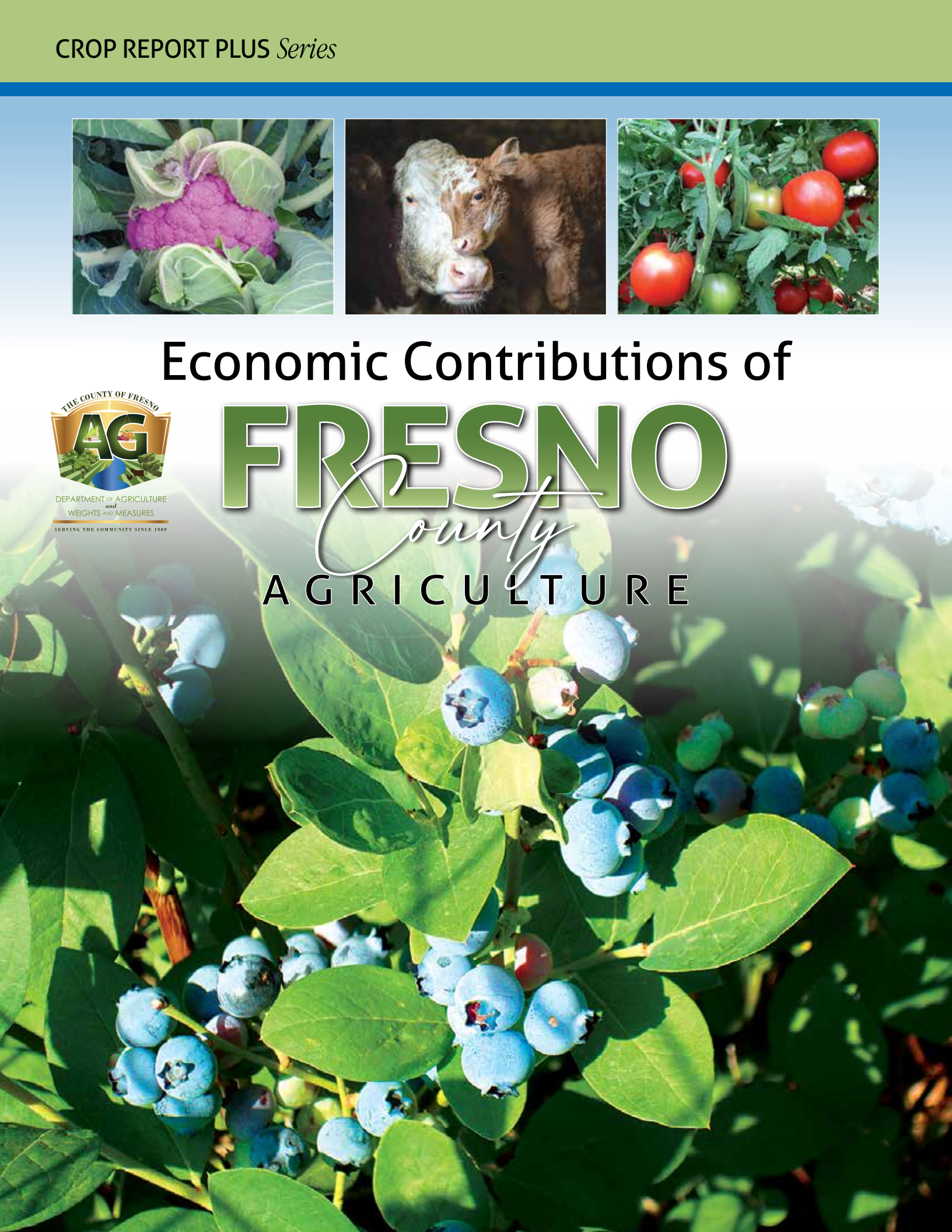
Economic Contributions of

THE COUNTY OF FRESNO
AG
DEPARTMENT OF AGRICULTURE and WEIGHTS AND MEASURES
SERVING THE COMMUNITY SINCE 1909

FRESNO *County*

AGRICULTURE



The Honorable Board of Supervisors, County of Fresno

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District 1

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(Vice Chairman)
District 1

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District 3

Buddy Mendes
(Chairman)
District 4

Nathan Magsig
District 5

Fresno County Administrative Officer

Paul Nerland

Department of Agriculture

1730 S. Maple Avenue
Fresno, CA 93702-4596

Phone:
559.600.7510

Email:
fresnoag@fresnocountyca.gov

Web:
www.co.fresno.ca.us/fresnoag

Commissioner's Letter

I am pleased to share the **Economic Contributions of Fresno County Agriculture**. This report takes an important step beyond the Fresno County Crop and Livestock Report that we have published every year for nearly a century. Instead of stopping at crop production values and acreage, it quantifies agriculture's total economic contributions through production, local processing, employment, and economic multiplier effects.

In short, this report uses twenty-first century economic tools to document agriculture's broader role in sustaining a thriving local economy.

This new study shows that in 2023, agriculture contributed a total of $21.664 billion to the county economy. This far exceeds the $8.589 billion value from our 2023 Fresno County Crop and Livestock Report. Agricultural production and processing also directly supported 63,103 jobs, plus another 44,932 employees from multiplier effects.

In addition, this report documents an extremely high level of economic diversification within agriculture, which supports resilience in agriculture and in the greater county economy.

Agriculture has a long tradition in Fresno County. For more than a century, it has been a pillar of our economy and culture. With this report, we deepen our understanding of that tradition and renew our commitment to sustaining it well into the future.

Respectfully submitted,

Melissa Cregan
Agricultural Commissioner/Sealer of Weights & Measures

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Published July 2025

Fresno County Agriculture at a Glance

Economic Contributions
of the Agricultural Industry for 2023

$21.664 BILLION | Fresno County Agriculture's total contributions to the local economy

$14.626 BILLION in direct economic output

$7.038 BILLION in multiplier effects

$59.36 MILLION per day

Employment Effects
of the Agricultural Industry

108,034 total jobs (rounded)

63,103 direct employees across production & processing

44,932 additional jobs attributable to multiplier effects: expenditures by agricultural companies and their employees

1 in 9 jobs in Fresno County attributable to the agricultural industry

Introduction

Nestled in the heart of California's Central Valley, Fresno County stands as a powerhouse of American agriculture. Here, a combination of fertile soils, abundant sunshine, and a rich multicultural farming heritage produce a vast range of products on some of the world's most productive farmland. With 114 unique commodities exported to markets in 90 countries in 2023, Fresno County is a distinctive and vital contributor to California's – and the world's – food supply.

Clearly, agriculture plays a vital role in the Fresno County economy. What's not so clear, however, is the true size of that role. How much money does agriculture pump into the local economy? How many jobs does agriculture support? In other words, just how important is agriculture as a driver of Fresno County's economic health?

This report sheds light on these and related questions. Using multiple data sources and advanced economic modeling techniques, it analyzes agriculture's total contribution to the Fresno County economy. The report also examines economic diversification in agriculture and its implications for resilience to economic shocks. On the whole, the findings offer important information for policymakers, the public and anyone who values a vibrant and resilient local economy.

Our Approach

A *basic industry* sells most of its products beyond the local area and thus brings outside money into local communities. Agriculture easily qualifies as a basic industry in Fresno County. Calculating a reasonable range of economic contributions by a basic industry entails quantifying three economic areas: 1) *direct* economic effects; 2) *indirect* economic effects; and 3) *induced* economic effects. This report covers all three.

Direct economic effects include farm production, local processing, and their related employment. *Indirect* effects consist of inter-industry, business-to-business supplier purchases. *Induced* effects reflect consumption spending by employees. The **Multiplier Effects** section on page 8 explains this further.

To understand the furthest economic impacts of agriculture, one would also need to assess agricultural-related costs to society through, for example, net impacts on water and other natural resources. While important, a full assessment of these impacts lies beyond the scope of this study.

Our calculations draw from local and national data sources. The local sources include industry experts and the annual Fresno County Crop and Livestock Report produced by the Fresno County Department of Agriculture. The main national data source is IMPLAN, a widely used economic modeling program (see www.implan.com).

Originally created for the U.S. Department of Agriculture (USDA), IMPLAN uses econometric modeling to convert data from more than a dozen government sources into local values for every U.S. county and zip code across 546 industry sectors. Because IMPLAN draws from multiple sources, including the most recent USDA Census of Agriculture (2022), its employment and economic output numbers often differ from those reported by individual state and federal agencies. For details, please see "Data Sources for Select Industries: Farm, Construction, Railroad, and Government" on the company website: http://bit.ly/4e0if2Z.

Except where otherwise noted, all figures are from 2023, the most recent IMPLAN dataset available. Where appropriate, we adjusted sector names for clarity and applied coefficients to IMPLAN values to reflect unique Fresno County conditions. Please contact the authors for additional details on the methods used.

Direct Effects of Fresno County Farm Production

This section focuses on the simplest measures of economic activity: production and employment. It describes total farm production and the number of agricultural jobs.

PRODUCTION

Figure 1 shows the various categories that made up Fresno County's farm production value. At $4.756 billion, Fruit & Nut Crops was the single largest production category by dollar value, comprising 55.4% of the county total. Grapes dominated this category at $1.339 billion. Almonds followed ($1.024 billion), then pistachios ($862.0 million) and peaches ($365.9 million).

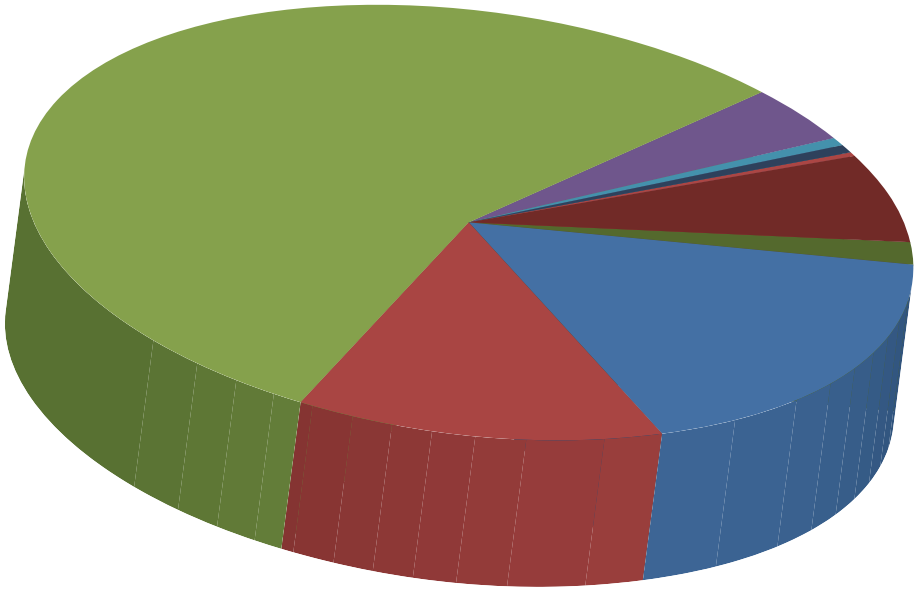
At 17.9%, Vegetable Crops represented the second largest category ($1.538 billion). Tomatoes topped this grouping ($601.4 million), followed by garlic ($309.4 million), onions ($153.7 million) and melons ($150.2 million).

Livestock & Poultry was the third largest category at 13.3% ($1.144 billion), led by cattle & calves at $572.4 million. Together with Fruit & Nut Crops and Vegetable Crops, these three large categories accounted for 86.6% of the county's direct farm production value.

The combined total dollar value for all agricultural products rose $1.549 billion over the previous decade, from $7.040 billion in 2014 to $8.589 billion in 2023. This represents a 22.0% increase, or minus 5.3% after adjusting for 27.3% inflation that occurred during the period. These values represent gross output and do not reflect the net profit or financial performance of individual growers or the industry as a whole. Interested readers are encouraged to consult the county's 2023 Fresno County Crop and Livestock Report for additional details on specific products and their value.

Figure 1. Distribution of Fresno County Farm Production

Source: 2023 Fresno County Crop and Livestock Report, Office of the Fresno County Agricultural Commissioner/ Sealer of Weights & Measures



Fruit & Nut Crops
$4,756,015,000 - 55.4%

Field Crops
$346,933,000 - 4.0%

Nursery Crops
$58,067,000 - 0.7%

Seed Crops
$46,093,000 - 0.5%

Industrial Crops
$1,739,000 - 0.02%

Livestock & Poultry Products
$547,129,000 - 6.4%

Apiary Products & Pollination Services
$150,935,000 - 1.8%

Livestock & Poultry
$1,144,381,000 - 13.3%

Vegetable Crops
$1,537,762,000 - 17.9%

EMPLOYMENT

How many people work in agricultural production? In 2023, IMPLAN data indicate that agricultural production directly employed 27,515 people in Fresno County. This figure encompassed a wide range of production-related jobs, including not just growing and harvesting, but also sales, marketing and many other roles. It did not include food processing jobs, which are discussed on page 10. Nor did it include Fresno County's public sector jobs in agriculture across a range of local, state, and federal agencies.

Readers who want to know more about employment estimates are encouraged to consult IMPLAN's "Data Sources and Procedures Data Sources for Select Industries: Farm, Construction, Railroad, and Government" article referenced earlier. In general, IMPLAN data attempts to correct for omissions and inconsistencies among other sources. For example, IMPLAN counts farm owners (proprietors) even though other sources do not. IMPLAN also corrects for certain crops with low production levels not being reported by other sources due to disclosure laws that protect the privacy of individual producer data. Last, IMPLAN counts part-time workers differently than the USDA Census of Agriculture. Imagine a farm with six humans who work two months each, sequentially in a year. The Census of Agriculture would report that as six jobs, whereas IMPLAN would consider it to be just one job – one job that happens to be filled by six different temporary workers.

Multiplier Effects of Fresno County Farm Production

This section quantifies the economic ripples that farm production creates in the local economy. These ripples take two forms: *indirect effects* and *induced effects*. The first consists of business-to-business supplier purchases. For example, when a Fresno County producer buys vehicles, machinery, fertilizer, fuel, chemicals, insurance, banking services, veterinary supplies and other inputs, the producer creates *indirect effects*.

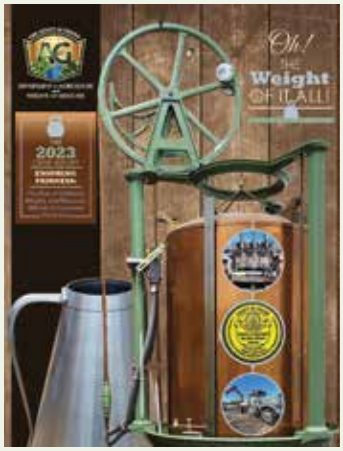
The second ripple type, *induced effects*, consists of consumption spending by the combined owners and employees of agricultural businesses and their suppliers. They pay for groceries, housing, healthcare, leisure activities, and other things for their households. All this spending creates ripples in the economy.

Although agricultural companies, suppliers and their combined employees certainly spend money in other counties, this study only reflects those expenditures within Fresno County. Quantifying expenditures outside the county would be an expensive, complex effort that lies well beyond our scope here.

Figure 2 shows agriculture's *direct*, *indirect*, and *induced* economic effects within the county across major production categories. The numbers reflect IMPLAN multipliers for each sector, which are rooted in the most recent U.S. Bureau of Economic Analysis input-output models.

Note that sector names and production values in **Figure 2** differ from the county's annual report. They closely follow a standard classification system used nationwide called the North American Industrial Classification System (NAICS), as adapted by IMPLAN. Each year, agricultural producers in Fresno County and nationwide use the NAICS categories on Schedule F of their federal tax returns ("Profit or Loss from Farming"), which requires them to designate the NAICS category that best fits their operation. Producers also use NAICS categories when completing the USDA Census of Agriculture, most recently for 2022.

The following list helps bridge NAICS and IMPLAN sectors in **Figure 2** with familiar commodities listed in the 2023 Fresno County Crop and Livestock Report:



- **Fruit Farming:** Apples, Apricots, Blueberries, Cherries, Citrus (Grapefruit, Lemons, Oranges, Mandarin/Tangerine, Tangelo, Other), Grapes (Raisin Varieties), Grapes (Table Varieties), Grapes (Wine Varieties), Kiwifruit, Nectarines, Olives, Peaches, Pears, Persimmons, Plums, Pomegranates, Other Fruits.
- **Tree Nut Farming:** Almonds, Almond Hulls, Pistachios, Walnuts.
- **Vegetable & Melon Farming:** Asparagus, Broccoli, Corn (Sweet), Eggplant, Garlic, Head Lettuce, Melons (Cantaloupe, Honeydew, Mixed, Watermelon), Onions, Oriental Vegetables, Pepper (Bell), Squash, Tomatoes, Other Vegetables.
- **Dairy Cattle & Milk Production:** Dairy Cattle & Calves (Breeding Stock, Feeders, Calves, Cull Stock), Milk (Conventional, Organic, Goat).
- **Misc. Animals & Animal Products:** Apiary Products (Honey, Beeswax), Hogs & Pigs, Manure, Pollination (Seed; Trees, Fruits & Nuts; Melons, Vegetables), Sheep & Lambs, Wool.
- **Poultry & Egg Production:** Chickens, Ducks, Gamebirds (Pheasant, Pigeon, Quail), Geese, Turkeys, Eggs.
- **Field & Seed Crops:** Barley, Beans (Dry), Corn (Silage), Cotton (Lint, Seed), Hay (Alfalfa, Wheat, Other), Pasture & Range, Wheat (Grain, Silage), Other Field Crops, Seed Crops (Alfalfa, Vegetables, Other).
- **Beef Cattle Ranching:** Beef Cattle & Calves (Breeding Stock, Feeders, Calves, Slaughter Stock).
- **Greenhouse, Nursery & Floriculture Production:** Herbaceous Ornamentals, Ornamental Trees & Shrubs, Other Nursery Crops, Misc. Other (Compost, Mulch, Pomace, Sod, Soil).
- **Forestry & Forest Products:** Timber, Christmas Trees.

Figure 2. Economic Effects of Fresno County Farm Production

Dollar values are in $ millions. Figures are for 2023 and come from IMPLAN and U.S. Bureau of Economic Analysis, with adjustments for local conditions. Columns and rows may not compute exactly due to rounding.

FARM PRODUCTION SECTOR	Output Effects ($ Millions)			TOTAL
	Direct	Indirect	Induced	
Fruit Farming	$2,828.1	$882.1	$690.2	$4,400.4
Tree Nut Farming	$1,936.7	$93.5	$622.7	$2,652.9
Vegetable & Melon Farming	$1,540.0	$506.4	$246.9	$2,293.4
Dairy Cattle & Milk Production	$828.7	$275.3	$84.6	$1,188.6
Poultry & Egg Production	$547.6	$164.4	$36.8	$748.8
Field & Seed Crops	$393.1	$157.7	$68.4	$619.2
Beef Cattle Ranching	$284.5	$79.2	$26.6	$390.2
Misc. Animals & Animal Products	$186.7	$7.6	$75.3	$269.6
Greenhouse, Nursery & Floriculture	$58.2	$12.6	$5.7	$76.6
Forestry & Forest Products	$1.7	$0.1	$0.8	$2.6
TOTAL ECONOMIC OUTPUT	$8,605.3	$2,179.0	$1,857.9	$12,642.3
	Employment Effects (# of Jobs)			TOTAL
	Direct	Indirect	Induced	
TOTAL EMPLOYMENT	27,515	18,531	11,194	57,239

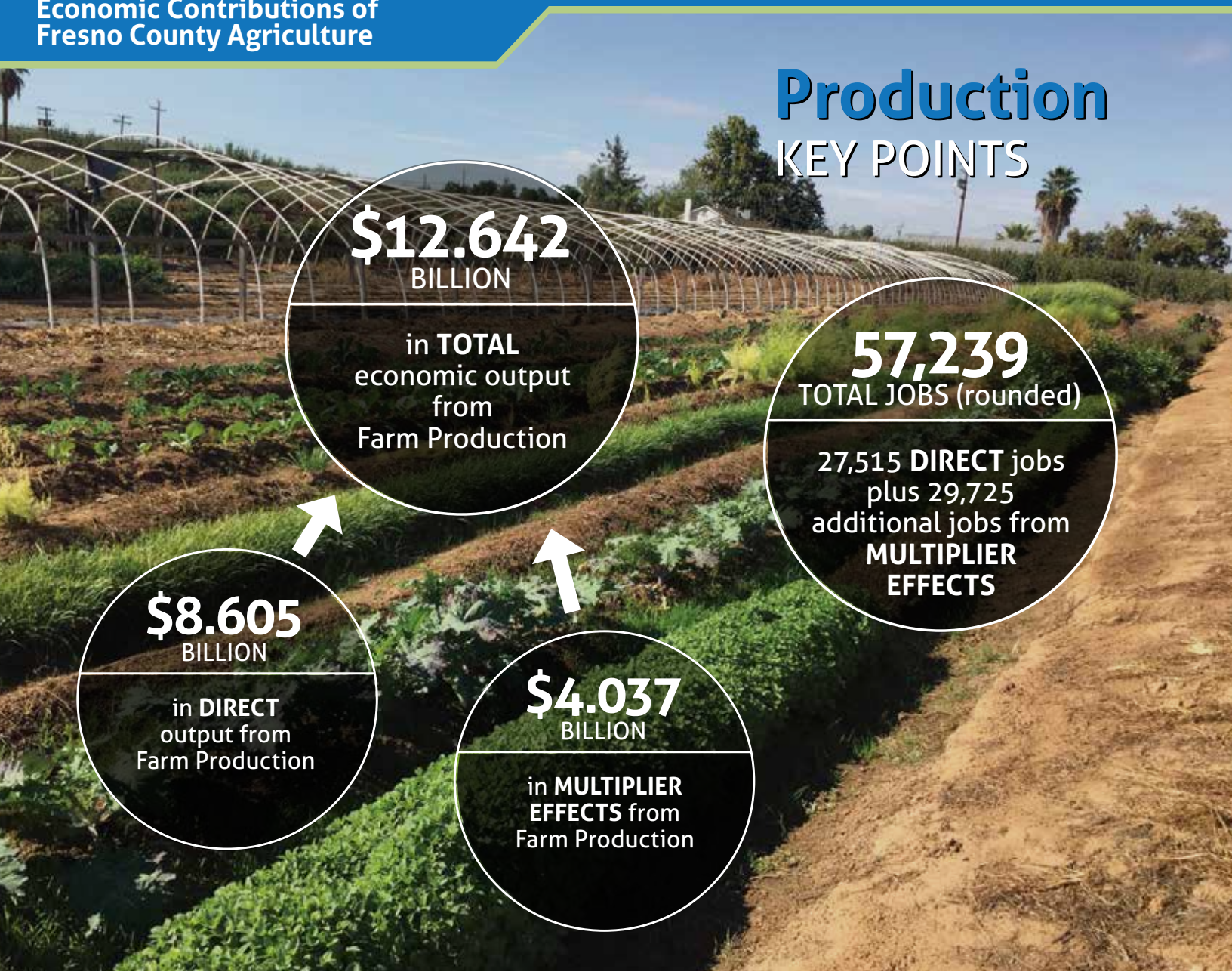
NAICS/IMPLAN also combines familiar products in unfamiliar ways. For example, the county's annual crop report groups dairy cattle (worth $289.2 million in 2023) into "Cattle and Calves," but NAIC/IMPLAN tracks those animals under "Dairy Cattle & Milk Production" (**Figure 2)**. The county's $46.1 million in seed crops occurs across multiple sectors, depending on the type of seed. Pollination services, worth $150.9 million in 2023, fits under the county's $1.72 billion "Support Activities for Agriculture" sector, as do the drying and hulling of nuts and many other activities embedded within **Figures 2** and **3**.

Each sector has distinct multipliers. For example, Fresno County "Fruit Farming" sector in **Figure 2** had a 2023 *indirect effects* multiplier of 0.3119 and an *induced effects* multiplier of 0.2440. This means that each dollar's worth of direct output generated an extra 31 cents in supplier purchases, plus 24 cents more in consumption spending by the owners and employees of agricultural businesses and their suppliers.

Multipliers change every year for each sector and county nationwide. The multipliers update to reflect where companies and employees spent their money. For example, the *induced effects* multiplier for Fresno County "Dairy Cattle & Milk Production" was 0.0742 in 2010, then increased to 0.1021 for 2023.

Sectors have unique multipliers not just for economic output but also for employment. For example, Fresno County "Tree Nut Farming" in **Figure 2** supported 9,983 *direct* jobs plus an additional 958 *indirect effects* jobs and 3,756 more from *induced effects*. The bottom row of **Figure 2** shows combined employment figures across sectors.

Because IMPLAN's methodology differs from that of the county's annual agriculture survey – and because this analysis incorporates supplemental data provided by the Department of Agriculture – the total 2023 direct production value in **Figure 2** ($8.605 billion) is slightly higher than the $8.589 billion reported in the 2023 Fresno County Crop and Livestock Report. The difference amounts to less than one-twentieth of one percent.



Locally Sourced, Value-Added Food Processing

Farm production tells only part of the story. This section captures the economic value of local food processing, which plays a key role in the Fresno County economy. It is neither an exact science nor a full assessment but rather gives the reader a basic overview of the topic.

To avoid overstating the numbers, we only include food manufacturers and sectors that fit two strict criteria: 1) they use mostly local agricultural inputs; and 2) they are unlikely to exist here without the presence of the associated agricultural sector, i.e., Fresno County's abundant supply of fruits, nuts, vegetables, animals and other raw agricultural products.

We also took precautions to avoid double-counting. For example, we did not factor wine grape production into this section because **Figure 2** already captured the $240.1 million direct dollar value of wine grapes in its "Fruit Farming" row. We only calculated the value created by converting wine grapes into wine.

Nor did we include the county's $538.4 million in milk production, since the "Dairy Cattle & Milk Production" row in **Figure 2** already includes that value. We only calculated the value created by processing raw milk into pasteurized milk, butter, milk powder, condensed milk, skim milk, ice cream and other dairy products.

Based on these strict criteria, we excluded several IMPLAN food and beverage sectors that other studies often include. Adding these sectors could overstate the value of local agriculture, including its employment and multiplier effects. For example, we did not include Fresno County's $160.8 million in bread and bakery products output because much of the yeast, salt and other raw ingredients come from outside the county. Nor did we include the county's manufacturing of canned or bottled soft drinks and water ($379.0 million), cookies and crackers ($49.6 million), coffee and tea ($10.6 million), and spices and extracts ($9.6 million).

We also did not count the county's beer brewing sector, worth $56.7 million in 2023. Brewers depend on outside grains, especially hops grown in the Pacific Northwest or Germany. Recent attempts to grow hops in Fresno County on a commercial scale have had limited success.

Figure 3 shows the economic effects of locally sourced, value-added food processing. As with **Figure 2**, the sector names borrow from IMPLAN and NAICS, which lump and split products according to a national classification system for tracking economic output.

Figure 3: Economic Effects of Locally Sourced, Value-Added Food Processing

Sources: Adapted from IMPLAN and U.S. Bureau of Economic Analysis data, with input from local sources. Columns and rows may not compute exactly due to rounding.

FOOD PROCESSING	Output Effects ($ Millions) Direct	Indirect	Induced	TOTAL
Meat & Other Animal Products Manufacturing	$1,746.8	$563.7	$231.4	$2,541.9
Nuts & Other Dried Food Products Manufacturing	$1,499.9	$268.0	$529.7	$2,297.6
Light Processing of Fruit, Vegetable & Nursery Products	$831.0	$29.5	$437.8	$1,298.3
Canned, Jarred and Bottled Fruits & Vegetables Manufacturing	$635.9	$214.6	$83.0	$933.5
Miscellaneous Other Food Manufacturing	$407.7	$134.9	$36.3	$578.9
Wineries	$361.9	$113.6	$76.9	$552.4
Frozen Fruits, Juices & Vegetables Manufacturing	$300.2	$134.1	$45.9	$480.2
Dairy Products Manufacturing	$237.5	$69.9	$32.0	$339.4
TOTAL ECONOMIC OUTPUT	$6,021.0	$1,528.2	$1,473.1	$9,022.2
	Employment Effects (# of Jobs) Direct	Indirect	Induced	TOTAL
TOTAL EMPLOYMENT	35,588	6,350	8,857	50,795

The largest sector, **"Meat & Other Animal Products"** in **Figure 3** reflects Fresno County's key role as a hub for meat and poultry processing. The county features a diverse mix of large-scale processors, family-owned businesses, and an educational facility. Collectively, Fresno County's meat and poultry processors play a vital role in the region's agricultural economy, supplying a wide variety of high-quality products to diverse markets.

The region's beef sector includes integrated operations that manage every stage from cattle feeding to processing, producing fresh boxed beef, ground beef, seasoned cuts, and fully cooked entrees. These products are distributed to retail chains, foodservice providers and national restaurant brands. Leading beef processors in the county

operate expansive feedlots and process hundreds of cattle daily, sourcing livestock from throughout California and neighboring states to ensure a consistent supply.

In the poultry sector, Fresno County hosts significant processing facilities that handle millions of chickens and turkeys annually. These operations produce whole birds, cut-up parts, organic and free-range options, and value-added items such as marinated and fully cooked products. Poultry products are supplied to supermarkets, specialty stores, and foodservice outlets across the West Coast and beyond. Local specialty shops and butcher markets contribute to the county's food landscape by offering fresh cuts, sausages, and prepared foods tailored to community preferences.

The Fresno State Meat Lab is a unique, student-run USDA-inspected facility located at California State University (CSU), Fresno. The lab processes beef, pork, and lamb, producing a wide array of specialty products such as Italian dry salami, sausages, and jerky. These products are sold at CSU Fresno's Rue and Gwen Gibson Farm Market, other local retail outlets and supplied to local restaurants. The Meat Lab also collaborates with local companies for product development and quality testing, providing hands-on training for future meat industry professionals.

"Nuts & Other Dried Food Products Manufacturing" in **Figure 3** captures Fresno County's role as a major center for processing fruits, grains and especially nuts into value-added products for domestic and international markets. State-of-the-art facilities in the county handle large volumes of nuts, utilizing advanced equipment for cleaning, drying, and sorting. For almonds, after hulling and shelling, processors may further roast, slice, dice, or grind much of the county's $1.024 billion almond crop into products such as roasted almonds, almond flour, and almond butter. Much of the pistachio crop, worth $862.0 million in 2023, is hulled, dried, and then sorted by size and color, with some facilities specializing in salted, roasted, or flavored pistachios for retail markets. Walnuts are similarly processed, with modern plants focusing on both in-shell and kernel packing, as well as specialty items like walnut oil and snack mixes.

Fresno County is also renowned for its dried fruit industry, with family-owned companies and cooperatives drying grapes into raisins, crafting premium dried apricots, peaches, and figs, and producing sun-dried tomatoes. Specialty processors create trail mixes and granolas by combining local nuts and dried fruits, while others focus on dehydrated vegetables and tomato products for foodservice and ingredient markets. A cooperative of local growers produces a variety of dried fig products such as snacks and baking ingredients, then sells them nationally and internationally under popular brand names. CSU Fresno further supports the sector with commercial-scale labs for hands-on training in nut and fruit processing. A cooperative of local growers produces a variety of dried fig products such as snacks and baking ingredients, then sells them nationally and internationally under popular brand names.

Producers also transform many vegetables into dried products. For example, a specialized processing plant in Firebaugh sources onions from several dozen growers, then produces dehydrated onion products such as flakes, granules, powder, and chopped dried onions.

"Light Processing of Fruit, Nut, Vegetable & Nursery Products" in **Figure 3** encompasses post-harvest value added to the county's abundant fruits and vegetables, and, to a lesser extent, nursery stock. This sector captures portions of IMPLAN's "Support Activities for Agriculture" sector that involve the sorting, grading, cleaning, and packing of fresh fruits and vegetables, including when those activities occur in fields during harvest. The sector also includes IMPLAN's "All Other Food Manufacturing" which reflects fruits and vegetables that are cut, peeled and turned into perishable foods, including ready-to-use refrigerated products.

Table grapes offer a prominent example. Home to the Table Grape Commission, Fresno County produced $743.8 million in fresh table grapes in 2023. During harvest, grape clusters are placed in clean containers and transported to packing stations, often in the field, where a second quality check is performed and additional trimming occurs. Grapes are then packed into bags, clamshells, or boxes, with sulfur dioxide pads sometimes added to preserve freshness. Packed boxes are weighed, palletized, and moved to cold storage for pre-cooling to about 32°F, ensuring shelf life and quality. Finally, the cooled pallets are loaded onto refrigerated trucks for shipping to major grocery store chains, specialty retailers, and other markets, mostly in the U.S., but also in Canada, China, Mexico and other countries. Specialized packaging into ready-to-eat grape cups and packs also occurs.

The county's $450.9 million citrus crop undergoes a similar value-added process. After harvest, Fresno County oranges, lemons, mandarin/tangerines, and other fruits are placed in bins, which are quickly transported to packing facilities. There, fruit is washed, electronically sized and sorted, and inspected for quality, with some facilities using advanced cameras and sensors to check for defects and sugar content. Workers trim stems and remove any subpar fruit before packing the citrus into bags or cartons. Packed fruit is then palletized, pre-cooled if necessary, and loaded onto refrigerated trucks for distribution.

Vegetables and nursery crops, too, undergo light, post-harvest value-added processes. Producers add value to the county's garlic crop, for example, by sorting and cleaning garlic at packing houses, then removing the outer skins before packing the garlic into boxes, palletizing, and loading onto trucks for distribution. Among the county's $58.1 million in nursery crops, growers add value to indoor potted plants, landscape plants, farm stock, and other plants by putting product into suitable containers ranging from inexpensive flats and trays to decorative clay and wooden pots. Growers prune, trim and shape product, and add labels as appropriate for wholesale and retail markets.

As the name suggests, **"Canned, Jarred and Bottled Fruits & Vegetables Manufacturing"** in **Figure 3** reflects canned, jarred, and bottled products made from fruits and vegetables that are not destined for the fresh market. For example, a portion of the $309.4 million garlic crop is chopped, minced, and/or diced, then put into jars (glass or plastic), tubs, or pouches for retail and food service.

The county's $503.9 million processed tomato crop features prominently in this category. Fresno County is the leading producer of processing tomatoes in California and the United States. Growers harvested 3.789 million tons in 2023 across 67,750 acres. Much of the tomato crop leaves the county for processing, including at large-scale facilities in nearby Los Banos and Santa Nella. Within Fresno County, tomatoes are processed at facilities such as a plant in Huron that specializes in high-quality tomato paste.

Boutique-scale processing complements these larger operations. A Fresno-based company, for example, crafts small-batch jams and jellies from locally grown fruits like pluots, pomegranates, and berries. Farms in Clovis and

Fresno sell bottles and jars of local honey. A women-owned farm and kitchen in Reedley creates small-batch, farm-to-jar preserves, pickles, and salsas from their own produce.

Among other examples, a cold-press juice company in Fresno makes bottled juices and cleanses with citrus, pomegranates, and greens sourced from Fresno County farms. A company in Fresno brews and bottles small batches of kombucha flavored with locally grown fruits, herbs, and botanicals, for sale at farmers markets and select local retailers. Last, a family bakery in Clovis uses local almonds, citrus, and dried fruits to make traditional and modern biscotti, cookies, and gift packs to sell at farm stands, specialty shops, and online.

"**Miscellaneous Other Food Manufacturing**" is a catchall category that combines several NAICS/IMPLAN sectors. A company in South Fresno, for example, converts large volumes of local commodities into finished feeds, soil amendments, and other products. This includes, for example, processing portions of the county's $17.6 million seed cotton crop into oil and byproducts.

Companies in Sanger, Auberry, Prather, Clovis, and Fresno compress alfalfa and other hays into pelletized products for animal feed. A few companies manufacture food for dogs, cats and other pets. These range from a large-scale facility in Sanger to a company in Fresno that specializes in grain-free dog and cat treats made from local beef, turkey and chicken, sometimes flavored with local pumpkins and cherries.

Several millers process portions of Fresno County's $28.7 million wheat grain crop and related field crops into flour. The largest facility, part of a national chain, produces tortilla flour, all-purpose flour, various whole wheat flours, and others. On the smaller end, a renowned, family-owned processor specializes in premium bulgur wheat and other quick-cooking specialty grains.

A Fresno facility owned by a prominent national company does wet corn milling, among other activities, separating corn kernels into components like starch, protein and oil for food and industrial purposes, including for dairy cattle feed. A biofuel refinery in Fresno uses advanced technologies to process various oilseed feedstocks, including seed oils, into biodiesel and refined glycerin. A vertically-integrated olive oil producer near Clovis grows 450 acres of organic olives, across five varieties, and has won over 200 awards for its olive oil.

Fresno County's "**Wineries"** sector captures the significant value added to the county's $236.7 million crushed wine grape crop. A majority of the county's more than a dozen wineries cultivate their own estate vineyards. Local wineries produce robust reds like Zinfandel, Syrah, Sangiovese, and Barbera, as well as aromatic whites such as Viognier and Muscat Canelli, all benefiting from the county's warm climate and fertile soils.

Fresno County wineries add additional value to wine grapes by attracting visitors to a variety of experiences. Many offer tastings paired with local foods, live music events, creative workshops, and outdoor gatherings. Some host private tours, vineyard walks, and educational activities, including hands-on winemaking and grape stomping, while others provide scenic venues for weddings and special events.

For a broader analysis of wineries' economic impact that goes beyond the scope of this study, please see the "2022 Economic Impact of California Wine and Grapes on Fresno County" available at https://www.wine-economy.com/. Among other differences, that larger study included grapes imported from other counties and economic impacts that occurred beyond Fresno County.

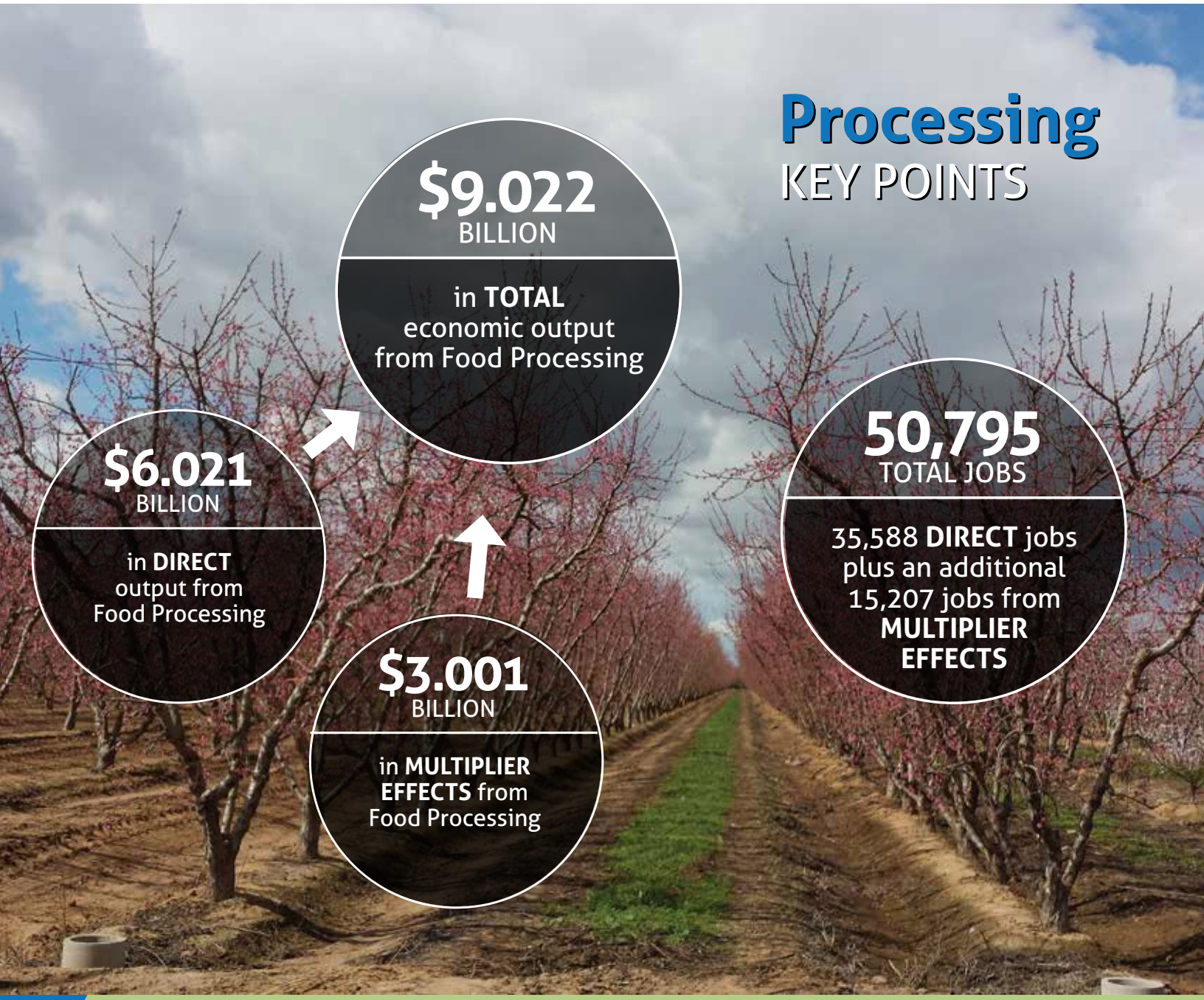
"Frozen Fruits, Juices & Vegetables Manufacturing" in **Figure 3** encompasses several companies in Fresno County that manufacture frozen products using locally grown fruits and vegetables. Common ingredients include peaches, strawberries, pears, plums, and mixed fruit blends, as well as regionally sourced vegetables. These products are processed at modern facilities and sold to food manufacturers, retailers, restaurants, and schools. Finished goods range from individually quick frozen (IQF) fruit pieces and vegetable cuts to fruit blends for smoothies and frozen pie fillings, as well as ingredients for yogurt, ice cream, and baked goods.

For example, a Fresno company is the industry leader in the growing and processing of fresh frozen peaches. After being washed, sized, pitted, and peeled, freestone and clingstone peach halves move on conveyor belts past professional graders who separate fruit into distinct product lines. The highest quality peaches become the key ingredient in popular frozen desserts. Others go to the blast freezer to become IQF pieces for peach products, blends, and yogurts. Softer peaches are sliced and designated for ice cream manufacturers, while overripe fruit becomes purées.

"Dairy Products Manufacturing" in **Figure 3**, reflects production by several major milk processing plants that operate in Fresno County. The largest one, based in Fresno, counts among the nation's largest dairy cooperatives and processes milk from local dairies into a variety of dairy products within 24 hours of arrival. After leaving Fresno County dairies, most of the $538.4 million in fluid milk is processed locally at these major facilities.

Businesses process fluid milk into a range of value-added dairy products. Examples include pasteurized and bottled fluid milk of various kinds, ranging from whole, reduced-fat, low-fat, and nonfat milk to chocolate milk and other flavors, available in gallons, half-gallons, quarts and smaller containers. Processors also make cream, half-and-half, butter, milk powders, condensed and skim milk, and ice cream. These products are packaged for retail, foodservice and industrial markets, supporting both local and broader regional demand.

Among other products, the Fresno State Dairy Processing Unit, a university-based creamery, produces a variety of cheeses using milk from its own campus dairy. Students are actively involved in every step, from milking cows to crafting cheddar and experimenting with new varieties. Their cheeses are available at CSU Fresno's Rue and Gwen Gibson Farm Market, supporting both education and local agriculture. In another cheese example, a family-run creamery in Sanger specializes in handcrafted artisan goat cheeses made from milk produced on their own farm. They offer several varieties, including fresh and aged cheeses, and supply local farmers markets, restaurants, and direct-to-consumer sales. A goat farm in Prather specializes in skin care products made from goat milk, including soaps, face creams, lip balms, bath bombs and hydrating body lotions.



Total Economic Contributions of Fresno County Agriculture

The previous sections have provided key pieces to an economic puzzle. This section combines those puzzle pieces into a final picture showing the overall economic effects of Fresno County agriculture.

As **Figure 4** shows, the total 2023 economic contribution of Fresno County agriculture was $21.664 billion. This consisted of $14.626 billion in combined direct output from production and processing, plus $7.038 billion in multiplier effects.

For perspective, agriculture pumped over *fifty-nine million dollars per day* into the county economy during 2023 ($59,354,880 to be exact). This translates to $2,473,120 per hour and $41,219 per minute.

Total agricultural employment covered in the scope of this study was 108,034. Of these, 63,103 jobs were directly in agricultural production and processing, with the remaining 44,932 from multiplier effects. The 63,103 direct agricultural jobs represented 11.1% of Fresno County's total employment of 566,167, or about one out of every nine jobs.

Figure 4. Overall Economic Effects of Fresno County Agriculture

Columns and rows may not compute exactly due to rounding. Agriculture In The Larger Economy

Type of Effect	Direct	Indirect	Induced	TOTAL
FARM PRODUCTION				
Output Effects ($ Millions)	$8,605.3	$2,179.0	$1,857.9	$12,642.3
Employment Effects (# Jobs)	27,515	18,531	11,194	57,239
LOCALLY SOURCED, VALUE-ADDED FOOD PROCESSING				
Output Effects ($ Millions)	$6,021.0	$1,528.2	$1,473.1	$9,022.2
Employment Effects (# Jobs)	35,588	6,350	8,857	50,795
TOTAL VALUE OF AGRICULTURAL INDUSTRY				
Output Effects ($ Millions)	$14,626.3	$3,707.2	$3,331.0	$21,664.5
Employment Effects (# Jobs)	63,103	24,881	20,051	108,034

Agriculture In The Larger Economy

Agriculture's $14.626 billion in direct output represented 13.9% of the county's total economic output of $105.24 billion, about one out of every 7.2 dollars. This made agriculture the largest economic sector in Fresno County, as shown in **Figure 5**.

Real Estate & Rentals ranked second ($11.517 billion). Health & Social Services ranked third ($10.196 billion), followed by Government ($10.123 billion).

Government included public entities across city, county, state and federal levels. Public education features prominently in this sector and includes CSU-Fresno as well as the large unified school districts in Fresno and Clovis. Local government also reflects public service enterprises such as the City of Fresno Department of Public Utilities, which reported roughly $240 million in 2023 operating revenues from water, sewer, solid waste, and sanitation services. Federal spending within Fresno County comes from the USDA, Air National Guard, Dept. of Veterans Affairs, Social Security Administration and others.

Figure 5. Fresno County Industries Ranked by Direct Economic Output

CATEGORY NAME	OUTPUT	RANK
Agriculture (production & processing)	**$14,626,286,073**	**1**
Real Estate & Rentals	$11,516,814,624	2
Health & Social Services	$10,195,698,779	3
Government (all levels & types)	$10,122,889,411	4
Manufacturing	$8,373,606,084	5
Wholesale Trade	$7,431,269,283	6
Construction	$6,356,751,293	7
Retail Trade	$5,883,614,106	8
Transportation & Warehousing	$4,548,019,864	9
Finance & Insurance	$4,516,487,115	10
Professional, Scientific & Technical Services	$4,167,522,172	11
Accommodation & Food Services	$4,106,394,010	12
Utilities	$3,418,826,911	13
Other Services	$3,079,584,441	14
Administrative & Waste Services	$3,060,326,638	15
Information	$1,929,034,566	16
Management of Companies	$710,405,678	17
Arts, Entertainment & Recreation	$503,726,197	18
Educational Services	$422,529,719	19
Mining	$274,826,631	20

For direct employment, Agriculture ranked third in the county (**Figure 6**). Health & Social Services ranked #1 with 83,896 jobs and included, for example, doctors, dentists, hospitals, medical laboratories, residential care facilities and day care services. Government ranked second.

Figure 6. Fresno County Industries Ranked by Direct Employment

CATEGORY NAME	EMPLOYMENT	RANK
Health & Social Services	83,896	1
Government (all levels & types)	75,386	2
Agriculture (production & processing)	63,103	3
Retail Trade	44,555	4
Accommodation & Food Services	39,935	5
Other Services	38,515	6
Transportation & Warehousing	37,265	7
Construction	30,155	8
Administrative & Waste Services	26,711	9
Professional, Scientific & Technical Services	24,121	10
Real Estate & Rental	21,696	11
Finance & Insurance	21,333	12
Wholesale Trade	18,097	13
Manufacturing	16,714	14
Arts, Entertainment & Recreation	6,739	15
Educational Services	6,209	16
Information	4,144	17
Utilities	3,605	18
Management of Companies	3,520	19
Mining	471	20

How Resilient is Agriculture to Economic Shocks?

We have all heard the old saying "don't keep all your eggs in one basket." If the basket drops, then you might lose everything. This section takes a deep dive into that concept and focuses on three questions: 1) Why is economic diversification important? 2) How economically diversified is Fresno County agriculture? and 3) How has agriculture's level of economic diversification trended over time?

Answers to these questions can shed important light on the agricultural industry's economic resilience, with implications for the wider county economy and beyond.

WHY IS ECONOMIC DIVERSIFICATION IMPORTANT?

Like growers and ranchers everywhere, Fresno County's agricultural producers face a long list of risks. Examples include: wildfires, droughts, floods, pandemics, crop pests and diseases, food safety-related outbreaks, new regulations, new competitors, labor availability and cost, price drops, tariffs and other trade policies, and spikes in costs for fuel, equipment, water and other inputs. Any one of these risks can deal a damaging blow. When combined, they can undermine not just an individual operation but an entire industry.

Take Napa County, for example, where wine grapes account for 99% of the annual agricultural value. When wildfires and a pandemic caused a 51% decline in wine grapes for 2020, the county's overall agricultural value declined by that same percent. Contrast that with Fresno County, where solid diversification helped agricultural production grow 3.4% when the pandemic began in 2020, then increase by another 1.3% during the pandemic's peak in 2021.

HOW DIVERSIFIED IS FRESNO COUNTY AGRICULTURE?

If economic diversification is like an "insurance policy" against risks, then that raises the question: how economically diversified is Fresno County agriculture?

To answer this question, we calculated the Shannon-Weaver Index for Fresno County agriculture. Created in 1949 for military code breaking, the Shannon-Weaver index is widely used by economists and others interested in quantifying diversification. Different versions of the basic Shannon-Weaver formula exist. What they all have in common, though, is that they quantify not just the number of different items – such as characters in a coded message or crops grown in a county – but also their relative *evenness* or *abundance*.

How exactly does one calculate the Shannon-Weaver Index for agriculture? The main steps are: 1) create a list of agricultural products and their production values over the past decade; 2) remove 30 outlier products that had an average production value less than one-fourth of one percent (0.25%) of the county's total; 3) enter the data into the Shannon-Weaver formula; and 4) convert to scale from 0.0 to 1.0. For additional details, please contact the authors.

Over the past decade, Fresno County has consistently produced and reported 50 major commodities. The relative contribution of each major commodity varied during this period from 0.25% of the county's total gross production value to 19.7% of the county total (almonds in 2019). **Figure 7** depicts their most recent relative contributions.

Figure 7. Relative Distribution of Fresno County Agricultural Commodities

Each circle below represents approximately $25,000,000 in gross sales, and each of the 80 colors represents a unique agricultural commodity. Combined, the circles and colors visually portray major agricultural commodities' relative contributions to Fresno County's total 2023 gross production value. Commodities less than $25,000,000 in value are depicted with a single dot. The number of commodities produced, and their relative evenness, influences the industry's economic diversification score and its resilience to economic shocks. (Source: 2023 Fresno County Crop and Livestock Report)

For 2023, the Shannon-Weaver Index for Fresno County's agricultural industry was **0.75.**

What exactly does this number mean? To begin with, getting the highest index, a perfect 1.00 on a scale from 0.00 to 1.00, would require the impossible: produce all seventy-two of California's major commodities and have gross production values equally distributed across them. No single county could accomplish this.

At first glance, Fresno County's index of 0.75 seems near the upper-middle of the 0.00 to 1.00 range. But the Shannon-Weaver formula includes a logarithmic function, which complicates interpretation. The logarithm makes the scale exponential, like the Richter Scale that measures earthquakes. Many Californians understand that a 7.4 earthquake releases twice the energy of a 7.2 earthquake even though the numbers are not far apart. The same principle applies here.

The 0.75 index is extremely high compared to typical U.S. counties, many of which focus on a just one or two crops such as corn, soybeans or wheat. The index is also extremely high by California standards. Among twenty California counties analyzed so far, Fresno County's 0.75 easily ranks as the highest number. Overall, Fresno County's outstanding economic diversification suggests strong protection from economic shocks.

HOW HAS AGRICULTURE'S LEVEL OF ECONOMIC DIVERSIFICATION TRENDED OVER TIME?

Has agriculture become more diversified in Fresno County, or less? **Figure 8** shows the Shannon-Weaver Index for the past decade.

The main thing to note is consistent and extremely high economic diversification across the years. The index has held steady over time, always within the narrow 0.72 to 0.75 range. This suggests exceptional ongoing economic resiliency within agriculture. Further, the slight upward trend – leading to a new high of 0.75 in 2023 – contrasts with the downward trend occurring in many California counties that have become dependent on one or two major products.

Figure 8. Ten-Year Trend in Fresno County Agriculture's Economic Diversification

*An indicator of economic resilience, the **Shannon-Weaver Index** quantifies economic diversification and resilience by combining the number of different commodities produced and their relative economic value.*

The Covid-19 pandemic underscored the importance of a strong, diversified production base. The pandemic disrupted supply chains, farm labor, production costs, exports, prices, and other factors. Many crops went unharvested, and grocery store shelves sat empty across much of the Northern Hemisphere.

Not surprisingly, several Fresno County products declined in value when the Covid-19 pandemic hit. Among 80 commodities consistently tracked over the past decade, 32 experienced declines for 2020. Examples include watermelon (-39.9%), walnuts (-31.1%), onions (-22.0%), almonds (-21.4%) and dairy calves (-20.6%).

But gains in other areas offset these losses. Forty-eight commodities increased for 2020, with a median gain in value of $5.6 million (23.0%). Examples include alfalfa hay (+80.7%), fresh lemons (+67.5%), beef cattle & calves (slaughter stock, +38.6%), oranges (+32.1%), milk (+15.0%) and pistachios (+7.3%). Fresno County's overall production value rose $261,743,100 (3.4%) for the year, then added another 1.3% ($105,917,000) during the pandemic's peak in 2021.

BOTTOM LINE

The discussion here supports three key points: 1) economic diversification helps buffer against economic shocks such as wildfires, droughts, trade policies and even pandemics; 2) Fresno County agriculture has an outstanding level of economic diversification across crops, which certainly benefited the industry during the recent Covid-19 pandemic; and 3) agriculture's high level of economic diversification has held steady over time.

All of this bodes well for the future. In an era of rapid change and rising risks, the agricultural community can take pride and comfort in not having "all of its eggs in one basket."

Toward the Future

This report has documented the role that Fresno County agriculture plays in the county economy. The key points are:

- Including local food production, processing, and multiplier effects, agriculture contributed $21.664 billion to the county economy. This represents fifty-nine million dollars per day ($59,354,880 to be exact), $2,473,120 per hour and $41,219 per minute.
- With $14.626 billion in direct economic output from food production and processing, agriculture ranked #1 among Fresno County industries.
- As the county's third-largest employer, agriculture directly supported 63,103 employees – one out of every nine jobs in Fresno County – plus another 44,932 attributable to multiplier effects.
- With a Shannon Weaver Index of 0.75, agricultural production has an exceptionally high level of economic diversification, which has provided critical stability and resilience to the agricultural industry and to the larger county economy.

Agriculture is an essential pillar of the Fresno County economy and represents a key link to the county's cultural past and competitive future. Agriculture will no doubt face many challenges and opportunities in the coming years. For now, the findings herein provide the most complete view to date of Fresno County agriculture's vital economic role.

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