	15.3	3.2
Soups and sauces	MT	133	98	1.36	144	104	1.38	7.8	6.4	1.3
Fresh beans, not of the genus Vigna, not cowpeas, not lima beans entering during period from November 1 through May 31	MT	81	61	1.34	94	65	1.45	16.0	7.4	8.0
Potato granules	MT	77	20	3.76	82	21	3.88	6.8	3.4	3.3
Celery, fresh	MT	72	102	0.70	66	95	0.70	-7.4	-7.1	-0.3
Brussels sprouts, fresh or chilled	MT	60	49	1.22	73	63	1.16	21.1	28.1	-5.5
Eggplant, fresh	MT	57	66	0.87	67	70	0.95	17.2	7.2	9.4
Other vegetables and preparations	MT	1,089	1,429	0.76	1,289	2,136	0.60	18.4	49.5	-20.8
Sugar and related products	MT	1,346	1,324	1.02	1,532	1,494	1.03	13.9	12.8	0.9
Sugar, cane or beet	MT	557	991	0.56	728	1,155	0.63	30.8	16.6	12.2
Confectionery products, excluding chewing gum and cough crops	MT	643	282	2.28	659	284	2.32	2.4	0.6	1.8
High-fructose corn syrup	MT	71	21	3.35	81	25	3.25	13.9	17.1	-2.8

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Product	UOM	2019			2020			Change		
		Value	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*
		Millons of dollars	*Thousands of units of measure*	*Dollars per unit of measure*	*Millons of dollars*	*Thousands of units of measure*	*Dollars per unit of measure*	*Percent*		
Other sugar and related products	MT	75	30	2.51	64	30	2.16	-13.9	0.3	-14.2
Cocoa and products	MT	571	197	2.91	554	188	2.94	-3.1	-4.1	1.1
Bulk cocoa preparations exceeding 2 kilograms	MT	140	24	5.81	108	21	5.11	-22.7	-12.1	-12.2
Other cocoa preparations, in blocks, slabs, or bars, not filled	MT	101	24	4.27	88	23	3.90	-12.2	-3.7	-8.8
Chocolate or cocoa confectionery containing peanuts or peanut products	MT	98	25	3.94	105	27	3.85	7.3	9.7	-2.2
Chocolate or cocoa confectionery, not containing peanuts or peanut products	MT	97	28	3.54	102	29	3.46	4.5	6.8	-2.2
Other cocoa and products	MT	136	97	1.40	151	88	1.71	11.0	-8.9	21.9
Coffee, including products	MT	298	78	3.79	308	78	3.97	3.5	-1.3	4.8
Coffee, not roasted	MT	156	49	3.21	167	48	3.49	6.8	-1.5	8.5
Instant coffee	MT	99	17	5.76	99	17	5.77	0.1	-0.1	0.2
Other coffee, including products	MT	43	13	3.34	43	13	3.38	-0.7	-1.7	1.0
Spices and herbs	MT	110	63	1.73	116	67	1.74	5.9	5.4	0.5
Essential oils	MT	67	8	8.51	58	6	9.61	-14.4	-24.2	12.9
Distilled spirits	LITPF	1,847	171,375	0.01	2,668	209,497	0.01	44.5	22.2	18.2
Tequila	LITPF	1,735	161,284	0.01	2,552	200,399	0.01	47.1	24.3	18.4
Mezcal, in containers each holding not over 4 liters	LITPF	57	3,311	0.02	60	2,939	0.02	4.6	-11.2	17.8
Other distilled spirits	LITPF	55	6,780	0.01	56	6,160	0.01	2.0	-9.2	12.2

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Product	UOM	2019			2020			Change		
		Value	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*	*Value*	*Quantity*	*Unit value*
		Millons of dollars	*Thousands of units of measure*	*Dollars per unit of measure*	*Millons of dollars*	*Thousands of units of measure*	*Dollars per unit of measure*	*Percent*		
Beverages, excluding fruit juice	KL	4,440	3,554	1.25	4,943	3,872	1.28	11.3	8.9	2.2
Beer	KL	3,947	3,003	1.31	4,151	3,087	1.34	5.2	2.8	2.3
Carbonated soft drinks, not containing high-intensity sweeteners (e.g., aspartame and/or saccharin)	KL	276	285	0.97	289	324	0.89	4.8	13.9	-8.0
Mineral waters and aerated waters	KL	68	106	0.64	92	140	0.65	34.6	32.4	1.6
Other beverages, excluding fruit juice	KL	148	161	0.92	410	321	1.28	176.4	99.5	38.6
Oilseeds and products	MT	258	108	2.38	327	123	2.66	26.8	13.3	11.9
Other horticultural products	MT	287	90	3.18	318	103	3.08	10.7	14.4	-3.3
Yeasts, active	MT	63	26	2.48	81	31	2.57	27.3	22.8	3.6
Horticultural products other than active yeast	MT	223	65	3.46	237	72	3.30	6.0	11.1	-4.6
Other agricultural products	--	181	--	--	216	--	--	--	--	--

Notes: UOM = Unit of measure. MT = metric tons. NO = number. KL = kiloliters. LITPF = liters of proof spirits (proof liters). Volume of high fructose corn syrup is expressed in dry weight. Some volumes for major product categories (in bold) are approximations due to some products not being measured in metric tons.

Source: USDA Economic Research Service, using trade data from U.S. Department of Commerce, Bureau of the Census, as compiled by USDA, Foreign Agricultural Service (2021a).