# Sacramento Area Council of Governments

SACOG


# Food System Multipliers for Specialty Crops in the Sacramento Region

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# Overview

The purpose of this study is to develop a suite of tools that can be used to analyze the economic value of specialty crop producers, processors, and distributors in the greater Sacramento region. The Sacramento region includes the six counties that comprise the Sacramento Area Council of Governments: El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba. The annual economic value that specialty crop agriculture provides to the Sacramento region is significantly greater than the $1.47 billion in gross farm-gate revenues. Growers purchase materials and machinery from local suppliers, farm workers purchase goods and services in the community, restaurants purchase local produce, and businesses in all of these related industries pay local, state, and federal taxes. In other words, each dollar of economic value generated by a specialty crop business generates multiplier effects in other industries.

The economic cluster of specialty crop businesses in the Sacramento region includes producers, processors, and distributors. From rows of fresh vegetables to blooming orchards and rolling hills of wine grapes, the specialty crop farming sector is the heart of specialty crop agriculture in the Sacramento region. Businesses that process local and imported specialty crops include post-harvest handling, canning, large scale processing, and a range of boutique processors creating new products for specialized markets. Distribution businesses, such as produce distributors, fruit stands, retail food stores, agricultural trucking companies, restaurants, and farmer's markets, work seamlessly with the production and processing sectors to meet consumer demand.

# Analysis Approach

The economic modeling framework developed under this project relies on an economic model of primary farm production in the Sacramento region and a regional economic model based on IMPLAN. Prior to this study, this suite of tools did not exist for Sacramento region specialty agriculture. Together the integrated framework is used to analyze the economic value of specialty crop agriculture from the field to the table.

Over one hundred specialty crop farmers, processors, and distributors were contacted through phone, email, and in-person interviews over an eight month period. The surveys elicited information on regulatory costs, expenditures, use of inputs, employees, and sales. The data were compiled, combined with supplemental information, and aggregated in a confidential database so that no one entity can be identified. Two linked models are developed under this project: (i) the primary production model simulates the responsiveness of Sacramento region agriculture to changes in market conditions or shifts in technology, and (ii) the customized regional input-output model traces these changes from the farm to all related sectors of the economy.

**Key Insights**

The default data describing economic linkages for the specialty crop agriculture production cluster includes four sectors in the Sacramento region. Key expenditure patterns in these sectors are derived from national benchmark data which are not representative of actual expenditures by specialty crop businesses in the Sacramento region. The aggregation bias and data bias makes the default data insufficient for economic analyses, and was one reason for the detailed survey and modeling approach developed in this project.

## Definitions

The economic contribution of an industry is a measure of the total jobs, output (sales) value, and value added created by the industry, considering the expenditures in all related industries. It is a true measure of the importance of an industry to the local economy. The economic contribution of an industry is expressed in terms of:

1. **Output value:** The gross sales value of an industry. In crop production, for example, this measure is equal to the price of the crop multiplied by the total production.
2. **Value added:** The net contribution of an industry to the Sacramento region economy. It is equivalent to the commonly-cited national measure of economic activity known as Gross Domestic Product (or GDP).
3. **Employment:** The number of full time equivalent jobs in a sector.

Each measure of economic activity can be decomposed into direct, indirect, and induced components. A direct change in one industry creates multiplier effects through indirect and induced purchases in related industries:

1. **Direct:** The economic effects of direct sales activity by an individual agricultural sector. For example, the farm-gate revenues from crop production.
2. **Indirect:** The economic effects of intermediate input purchases by the sector. For example, irrigation supply purchases for crop production.
3. **Induced:** The economic effects of spending by employees in all other industries. For example, farm workers purchase housing and food in the Sacramento region.

## Total Contribution

The farm-gate value of specialty crop production in the Sacramento region is $1.47 billion annually. In spite of regulatory compliance costs that exceed 6 percent of total farm income, this production value is generated on just over a quarter-million acres in the Sacramento region. The primary farming sector supports businesses in the processing sector, and in turn, the distribution sector. Taken together the specialty crop cluster in the Sacramento region generates $3.8 billion in direct output value annually. Including indirect and induced multiplier effects, representing expenditures in ancillary businesses and by employees, respectively, the total output value exceeds $5.8 billion annually. The total value added contribution to the Sacramento region economy from the specialty agriculture cluster equals $2.4 billion dollars annually. The total cluster supports over 31,000 full time equivalent jobs in the Sacramento region.

**$2.4 billion** Annual economic contribution to the Sacramento region

**31,176 jobs** Created by specialty crop growers, processors and distributors

**$3,530** Generated per acre-foot of water applied

**6.4%** Of total farm income spent on regulatory compliance

**258,179 acres** Specialty crops harvested in 2014

- For every job an additional .82 jobs are generated in other sectors of the Sacramento region economy.
- For every $1.00 of output an additional $.49 of output is generated in other sectors of the Sacramento region economy.
- For every $1.00 of value added an additional $.90 of value added is generated in other sectors of the regional economy.

## Producers

The production sector is the backbone of the specialty crop agriculture cluster in the Sacramento region. This sector includes olives, peaches, walnuts, processing tomatoes, wine grapes, melons, nursery and greenhouse production, and other miscellaneous fruits, vegetables, and nuts. These healthy, safe, and reliable crops are in high demand in domestic and international markets. The shift toward high-value locally consumed fresh fruit and vegetables and growth in the export market for high-value nut crops will drive future growth in the production sector. The specialty crop production sector contributes a total annual economic value added of $1.1 billion to the Sacramento region. The sector also generates a total of 22,000 jobs on total output value of $2.35 billion.

**13,655**
Direct Employment

**$727 million**
Direct Value Added

**$1.47 billion**
Direct Output

**7,407**
Secondary Employment

**$578 million**
Secondary Value Added

**$941 billion**
Secondary Output

## Processors

The processing sector includes a range of supporting businesses related to primary crop production, typically for post-harvest handling. This first-stage of post-harvest processing typically takes place relatively near the farm, therefore economic activity is likely to remain in the region with relatively little leakage. Some of these processing sectors include nut hulling and other processing, olive milling, and vegetable canning. This cluster also includes potential growth industries such as frozen fruit processing, and current growth industries such as wineries.  The specialty crop processing sector contributes a total annual economic value added of $900 million to the Sacramento region. The sector also generates a total of 8,000 jobs on total output value of $2. 5 billion.

**2,842**
Direct Employment

**$485 million**
Direct Value Added

**$1.69 billion**
Direct Output

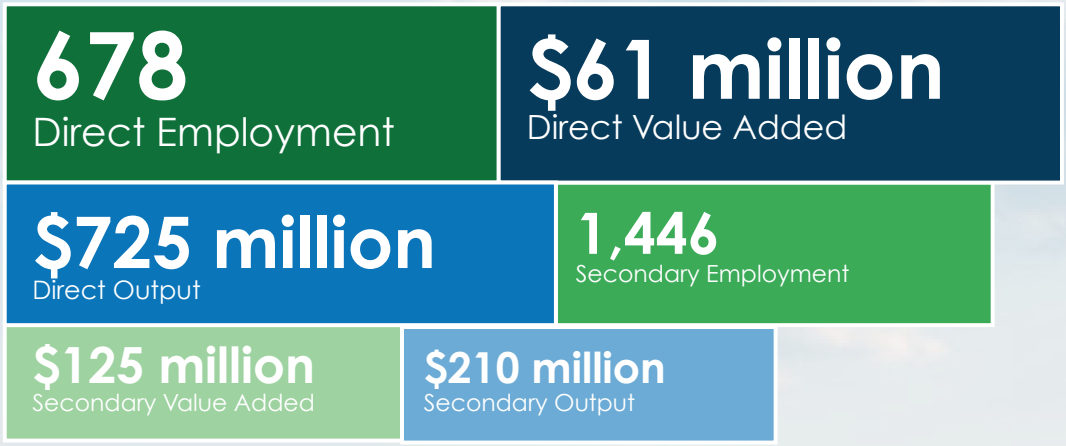
**5,146**
Secondary Employment

**$446 million**
Secondary Value Added

**$778 million**
Secondary Output

## Distributors

Consumers, particularly in domestic markets, increasingly demand fresh produce. The farming industry has met this demand by growing more produce for the fresh market and by improving shelf-life through increased prevalence of on-farm refrigeration and breeding improvements. As more produce is marketed through fresh market distribution channels, fresh produce distributors and packer-shippers have become increasingly important in the specialty crop agriculture economic value chain. For this analysis, the produce distribution sector includes produce distributors as well as packing and shipping of specialty crop production. Produce distributors deliver fresh produce to restaurants, retail stores, and institutions. Produce shippers include first-handlers of fruits and vegetables, many of whom are in fact grower-packer-shippers that market product for themselves and others. The specialty crop distribution sector contributes a total annual economic value added of $190 million to the Sacramento region. The sector also generates a total of 935 jobs on total output value of $935 million.




## Findings and Recommendations

- The most important lesson learned from this project is that the default IMPLAN data does not accurately characterize the expenditure patterns of specialty crop agriculture businesses. In fact, the default IMPLAN data does not accurately characterize expenditure patterns for most agriculture-related industries. While IMPLAN utilizes detailed county-level data to define the output values associated with agricultural commodities, the model estimates total value added based on national benchmark data provided by the Bureau of Economic Analysis (BEA). These trade flows are imposed on the specialty agriculture in the Sacramento region, and the survey of specialty agriculture businesses found that these national averages are significantly different than actual practices. The only way to correct this difference, until IMPLAN releases updated data, is through specialty crop agriculture business surveys.
- It is essential to link an economic model of agricultural production to the IMPLAN input-output model so that the entire market for crops can be simulated. This two-stage modeling approach allows for a consistent analysis framework that can trace the effect of changes in production from the field through all related industries and markets.
- Future analyses can improve on the modeling framework by including additional data from primary surveys. This information is difficult to gather, compile, and interpret, but when available it can be used to update the modeling framework.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