Sacramento Area Council of Governments

Food System Multipliers for Specialty Crops in the Sacramento Region

September 7, 2016

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Environment • Resources • Agriculture

Overview

This study developed a suite of tools to analyze the economic value of specialty crop producers, processors, and distributors in the greater Sacramento region. The Sacramento region includes the counties of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba. The scope of the analysis is specialty crops as defined by the United States Department of Agriculture. The economic value of these industries is highlighted in this summary report.

Definitions

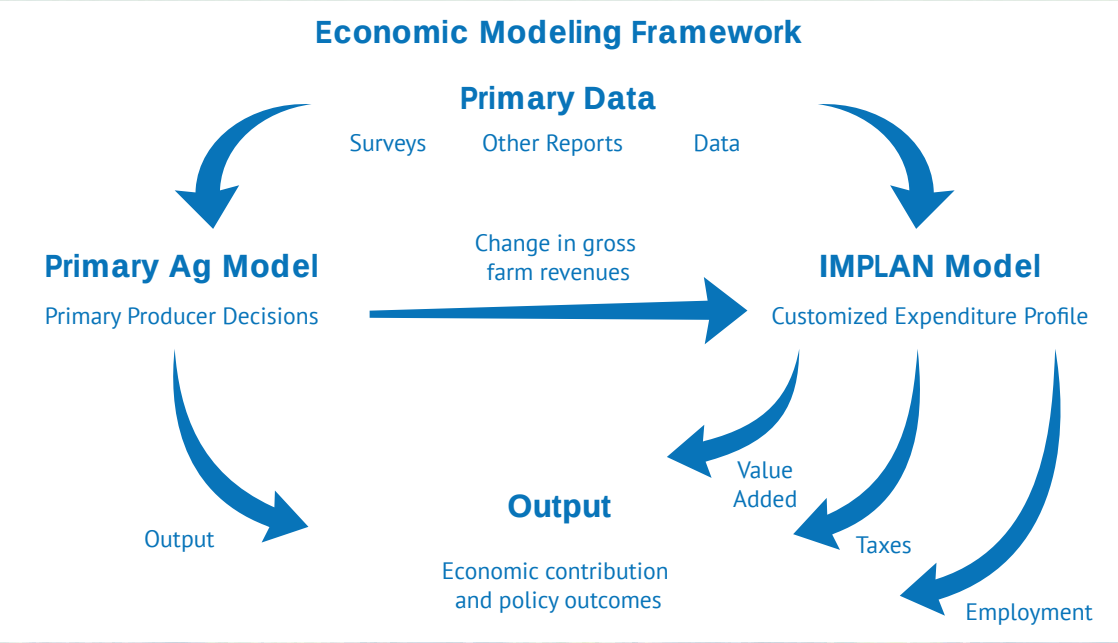
The economic contribution of an industry is a measure of the total jobs, output (sales) value, and value added created by the industry, considering the expenditures in all related industries. It is a true measure of the importance of an industry to the local economy. The economic contribution of an industry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

Analysis Approach

The analysis framework developed under this project includes an economic model of primary farm production in the Sacramento region and a linked regional economic model based on the IMPLAN platform. 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. Figure 1 illustrates the analysis approach.

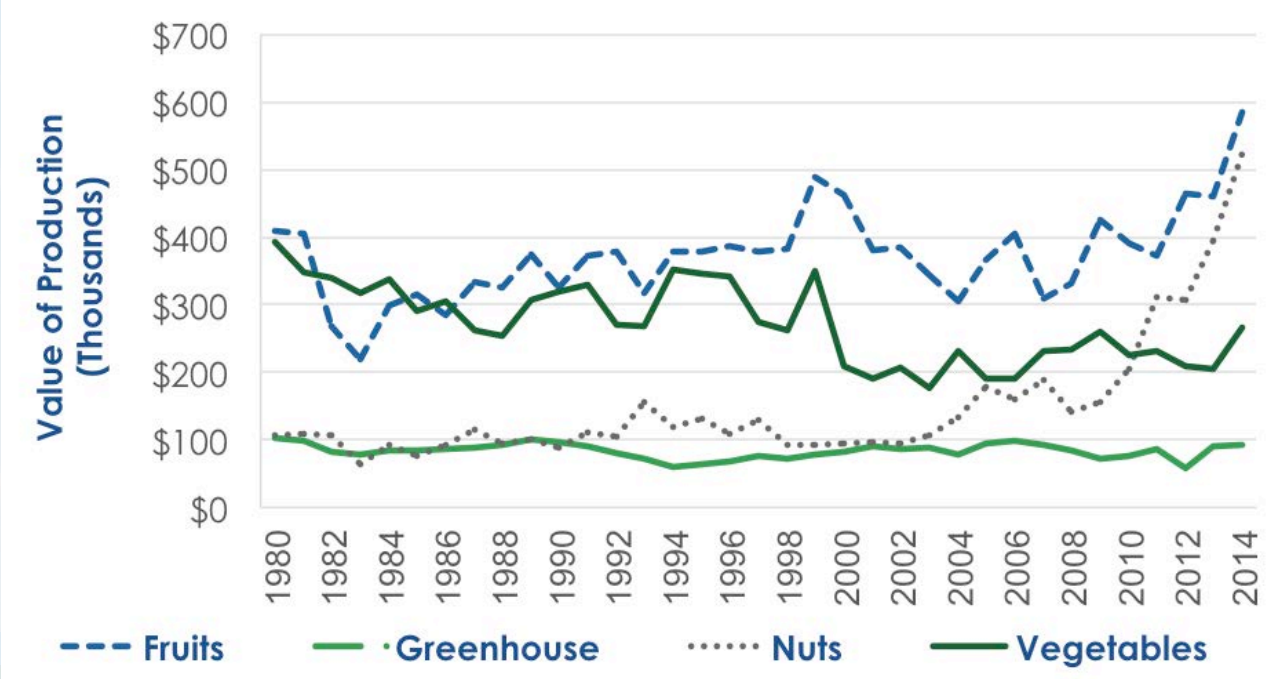
Figure 1: Economic Modeling Framework Flowchart



Farm-gate Value of Specialty Crops

The farm-gate production value of specialty crop agriculture in the Sacramento region exceeds $1.47 billion annually. The industry has been expanding at a rapid pace in response to favorable market conditions over the last decade. Fruit production value in the Sacramento region increased by 57 percent between 2011 and 2014. Between 2008 and 2014, the value of nuts produced in the Sacramento region increased by 268 percent. This has been driven primarily by rising prices as a result of favorable trading conditions and increased demand both domestically and internationally. Figure 2 illustrates the trend in production value for major specialty crop categories.

Figure 2: 1980-2014 Production Value by Specialty Crop Category (2016 Dollars)
Source: California Agricultural Statistics



Key Insight

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 creates multiplier effects in other industries.

Total Contribution of Specialty Crop Agriculture

What is the economic contribution of the specialty crop industry to the Sacramento region economy? In spite of regulatory compliance costs that exceed 6 percent of total farm income, growers produce $1.47 billion worth of specialty crops 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 $5.8 billion in total output value 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 31,176 full time equivalent jobs in the Sacramento region.

$5.8 billion Total Annual Output Value

$2.4 billion Annual economic contribution to the Sacramento region

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

$3,530 Value added per acre-foot of on farm water applied to crops

6.4% Of total farm income spent on regulatory compliance

258,179 acres Specialty crops harvested in 2014

Multiplier Summary

Another way to conceptualize the contribution of an industry is the economic multiplier. An economic multiplier measures the additional sales, value, and jobs created for each direct dollar of sales, value, and jobs created by the primary industry.

There are over 17,000 direct jobs in the specialty crop cluster in the Sacramento region and every job in specialty crops generates another 0.82 jobs in other areas of the economy. Specialty crop industries directly contribute over $1.2 billion in total value added to the regional economy. For every dollar in value added, $0.90 in additional value added is generated across other industries. Total output value of the specialty crop sector is approximately $3.9 billion, with each $1 of output generating an additional $0.50 of output in all other sectors of the specialty crop cluster.

1.90 Total economic contribution multiplier

1.50 Total output value multiplier

1.82 Total jobs multiplier

Specialty crop businesses are diverse, generating economic activity in different ways. The following sections break-down the total contribution by producers (growers), processors, and distributors (packer-shippers). In the future this framework can be used to evaluate the economic contribution of any individual business.

Producers of Specialty Crops

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 in the Sacramento region produces $2.3 billion in total output, creates 21,063 jobs and generates $1.3 billion in value added annually.

$1.3 billion
Total Annual Economic Contribution

$2.3 billion
Total Annual Output

21,063
Total Annual Jobs

1.80 Economic Contribution Multiplier

1.65 Output Value Multiplier

1.54 Jobs Multiplier

Processors of Specialty Crops

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 in the Sacramento region produces $2.4 billion in total output, creates 7,988 jobs and generates $931 million in value added annually.

$931 million
Total Annual Economic Contribution

$2.4 billion
Total Annual Output

7,988
Total Annual Jobs

1.92 Economic Contribution Multiplier

1.46 Output Value Multiplier

2.81 Jobs Multiplier

Distributors of Specialty Crops

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 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. 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 in the Sacramento region produces $934 million in total output, creates 2,124 jobs and generates $186 million in value added annually.

$186 million
Total Annual Economic Contribution

$934 million
Total Annual Output

2,124
Total Annual Jobs

3.04 Economic Contribution Multiplier

1.29 Output Value Multiplier

3.13 Jobs Multiplier

Findings and Recommendations

- 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.

- One key lesson learned from this project is that the default IMPLAN data does not accurately characterize the expenditure patterns of specialty crop agriculture businesses. The framework developed under this project corrects some of these inaccuracies.

- 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. Further work will expand the analysis to include non-specialty crops.

Looking Forward

Looking forward, robust growth in the specialty crop agriculture cluster is likely because the Sacramento region has comparative advantages in water and climate, and more importantly, produces a set of healthy, safe, and reliable crops that are in high demand in domestic and international markets. In particular, the on-going shift toward high-value locally consumed fresh fruit and vegetables, and growth in the export market for high-value nut crops will drive growth in the specialty crop agriculture cluster. Specialty crop agriculture generates significant value per unit land (and water) and has the potential to generate additional employment in secondary processing and distribution. While many regions of California's premier agricultural economy are reeling from drought and coping with new regulations, the Sacramento region specialty crop agriculture cluster is well suited for years of robust growth.

The suite of tools is a robust framework for analyzing:

- **Contributions:** Contributions analyses can generate useful metrics for marketing and highlight the importance of an industry to the local economy in terms of jobs, taxes, and economic value added.
- **Impacts:** There are a number of policies which threaten the viability of agriculture and linked industries. The Sustainable Groundwater Management Act, Irrigated Lands Regulatory Program, labor laws, and other policies can affect agriculture. Economic impact analyses can quantify costs, benefits, and help inform effective policy.
- **Market Conditions:** Consumer demand for fresh fruits, nuts, and vegetables has been increasing at an incredible rate in recent years. Analyzing these market trends using the tools developed under this project allows businesses to make informed investment decisions.

About ERA Economics

ERA Economics, LLC is an agricultural and resource economics consultancy based in Davis, California. We apply our experience to provide clients with data-driven economic analysis of complex policy and regulatory questions at the intersection of agriculture, resources, and the environment. ERA provides services including benefit-cost analyses, feasibility studies, impact analyses, policy evaluation, and economic modeling. Our team is the primary developer of California's Statewide Agricultural Production Model (SWAP), a large-scale economic optimization model of California's agricultural economy. We link our modeling framework to the broader economy through input-output models, such as IMPLAN or REMI, thus enabling us to clearly illustrate the relationship between agricultural production and measures of economic activity including employment, public welfare, and the regional tax base. Our data-driven approach to economic analysis provides a demonstrably robust foundation for analyzing economic and social impacts, investment decisions, and the development of economically-motivated public policies.

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