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Outlook of Fresh Fruits and Vegetables in the United States

Luis Ribera, Landyn Young[1]

Introduction

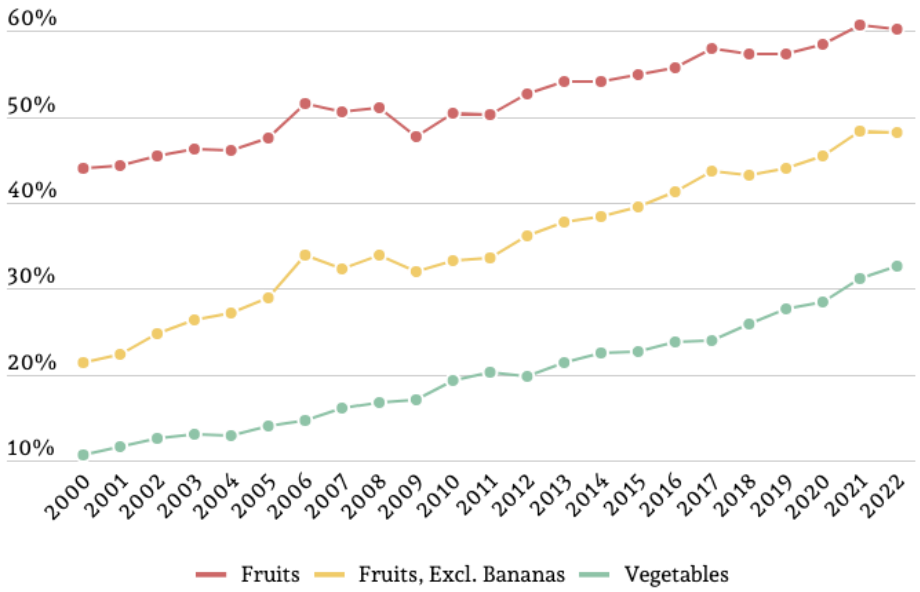
In recent years, fresh fruit and vegetable production in the United States has been on the decline, U.S. production has decreased by 10 and 23.1 percent respectively since 2000. With declining domestic production, imports of fresh fruits and vegetables have grown substantially with some products only being available in the United States due to imports. Since 2020, a larger share of the total supply of fresh fruit in the United States was imported than grown domestically and has increased from 36.6 percent in 2000 to 54.8 percent in 2022. Vegetable imports in 2022 were 29.3 percent of the total supply up from 9.5% in 2000. The value of imported fresh fruits and vegetables for 2022 was $30.9 billion. After accounting for exports, the total volume of fresh fruits and vegetables available in the United States was 94.65 billion pounds, or 283.63 pounds per capita.

Total Supply of Fresh Produce in the United States

The United States had a total supply of 105.51 billion pounds of fresh produce in 2022, when fresh produce is referred to throughout the remainder of this paper it should be noted that includes all fresh fruit and fresh vegetable products. Fruit availability in the United States totaled 42.26 billion pounds in 2022, or 40.1 percent of fresh produce. The total supply of fresh fruit can be split into U.S. production and imports which are, respectively, 19.11 and 23.15 billion pounds. The percentage of fresh fruit consumed in the US from imports went from 21.4 percent in 2000 to 48.2 percent in 2022 when bananas are excluded and 44 percent to 60.3 percent in 2000 and 2022, respectively when bananas are included (Figure 1). Fresh vegetables are also broken into production and imports, some products also including beginning stocks which contributed an additional 1.30 billion pounds in 2022. Vegetable production totaled 42.92 billion pounds with imports at 20.32 billion. The percentage of fresh vegetables consumed in the US from imports went from 10.7 percent in 2000 to 32.5 percent in 2022.

[1] Prepared by Luis A. Ribera and Landyn K. Young with assistance provided by Center for North American Studies undergradudate technicians Cora Stewart and Dylan Outlaw. For additional information, please contact lribera@tamu.edu or call 979-845-3070

Figure 1: Percentage of U.S. Fresh Produce Consumption from Imports, 2000-2022



Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS

Of the 42.92 billion pounds of fresh vegetables grown in the United States during 2022, potatoes account for nearly a quarter of the total at 9.35 billion pounds (Figure 2). Onions, leaf and romaine lettuce, head lettuce, and sweet potatoes round out the next largest groups of products in the United States. These five largest groups of vegetable products total 24.66 billion pounds in 2022. Fruit production in 2022 was led by apples which account for 6.42 billion pounds of the total. Oranges (2.89 billion pounds), strawberries (2.26 billion pounds), grapes (1.79 billion pounds), and lemons (1.49 billion pounds) made up the rest of the top five largest fruit products grown in the United States.

Figure 2: Total Supply of U.S. Fresh Produce, 2022

Total Supply: 105.51 Billion Pounds

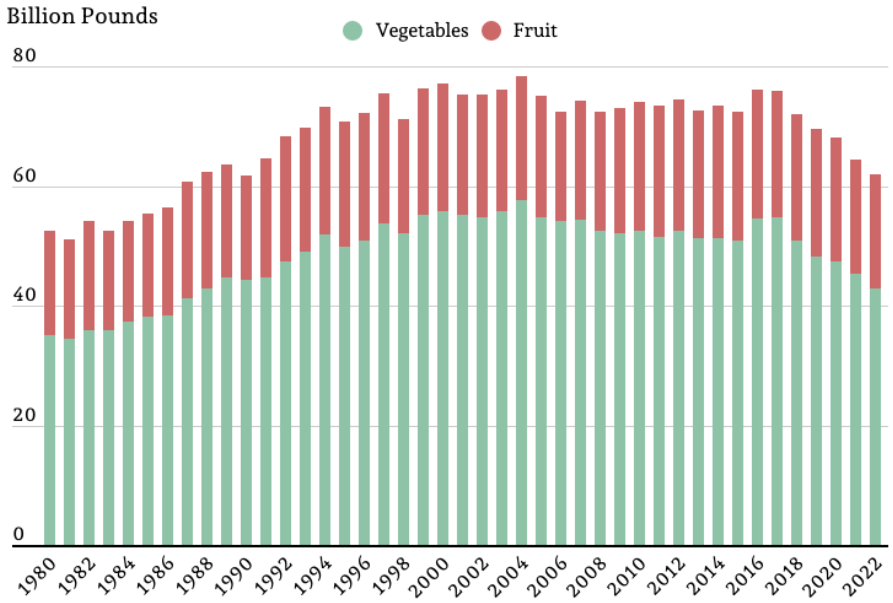
Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS

Production volume for fresh vegetables grew substantially from the 1980's to the 2000's; production peaked during 2004 at 57.7 billion pounds (Figure 3). The crops that have seen the largest decrease since 2004 are potatoes (3.83-billion-pound decrease), head lettuce (3.30 billion pounds), onions (2.03 billion pounds), and tomatoes (2.01 billion pounds). The total volume of production lost since 2004 for these four products is 11.18 billion pounds, or 75.5 percent of the total decrease from production in 2004.

Similarly to vegetable production, the volume of fruit grown in the United States increased most years from 1980 to 2004 where it began to decline after growing from 17.45 to 20.57 billion pounds. However, during 2008 that turns around and the industry resumes growing production volume until 2014, where it reaches a peak of 22.80 billion pounds and has decreased nearly every year since. Leading the products that have decreased production volume are apples (1.49 billion pounds), oranges (704 million pounds), grapefruit (587 million pounds), and peaches (429 million pounds). The total change since 2014 for the other 13 products that have production values for these years actually increased by 219 million pounds. This was led by strawberries and lemons which had a 525- and 262-million-pound increase, respectively.

The cause of production declines for U.S. produce after those two years cannot be attributed to one or two single factors, but rather a multitude of events compounding. A key change that happened in this time was NAFTA taking full effect removing many of the tariff and non-tariff barriers for Mexico and Canada to trade with the United States, two of the largest exporters of produce today. Weather shocks have been frequent occurrences that no ag producer is immune. In addition, land loss is a major factor impacting production of fruit and vegetable products. Along with these, changing consumer preferences impact multiple products, potatoes being one of the most impacted by this. USDA sources also cite labor shortages in the United States and growing competition from international producers.

Figure 3: U.S. Production of Fresh Produce, 1980-2022

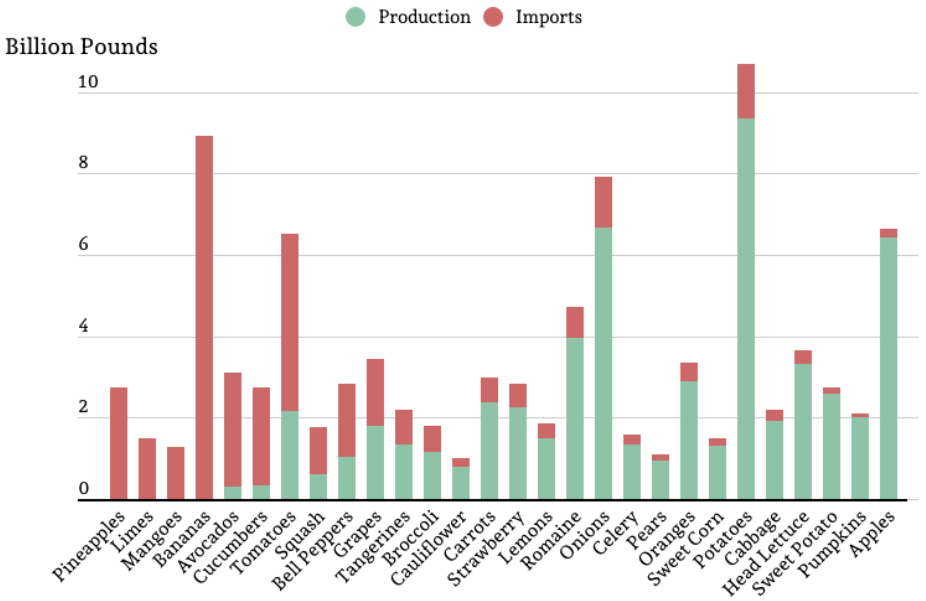


Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS

Multiple products are primarily grown domestically with the import share being small (Figure 4). During 2022, products where less than 10 percent of the total supply came from imports include apples, pumpkins, sweet potatoes, and head lettuce. These four products total 14.3 billion pounds of fresh produce grown domestically.

Imports account for the other 41.2 percent of the total fresh produce supply in the United States and the availability of some products is highly dependent on production outside of the United States. During 2022, four products were available in the United States due almost entirely to imports: pineapples, limes, mangoes, and bananas. When expanding to produce where less than 15 percent of availability comes from production in the United States avocados, and cucumbers are all added to that list. These six products cumulatively make up 19.7 billion pounds of the 43.47 billion imported in 2022.

Figure 4: Total Supply of U.S. Fresh Produce, 2022



Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS

During 2023, Mexico was the largest exporter of fresh produce to the United States totaling an estimated 25.1 billion pounds, worth an estimated $17.96 billion (Figure 5). Mexico accounts for 34 and 73 percent of fresh fruits and vegetables imported by the United States, respectively in 2022. Of that 10.25 billion pounds, or 40.9 percent, was fresh fruit and the other 14.84 billion pounds were fresh vegetables. Mexico is the largest source of U.S. imports for a large variety of products. Mexican exports are dominated by tomatoes with 4.29 billion pounds of exports followed by avocados (2.48 billion pounds) and peppers (1.85 billion pounds). U.S. import volume for each of these three products from Mexico is larger than the total volume of fresh produce imported from any market outside of the top five.

Guatemala and Costa Rica followed Mexico as the two next largest exporters of fresh produce to the United States. Guatemala was the source of 6.17 billion pounds of fresh produce and 4.44 billion pounds from Costa Rica. Over 90 percent of the total fresh produce exported to the United States for both countries was fresh fruit with the volume heavily consolidated to a few products. Of the 6.17 billion pounds of produce imported from Guatemala, 4.38 billion pounds were bananas with the next largest total being melons which totaled 988 million pounds. Costa Rica also dominate exports of pineapples with 2.46 billion pounds of the 4.44 billion.

Canada the source of 3.89 billion pounds exports primarily vegetable products to the United States with 95.5 percent of the total being fresh vegetables in 2023. Potatoes were the largest product imported from Canada in 2023 totaling 1.39 billion pounds, 35.8 percent of total imports from Canada. The exported products following potatoes

are cucumbers, berries, tomatoes, and peppers accounting for just over another third of the total volume.

Peru ranked as the fifth largest market exporting fresh produce to the United States, exporting 2.05 billion pounds of fresh produce to the United States in 2023. Fruit accounted for 77.4 percent of the fresh produce imported by the United States and vegetables making up the remaining 22.6 percent. The largest group of products exported from Peru to the United States were grapes in 2023 at 33.8 percent of the total volume, but a large variety of fruit products made up the remainder of exports to the United States.

Figure 5: U.S. Fresh Produce Imports, 2023

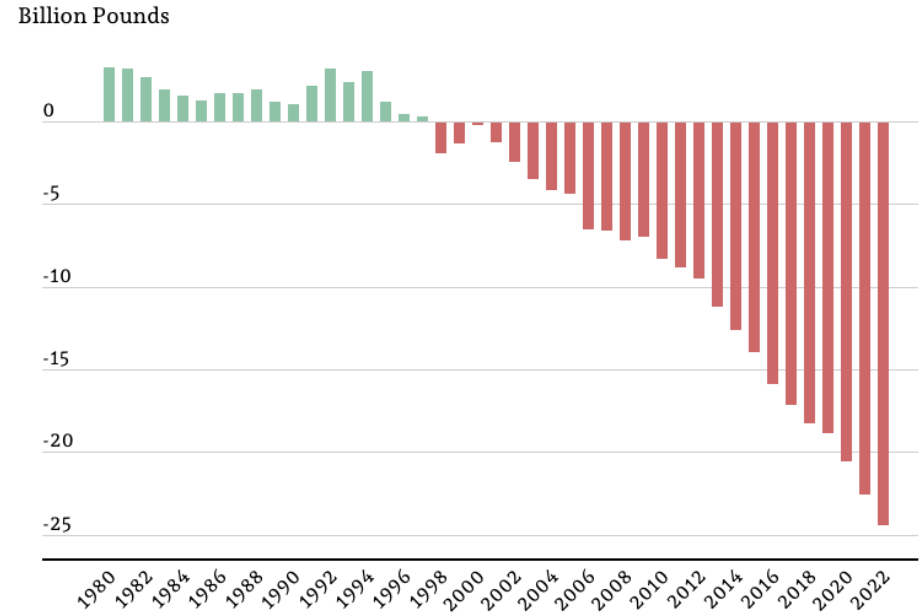
Total Supply: 50.42 Billion Pounds

Source: Global Ag Trading System (GATS), USDA/FAS

The United States has gone from being a net exporter of fresh produce in 1980 with 3.25 billion pounds to a net importer starting in 1998 with 1.88 billion pounds (Figure 6). Net trade of fresh produce, excluding bananas, for the United States during 2022 totaled 24.4 billion pounds of trade deficit and has been over 10 billion pounds since 2013. The United States was a net exporter of fresh fruits, excluding bananas, from 1980 to 2002, since then the United States net imports have grown considerably. During 1980 the United States trade surplus of fresh fruits, excluding bananas, totaled 3.11 billion pounds of exports. In 2022, the trade deficit of fresh fruits, excluding bananas, totals 10.4 billion pounds of imports. As for fresh vegetables, the United States has not had exports exceed imports since 1992. During 2022, imports

of fresh vegetables were 13.9 billion pounds higher than exports and continue to grow.

Figure 6: U.S. Fresh Produce Trade Balance*, 1980-2022



* Excluding Bananas Imported and Exported
Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS

Availability of Fresh Produce in the United States

Availability of produce will explain all of the produce grown or imported by the United States after accounting for exports. This is used as a proxy for consumption of fresh produce in the United States. Fresh fruit available in the United States total 38.42 billion pounds, after reducing 3.84 billion pounds of fruit exported in 2022 from the total supply (Figure 7).

Like fresh fruits, availability of fresh vegetables is found by subtracting exports from the total supply. Some products also list additional items where a reduction is required including ending stocks, shrink/loss, and usage for seed stock. In 2022, vegetable exports totaled 4.36 billion pounds with these additional categories accounting for an additional reduction of 1.94 billion pounds. With a total supply of vegetables at 62.52 billion pounds, these reductions bring total availability of fresh vegetables to 56.22 billion pounds.

Figure 7: Total Availability of U.S. Fresh Produce, 2022

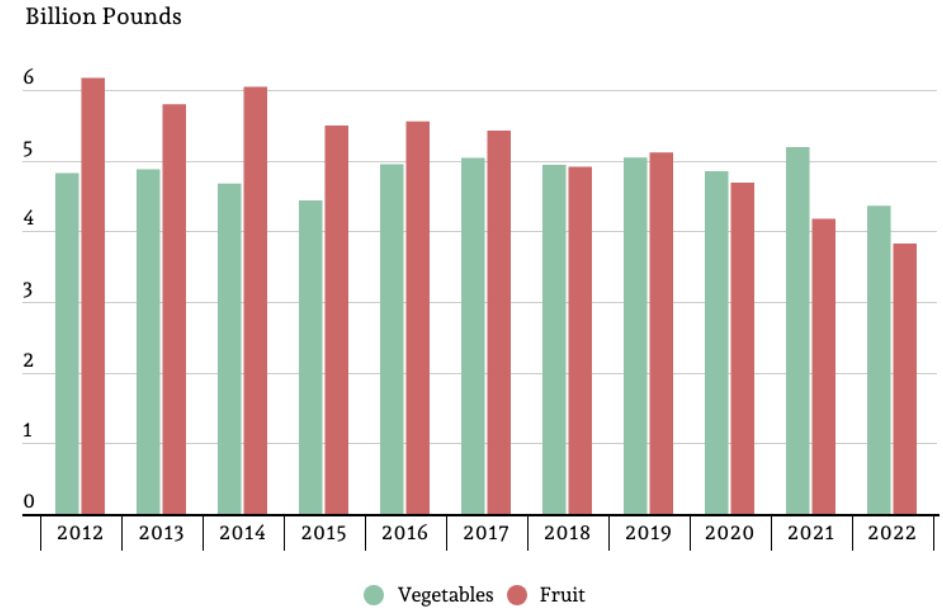
Total Supply: 94.65 Billion Pounds

Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS

In the ten years from 2012-2022, exports of vegetables fell 9.6 percent to 4.36 billion pounds, fruit exports had a substantially higher decrease of 38 percent to 3.84 billion (Figure 8). Total volume of fresh produce exports in 2022 totaled 8.2 billion pounds, the lowest volume since 1992. Exports had grown quickly around that time, most likely due to the implementation of NAFTA, and fluctuated between 9-10 billion pounds. In 2012, exports reached their highest point at 11.02 billion pounds.

During 2023, the United States exported 9.97 billion pounds of fresh produce (Figure 9). Canada is the largest market for these exports totaling 4.99 billion pounds, Mexico trails at 2.08 billion pounds of U.S. fresh produce imports. Taiwan, South Korea, and Japan follow the two USMCA countries to round out the top five importers, but these three markets each total less than 400 million pounds of produce imports from the United States.

Figure 8: U.S. Exports of Fresh Vegetables and Fruits, 2012-2022



Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS

The 4.99 billion pounds of fresh produce imported from the United States by Canada is divided into several products with total volume of vegetables accounting for 63.2 percent, or 3.18 billion pounds. Lettuce (561 million pounds), potatoes (460 million pounds) and onions (418 million pounds) are the leading vegetable products imported from the United States. The fresh fruit making up the other 1.81 billion pounds of produce imported from the United States are led by melons with 498 million pounds of imports. Nine additional products imported by Canada in 2023 totaled more than 100 million pounds, for reference Mexico only has six imported products that total 100 million pounds.

Share of Mexican produce imports favor fruits with a total of 1.21 billion pounds, 58.1 percent of the total. Apples are the largest fresh produce item imported by Mexico from the United States, contributing 589 million pounds to the total. The next largest produce products imported from the United States are pears (155 million pounds) and oranges/tangerines (123 million pounds). Of the 873 million pounds of imported vegetable products two-thirds are from potatoes (415 million pounds) and onions/shallots (169 million pounds).

Figure 9: U.S. Fresh Produce Exports, 2023

Total Supply: 9.97 Billion Pounds

Source: Global Ag Trading System (GATS), USDA/FAS

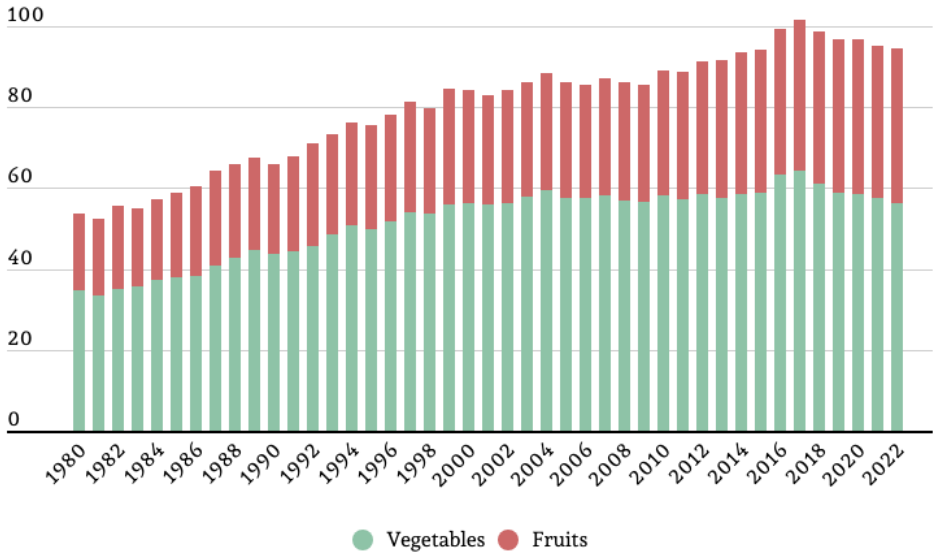
During 2022, 56.22 billion pounds of fresh vegetables were available in the United States along with 38.42 billion pounds of fresh fruit (Figure 10). Since 2000, availability of fresh produce has increased by 12.4 percent with fruit accounting for 38 percent of the increase. Availability of fresh fruit in the United States has increase each year since 2006 from 28 billion pounds to 38.4 billion in 2022. Vegetable availability on the other hand has declined annually since 2017 from the highest recorded volume at 64.4 billion pounds and has declined by 8.2 billion pounds.

While total availability of fresh produce has been seen an increase in recent years, per capita availability in the United States has fallen by five percent since 2000 despite total availability increasing by 11.8 billion pounds. The reason being the rising population of the United States. Availability of fresh produce in 2022 totaled 283.61 pounds per capita with 168.63 pounds being allocated to vegetables and fruit contributing the other 115 pounds per capita (Figure 11). Annually since 2017, when per capita produce availability was 311.9 pounds per capita, availability has decreased and in 2022 reached the lowest point since 2008 with a per capita availability of 282.21 pounds.

Since 2017, fresh vegetables available have fallen to 168.63 pounds per capita, down 14.9 percent. Despite being at the highest recorded volume availability of fresh fruit in the United States has yet to surpass vegetables. Per capita fruit availability totaled 115 pounds in 2022, up 17.1 percent from 2000.

Figure 10: U.S. Fresh Produce Availability, 1980-2022

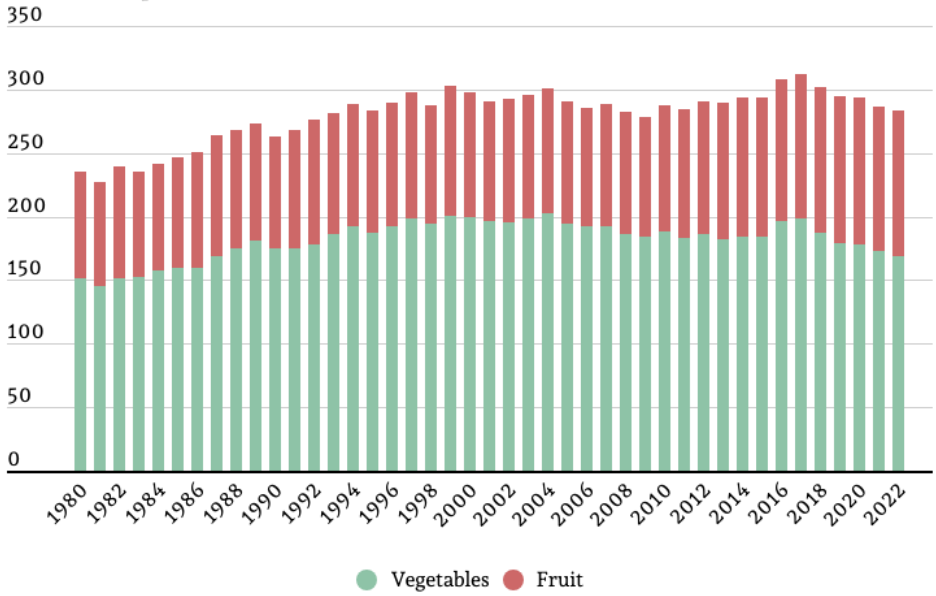
Billion Pounds



Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS

Figure 11: U.S. Fresh Produce Availability, 1980-2022

Pounds Per Capita



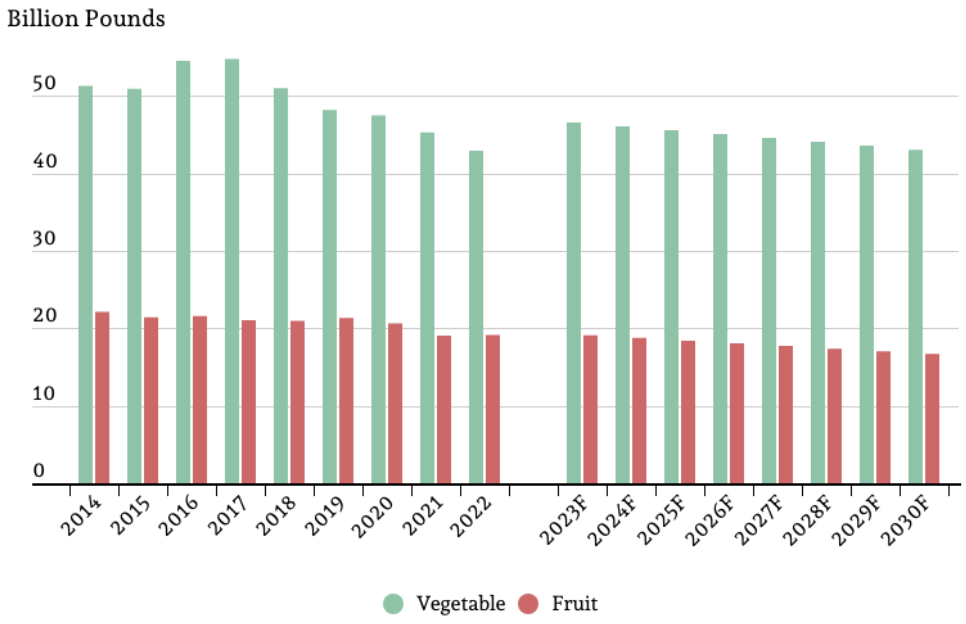
Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS

Outlook of Fresh Produce in the United States

Over the coming years, production of both fresh fruits and vegetables in the United States are expected to decrease while growing imports. In an effort to quantify how much change is expected for U.S. produce by 2030, a linear trend forecasting approach was used to estimate the volume of production based upon trends that were present from 2004 for vegetables and 2014 for fruits. These years were chosen based on the changing trends in production discussed earlier for the respective groups. A linear trend analysis was conducted to develop a baseline estimate. This is a conservative approach because no significant changes are considered; therefore, it represents a baseline and assumes that the future will be reflective of the past. Further it is assumed that the mix of products will remain stable over the time period.

Based upon the assumptions above, it is estimated that U.S. production of fresh produce will decline annually in the forecast period after taking a step up from the previous two years. The model forecasts 2023 production to be higher than the two years prior with 65.6 billion pounds of fresh produce, 46.6 billion pounds of fresh vegetables and 19.0 billion pounds of fresh fruits (Figure 12). After this initial year, both groups will decrease until reaching 59.7 billion pounds of production in 2030. With this projected decrease U.S. fresh produce production will fall by 18.6 percent from 2014 to 2030, fruit production will fall by 24.6 percent and vegetables by 16 percent. If production were to fall to this value, it would be the lowest volume of fresh produce grown in the United States since 1986.

Figure 12: U.S. Fresh Produce Production, 2014-2030F

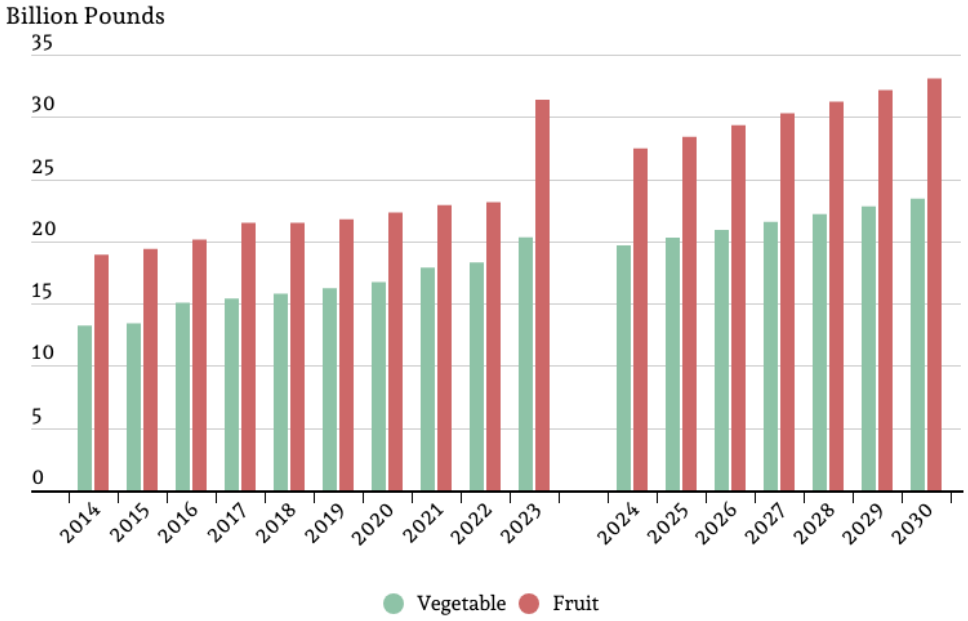


Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks, USDA ERS and Department of Agricultural Economics, Texas A&M University; 2023/2030

Imports for fresh produce grow through the forecasted years reaching a peak of 56.5 billion pounds in 2030, a 75.9 percent increase from imports in 2014 (Figure 13). Produce imports are projected at historical levels in 2027, together totaling 51.8 billion pounds, while continuing to grow through 2030.

Note the peak in 2023, values for this year are reported through USDA's Global Ag Trading System (GATS) rather than the fruit and vegetable yearbook also published by the USDA. Vegetables are reported to be 2.03 billion pounds higher than the previous year; fruit imports increase by 8.21 billion pounds. There is no explained reason this sudden rise from previous years occurs. Though this could be due to GATS including additional products not counted by the yearbook as historical values reported by GATS show a less dramatic jump for imports from 2022.

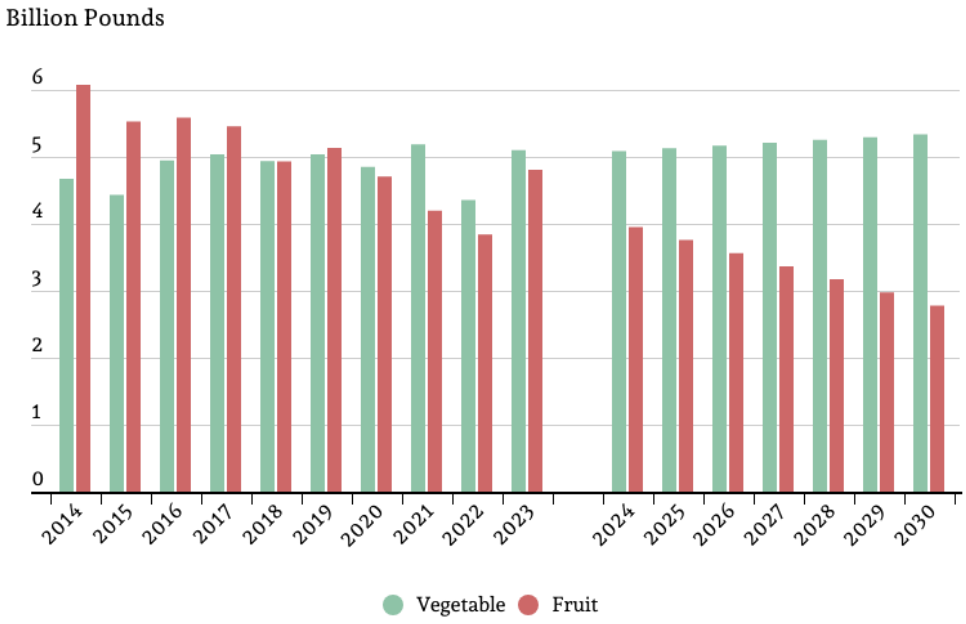
Figure 13: U.S. Fresh Produce Imports, 2014-2030F



Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks; GATS, FAS/USDA; USDA ERS and Department of Agricultural Economics, Texas A&M University; 2024/2030

While forecasted values for production and imports saw fruits and vegetables moving in similar directions the same cannot be said for export forecasts. During 2023, it was reported by GATS that 9.9 billion pounds of fresh produce was exported from the United States, including 5.1 billion pounds of vegetables and 4.8 billion pounds of fruits. In general, fruit exports have declined each year since 2014, when 6.07 billion pounds of fresh fruit were exported, while vegetables have been cyclical while still increasing. By 2030, fruit exports are forecast to fall to 2.78 billion pounds, lower than any year since 1980 (Figure 14). Vegetable exports meanwhile grow 226 million pounds by 2030, despite this growth the decrease in fruit brings the total for fresh produce exports down to 8.12 billion pounds in 2030.

Figure 14: U.S. Fresh Produce Exports, 2014-2030F



Source: Fruit and Tree Nut/Vegetable and Pulse Yearbooks; GATS, FAS/USDA; USDA ERS and Department of Agricultural Economics, Texas A&M University; 2024/2030

Challenges of Fresh Produce in the United States

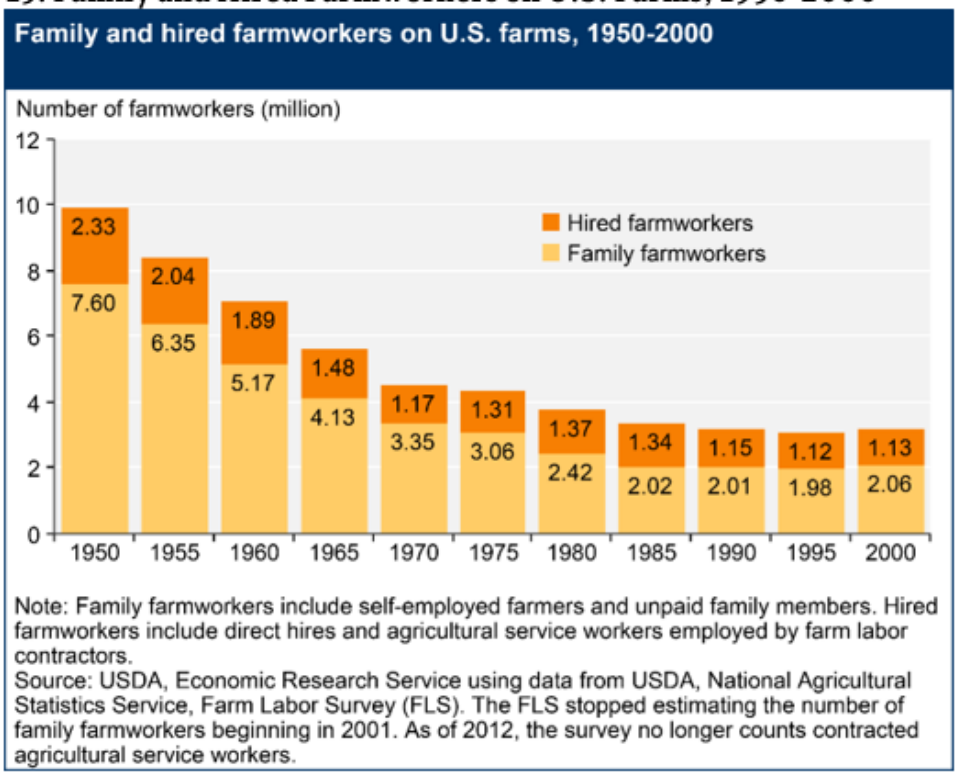
As mentioned before, several factors could explain the increased dependence of fruit and vegetables imports. Some of the main factors are high labor costs and availability relative to other countries, mainly those in Latin America, high cost for technology to help increase labor efficiency (if equipment is even available for the specific crop), longer seasonality and climate more well suited for specialty crops, trade agreements, and subsidies to infrastructure or production in other countries. Labor cost and availability is identified by the literature as the main challenge that the U.S. fruits and vegetable industry faces; therefore, this section will focus on this issue.

The average number of hired farmworkers has steadily declined over the last 50 years, from roughly 2.33 million to just over 1 million (Figure 15). Hired farmworkers make up less than 1 percent of all U.S. wage and salary workers, but they play an essential role in U.S. agriculture. Labor expenses are a major concern for agricultural producers in general, but even more for fruit and vegetable producers. Labor expenses for agricultural production account for around 10 percent of total operating expenses, however, labor expenses for fruits and vegetables are 38.5 percent and 28.8 percent, respectively.

According to the U.S. Department of Labor's National Agricultural Workers Survey (NAWS) estimates from data spanning fiscal years 2018–20, just 30 percent of crop

farm workers in manual labor occupations were U.S. born, therefore around 70 percent were foreign-born. Imported labor, primarily from Mexico, seems to be the major source of farm labor for fruits and vegetable production in the United States. However, the decline of farm workers from Mexico has caused U.S. farm labor shortages. Main reasons for the decline are the sharp decline in the Mexican fertility rate, a significant expansion in rural education, and an increase in per-capita income, which now is close to $20,000 per year (adjusted for the cost of living). The good news for U.S. farmers is that there is a great deal of persistence in farm work: if a rural Mexican does farm work one year, there is more than a 90 percent likelihood that he or she will do farm work the following year. The bad news is that a transition away from farm work is underway. The supply of agricultural workers will not disappear immediately, but U.S. agriculture can expect to see a gradual decline in the availability of Mexican farm workers over time.

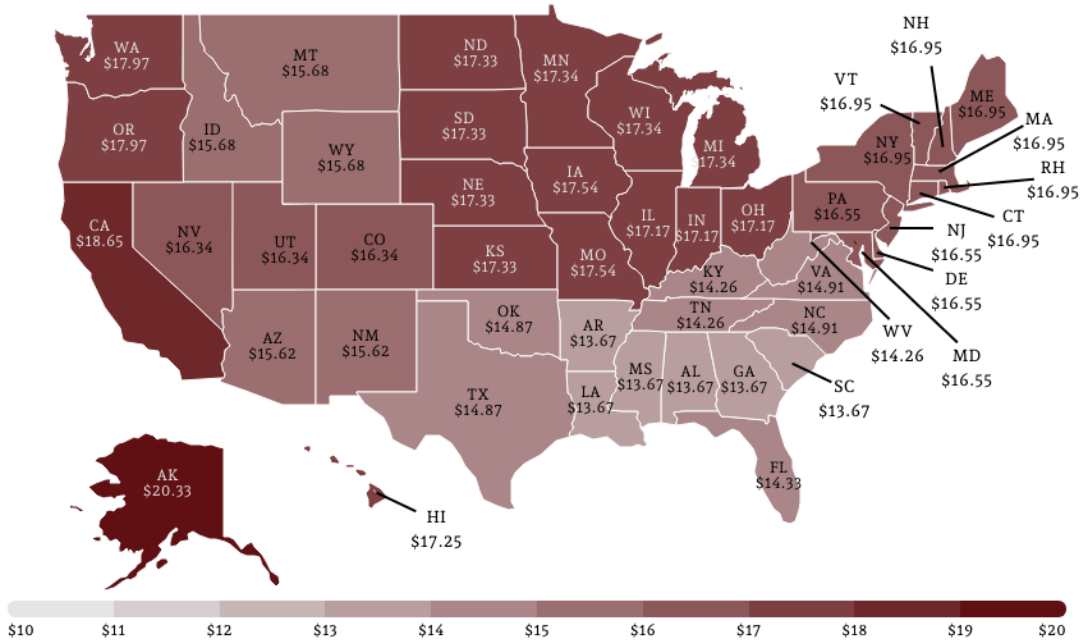
Figure 15. Family and Hired Farmworkers on U.S. Farms, 1950-2000



This decline in migration along with increasing the state minimum wage, and removal of overtime pay exemptions by some states appear to have increased U.S. farm labor costs. The federal minimum hourly wage is $7.25 and has not increased since 2009, but some states set their minimum wage above the federal rate. Also, the Raise the Wage Act of 2023, introduced in the U.S. House of Representatives and U.S. Senate on July 25, 2023, if approved would gradually raise the federal minimum wage to $ 17 an hour by 2028. Nevertheless, farm wages in the U.S. often exceed state minimum wages and are considerably higher than the Mexican minimum wage of $14 per day or $1.75 an hour for an 8-hour workday.

In order to address the shortage of farm labor, the H-2A Temporary Agricultural Program—often called the H-2A visa program— was created in 1986. The H-2A provides a legal means to bring foreign-born workers to the United States to perform seasonal farm labor on a temporary basis, for a period of up to 10 months. Employers in the H-2A program must demonstrate, and the U.S. Department of Labor must certify, that efforts to recruit U.S. workers were not successful. Employers must also pay a State-specific minimum wage, which may not be lower than the average wage for crop and livestock workers surveyed in the Farm Labor Survey (FLS) in that region in the prior year, known as the Adverse Effect Wage Rate (AEWR). Figure 16 shows the AEWR by state and it is obvious that those rates are much higher than the federal minimum wage as well as any state minimum wage. In addition, H-2A employers must provide transportation, housing, food, insurance, and visa application fees, among other expenses that could add between 35% to 40% to the AEWR rate, i.e., $20.82 in Texas, $23.73 in New York and $26.11 in California. Industry experts shared that agricultural wage rates in Mexico averages around $20.59 in Colima and $23.53 in Sonora per day, or $2.57 and $2.94 per hour for an 8-hour workday, respectively. Finally, as the labor shortage keeps getting worse, producers could be getting into wage bidding wars in order to secure farm labor during peak season increasing their labor cost even more.

Figure 16: Adverse Wage Rate, 2023

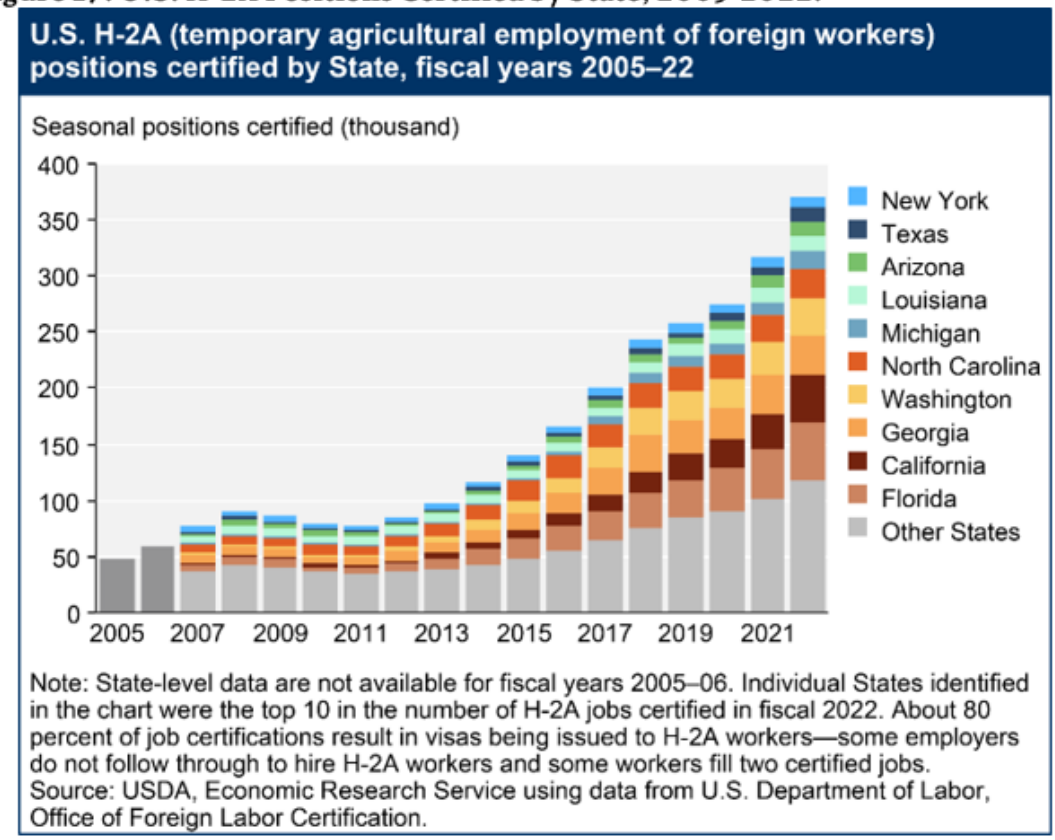


Source: USDA/ERS

Even though labor cost takes a major toll to the fruits and vegetable industry, they are left with little to no options as labor is needed to make a crop. Not only is the share of the labor cost higher than other agricultural industries, but also labor is scarce. According to ERS (2023), one of the clearest indicators of the scarcity of farm

labor is the fact that the number of H-2A positions requested and approved has increased more than sevenfold in the past 17 years, from just over 48,000 positions certified in fiscal 2005 to around 371,000 in fiscal year 2022. The average duration of an H-2A certification in fiscal 2022 was 5.65 months, implying that the 371,000 positions certified represented around 175,000 full-year equivalents. A certified job does not necessarily result in the issuance of a visa; in fact, in recent years only about 80 percent of jobs certified as H-2A have resulted in visas. Around 300,000 visas were issued in fiscal 2022 by the Department of State.

Figure 17. U.S. H-2A Positions Certified by State, 2005-2022.



Conclusion

A multitude of issues have impacted the fresh produce industry. Fresh fruits and vegetables grown in the United States have seen declines total 2.99 and 14.8 billion pounds since their peaks, respectively. Despite production declining 13.5 percent for fruits and 25.6 percent for vegetables since their respective peaks, availability in the United States has stayed stable. Trade is a major part of many different produce products available in the United States with various products relying almost entirely on imports.

Production is forecast to continue decreasing in the future, but imports are expected to continue rising. Through 2030, it is forecast that produce availability continues to

grow and per capita availability falls by less than 2 pounds per capita due to population of the U.S. continuing to grow.

High labor costs and labor availability relative to other countries, mainly those in Latin America, seemed to play a major role in the increase dependance of fruit and vegetables imports. The H2-A program has helped to fill some of the need for farm labor as seen by the increase of application over the last 17 years. Although the sustainability of the industry is at peril due to the high effective labor wages required by the program.

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