July 2016

Food System Multipliers for Specialty Crops: Executive Summary

SACRAMENTO REGION

A project of the Rural-Urban Connections Strategy
Food System Multipliers for Specialty Crops:
Executive Summary

This project was supported by the Specialty Crop Block Grant Program at the U.S. Department of Agriculture through grant 12-25-B-1567. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.

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June 2016

**Specialty Crop Cluster Assessment**

**SACRAMENTO REGION**

A project of the Rural-Urban Connections Strategy (RECS) through the Food Systems Multipliers Project

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**Final Report**

**ERA Economics**

Food System Multipliers for Specialty Crops in the Sacramento Region

This project was supported by the Specialty Crop Block Grant Program at the U.S. Department of Agriculture (USDA) through grant 12-23-46-1556. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.

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The value of specialty crops grown in the Sacramento region extends far beyond the farm, supporting further economic activity and jobs throughout the greater regional economy.

The economic benefits of specialty crops are often overlooked due to a poor understanding of how growing food and fiber creates jobs and income both on and off the farm. In response, the Food System Multipliers for Specialty Crops in the Sacramento Region project not only highlights the direct contribution of a fuller range of specialty crop industries, it goes even farther to illustrate the ways in which the economic impact of this specialty crop cluster ripples throughout the larger regional economy. This important work related to evaluating and enhancing the competitiveness of specialty crops is funded by the USDA Specialty Crop Block Grant Program, which is administered by the California Department of Food and Agriculture. The Sacramento Area Council of Governments (SACOG) conducted the project through the Rural-Urban Connections Strategy (RUCS) in partnership with ERA Economics and BAE Urban Economics.

The study area for the project is the SACOG six-county region, including El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties. The project draws on numerous data sources (including interviews with local specialty crop farmers, processors, and distributors), as well as an updated economic model to quantify the relationships and linkages between specialty crop production, a core specialty crop cluster, and the larger Sacramento regional economy. The work also provides stakeholders an integrated tool to test possible future economic conditions in the cluster. To capture these findings, this Executive Summary brings together the work of two technical deliverables. The first element of the project, the Sacramento Region Specialty Crop Cluster Assessment, links specialty crop farms to a core cluster of processing, distribution, and support industries. The companion Sacramento Region Specialty Crop Multiplier Study then shows how this cluster interacts with the larger economy through a multiplier effect. Each technical deliverable also contains the citations for the various data and findings referenced in this Executive Summary. While these reports synthesize the best available data, it is important to recognize that the reported economic indicators and quantified economic activity are estimates that include modeled outputs, and only cover the core specialty crop components of a much larger food system.

The tools developed as part of this project demonstrate a valuable asset to public and private stakeholders by providing much needed data to facilitate the development of effective policies and strategies that support specialty crop agriculture. By demonstrating the economic potential of agricultural lands and related food industries, there may be more incentive to invest in specialty crop production and food chain infrastructure and to preserve working lands. This will enhance the marketability and competiveness of specialty crops of all California producers by creating new economic opportunities through expanding markets and increasing the value of their products.

This multiplier study in many ways parallels urban economic development studies used to help shape policies and plans for our region’s future. Recently completed RUCS case studies help identify food system opportunities and gaps to inform rural strategies and provide guidance for both public sector and private sector decision makers. Understanding how the effect of the food system ripples through the entire economy not only reinforces political and financial commitment to those industries, but also identifies potentially overlooked segments of the economy needed to support the cluster. This study provides more evidence that the agriculture and food cluster is not just a rural asset, but also one that depends on and reinforces the connection between rural producers, aggregators and urban processors, food entrepreneurs, wholesalers, retailers, marketers, and consumers. This work adds to the unprecedented data and tools that SACOG has developed to help us think about how to shape our urban and rural future, while balancing land use, transportation, and economic development decisions across the entire region.

Beyond the immediate benefit to SACOG’s member jurisdictions, this study buttresses local efforts such as the Sacramento Convention and Visitors Bureau’s Farm-to-Fork initiative, the Sacramento Metropolitan Chamber’s Food and Agriculture committee, and Valley Vision’s Food System Action Plan. The work also underpins AgPlus, the California Central Valley Investing in Manufacturing Communities Partnership federal designation that provides funding priority for food system-related projects in the Central Valley. RUCS is specifically identified as the technical support for this effort.
“The farm—in and of itself an important economic driver—is just one element of a larger food cluster encompassing multiple business sectors. This cluster’s economic activity circulates further into the larger regional economy, including sectors outside of agriculture. Together, this is the full economic impact of specialty crops within the region.”
Rural and urban areas are inextricably linked through the food system. Food moves from the farm to our plate through processes that we encounter every day without even realizing it. These processes illustrate a more complete picture of the agricultural economy, as growing food and fiber in our region creates jobs and income both on and off of the farm.
Specialty Crops on the Farm: Agricultural Production

A look at the full specialty crop system must begin at the foundation with an understanding of the role that specialty crop farms play in the regional economy. Approximately 60 percent of our lands in the Sacramento region are agricultural, including some of the most productive farmland in the world. We have great soil, water resources, and a Mediterranean climate that can grow almost anything, with over 70 specialty crops currently grown in the region. But specialty crop agriculture (defined in this study as fruits, vegetables, tree nuts, horticulture, and nursery crops) is not only highly productive and diverse—it is a major economic driver in the Sacramento region.

This Food System Multipliers for the Sacramento Region project estimates almost 11,000 jobs on specialty crop farms and nurseries throughout the region; together, this work growing specialty crops results in around $1.5 billion in regional farmgate value, helping feed both the region as well as national and international markets.

10,800 Jobs (full-time equivalent positions)

$1.5 billion Direct Farmgate Value (annual gross sales of specialty crop farmers)
Not only does specialty crop production support jobs and economic activity, but its impact on the regional economy has grown through time. Since 2008 specialty crop farms have added 800 jobs regionally, while most other sectors lost jobs and have yet to return their pre-recession employment levels. Notably, specialty crops have driven the region’s agriculture production sector to record levels of economic output. In all, between the study years of 2008 and 2014 specialty crop output value doubled (an increase of 89 percent when adjusted for inflation), far outpacing growth in the regional economy as a whole. This direct output, derived from 21 percent of the agricultural acreage in the region, accounted for 60 percent of total agricultural value. In fact, specialty crops accounted for 95 percent of the growth in total agricultural value from 2008 to 2014. Additionally, while all agriculture contributes significant value to the regional economy, specialty crops generated around $2,700 per acre annually—more than three times the value per acre than non-specialty agricultural products.
The specialty crop agricultural economy begins with production decisions at the field and on the farm, and the contribution of this specialty crop production sector is a vital component of the region’s economic competitiveness. Production includes the majority of employment within the larger specialty crop food system, as growing specialty crops generally is more labor intensive than agriculture at large. This map of SACOG’s field-level crop data shows how specialty crop production is widely distributed across the six-county Sacramento region. The corresponding output of these specialty crop fields fuels the additional economic activity and food system jobs covered in this study.
Specialty Crops both on and off the Farm: The Industry Cluster

Cluster research is a widely accepted practice for developing regional prosperity strategies for sustained job creation and growth that leverage unique regional strengths. Industry clusters increase firm competitiveness through shared infrastructure and a concentrated workforce, reduce operating costs with shorter supply chains, increase the flow of information regarding new business opportunities, and foster innovation with informal collaboration and heightened competition. Economic clusters often serve as the driving force of many regional economies.

Growing specialty food and fiber in our region also creates jobs and income off the farm. The way that food reaches our tables is complicated, yet remarkable, as fresh and processed food travels in and out of our region daily. Although some products arrive “raw,” most are transformed into processed or packaged goods along the way. Indeed, the fuller specialty crop food system encompasses multiple business sectors providing a range of services that refine, enhance, and move food products from farms to consumers.

Together, these industries represent the specialty crop cluster – a group of interdependent firms and related institutions linked through strong relationships and transactions. This project has divided the cluster into four core sectors: specialty crop production, processing, distribution, and support.

Cluster research is a widely accepted practice for developing regional prosperity strategies for sustained job creation and growth that leverage unique regional strengths. Industry clusters increase firm competitiveness through shared infrastructure and a concentrated workforce, reduce operating costs with shorter supply chains, increase the flow of information regarding new business opportunities, and foster innovation with informal collaboration and heightened competition. Economic clusters often serve as the driving force of many regional economies.

17,200
Jobs
(full-time equivalent)

1,200
Establishments
(# of firms in the cluster)

$1.2 billion
Value Added
(end sales minus value of all inputs)

$4 billion
Direct Output
(gross sales)

1 In keeping with other food system and cluster studies, this cluster definition incorporates the core economic linkages resulting as specialty crops are grown, processed and distributed in the Sacramento region. Note that this cluster definition does not include the (substantial) economic impact of specialty crop food at the point of consumption, be it restaurants, grocery stores, or institutions to name a few. Also, that the distribution activities included in the cluster definition are limited to a select subset of industries due to data restrictions. The cluster distribution employment data include warehousing and storage activities, while the project’s multiplier analysis only includes three industries—packer shippers, produce distributors, and produce stands.
The specialty crop cluster extends beyond the farm to include core food system industries. Firms in the processing subsector of the cluster process, manufacture, package, or prepare food products using specialty crops as inputs (e.g., oil processing, specialty canning, and wineries). Distribution firms pack, store, or transport specialty crop products (e.g., packer shippers, warehousing and storage, food service contractors). Firms in the support segment of the cluster support specialty agricultural production by providing resources and equipment for growing and harvesting specialty crop products (e.g., fertilizer, pesticides, and farm and food machinery and equipment).
In the past several years, the value of regional specialty crop production has soared to record levels.

**Specialty Crop Cluster Direct Output Value**

The Specialty Crop cluster provides significant benefits to the regional economy. Taken together, the various components of the cluster add nearly $4 billion in direct output (the value of an industry’s aggregate sales) a year to the Sacramento regional economy. Only around 30 percent of the cluster’s direct output stems from the value of specialty crops as they leave the farm – the majority of the cluster’s gross output value is in fact generated as specialty crops move through the larger regional food system. Value add (an industry’s end sales minus the value of purchases) is another economic measure of the cluster. The indicator highlights the net economic addition of each segment of the cluster (production, support, processing, and distribution) by controlling for the cost of inputs and purchases between businesses. Approximately $1.2 billion of the cluster’s total direct output is estimated as attributable to value add.
While specialty crop production includes the majority of employment within the cluster, over 6,400 jobs (or 37 percent) fall into the distribution, processing, and support subsectors off the farm. Taken together, employment in the specialty crop cluster increased by 6 percent from 2008 to 2014 – a stark contrast to both the overall economy and to non-specialty crop agriculture, which each actually declined in employment over the same period. Specialty crop processing industries helped lead this recent increase in cluster employment with the highest percentage of job growth within the cluster (13 percent), while specialty crop production added the most overall jobs (around 780) during the same period. Indeed, the specialty crop cluster has outpaced the region at large in economic recovery from the recent recession.

Specialty Crop Cluster Employment Change and Concentration

Specialty Crop Jobs per Year, by Subsector
Firms in a cluster draw a productive advantage from their geographic concentration – sharing common resources and technologies and relying on a similar labor pool and institutions. Hotspot mapping analysis measures where cluster employment is most concentrated. By design, the hotspot analysis does not visually display all areas of activity, just those with distinct co-location. However, the results show how Specialty Crop cluster employment extends far beyond the farm to areas throughout the region.
Employment Concentrations in the Specialty Crop Cluster
Economic Activity in the Larger Economy: The Specialty Crop Food System Multiplier Effect

A look at employment and direct output in the region’s specialty crop cluster provides an expanded – although still incomplete – snapshot of the role of specialty crops in the Sacramento region’s overall economy. In addition to the activities covered in the cluster, growers purchase a wider range of goods and services from local suppliers, while restaurants, stores, and institutions purchase local food products. Likewise, income from jobs in specialty crop production, processing, support, and distribution allows cluster workers to consume various goods and services in the community. In other words, each dollar of economic value generated by a specialty crop business generates further ‘multiplier’ effects in other industries.

To calculate the multiplier effect of specialty crop agriculture, the project team created an updated economic model drawing on numerous interviews with local farmers, processors, and distributors, as well as supplemental data sources. The work culminated in a customized tool based on extensive local data to better measure the larger ripple effect of the region’s specialty crop food system. With project multipliers generally five percent higher than the default model data, this new tool provides substantial improvements in accuracy compared to the tools the region currently has to quantify the food system. In short, the project’s updated multiplier model documents a fuller economic contribution of specialty crops in the Sacramento region: over 31,000 jobs created by specialty crop businesses, $2.4 in value add contribution to the regional economy, and almost $6 billion in total output value. From an economic multiplier perspective, this translates into an employment multiplier of 1.82 (every job in specialty crops generates another 0.82 jobs in other areas of the regional economy) and a value added multiplier of 1.90 (each dollar of the specialty crop cluster’s direct contribution to gross regional product also generates $0.90 in additional value added across other industries).
A multiplier effect estimates a fuller web of activity generated by a business or industry (in this case the Sacramento region’s specialty crop cluster) on the regional economy, including that for businesses supplying goods and services to the cluster and the household spending of income earned in the cluster and by supporting industries. The project’s estimates of this full economic contribution derive from an updated economic model which provides a more accurate portrayal of specialty crop economic activity within the six-county Sacramento region.
Local Data Yields More Accurate Multipliers

This project draws on interviews with local specialty crop businesses as well as supplemental regional data to create an updated economic multiplier model for the Sacramento region. As illustrated in the tables below, the study model results in more accurate multipliers compared to the base IMPLAN data that relies in part on national averages not representative of Sacramento region specialty crop agriculture.

<table>
<thead>
<tr>
<th>Employment Multipliers for Specialty Crop Cluster</th>
<th>Default Data Multiplier</th>
<th>Study Multiplier</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miscellaneous vegetable farming</td>
<td>1.88</td>
<td>2.31</td>
<td>23%</td>
</tr>
<tr>
<td>Processing tomato farming</td>
<td>2.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous fruit farming</td>
<td>1.38</td>
<td>1.52</td>
<td>10%</td>
</tr>
<tr>
<td>Olive farming</td>
<td>1.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peach farming</td>
<td>1.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wine grape farming</td>
<td>1.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous tree nut farming</td>
<td>1.63</td>
<td>2.05</td>
<td>26%</td>
</tr>
<tr>
<td>Walnut farming</td>
<td>2.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greenhouse, nursery and floriculture production</td>
<td>1.79</td>
<td>1.87</td>
<td>4%</td>
</tr>
<tr>
<td>Support activities for ag and forestry</td>
<td>1.19</td>
<td>1.19</td>
<td>0%</td>
</tr>
<tr>
<td>Nut hulling</td>
<td>1.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olive oil mills</td>
<td>N/A</td>
<td>5.74</td>
<td></td>
</tr>
<tr>
<td>Canned fruits and vegetables manufacturing</td>
<td>2.63</td>
<td>2.63</td>
<td>0%</td>
</tr>
<tr>
<td>Canned specialties</td>
<td>3.51</td>
<td>4.85</td>
<td>38%</td>
</tr>
<tr>
<td>Processing tomato canning</td>
<td>3.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dehydrated food products manufacturing</td>
<td>2.15</td>
<td>2.15</td>
<td>0%</td>
</tr>
<tr>
<td>Roasted nut and peanut butter manufacturing</td>
<td>3.48</td>
<td>3.46</td>
<td>-1%</td>
</tr>
<tr>
<td>Wineries</td>
<td>2.58</td>
<td>2.58</td>
<td>0%</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>1.86</td>
<td>5.79</td>
<td>211%</td>
</tr>
<tr>
<td>Produce distributors and shippers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Output Multipliers for Specialty Crop Cluster</th>
<th>Default Data Multiplier</th>
<th>Study Multiplier</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miscellaneous vegetable farming</td>
<td>1.43</td>
<td>1.74</td>
<td>22%</td>
</tr>
<tr>
<td>Processing tomato farming</td>
<td>1.87</td>
<td>1.87</td>
<td>31%</td>
</tr>
<tr>
<td>Miscellaneous fruit farming</td>
<td>1.50</td>
<td>1.82</td>
<td>21%</td>
</tr>
<tr>
<td>Olive farming</td>
<td>1.70</td>
<td>1.70</td>
<td>13%</td>
</tr>
<tr>
<td>Peach farming</td>
<td>1.63</td>
<td>1.78</td>
<td>19%</td>
</tr>
<tr>
<td>Wine grape farming</td>
<td>1.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous tree nut farming</td>
<td>1.45</td>
<td>1.85</td>
<td>28%</td>
</tr>
<tr>
<td>Walnut farming</td>
<td>1.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greenhouse, nursery and floriculture production</td>
<td>1.51</td>
<td>1.59</td>
<td>5%</td>
</tr>
<tr>
<td>Support activities for ag and forestry</td>
<td>1.51</td>
<td>1.54</td>
<td>2%</td>
</tr>
<tr>
<td>Nut hulling</td>
<td>1.48</td>
<td>1.48</td>
<td>-2%</td>
</tr>
<tr>
<td>Olive oil mills</td>
<td>1.34</td>
<td>1.57</td>
<td>18%</td>
</tr>
<tr>
<td>Canned fruits and vegetables manufacturing</td>
<td>1.50</td>
<td>1.51</td>
<td>0%</td>
</tr>
<tr>
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<td>1.56</td>
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<td>1.46</td>
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<td>1.61</td>
<td>5%</td>
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<tr>
<td>Produce distributors and shippers</td>
<td></td>
<td></td>
<td>4%</td>
</tr>
</tbody>
</table>
Tools Supporting Policy Development and Investment for Specialty Crops

In addition to calculating the fuller economic contribution of specialty crops today, this project has developed an integrated set of tools to test the effect of future policy and market changes in the cluster. The tools consist of a crop production model to simulate specialty crop farmers’ responses to changes in market conditions, and an updated multiplier model to show how these field-level decisions then ripple through the larger regional economy. These tools can help capitalize on the specialty crop employment and output momentum documented in this project, by facilitating the development of effective strategies, investments, and policies supporting the vital specialty crop cluster into the future.

Through RUCS, SACOG has focused on opportunities that support jobs and economic growth in the specialty crop cluster. The program’s technical work and stakeholder engagement have resulted in a series of case studies using scenario planning to show the effect of potential policy outcomes across the region’s vast agricultural lands. The tools built as part of this multiplier project complement the larger RUCS toolkit by connecting what happens on the farm to the economy at large, showing how policies and strategies impact a food system that is both rural and urban. In particular, the project’s additions to the RUCS toolkit allow for further data-driven decision-making and scenario analyses that hone in on synergies between the region’s rural and urban areas in meeting shared goals of new economic opportunity and enhanced quality of life.

The project applied this new integrated toolkit in two test examples. The first looked at the effect of regulations on the specialty crop cluster, finding that an estimated 6.4 percent of total specialty crop farm income is spent on regulatory compliance. The second application tested the potential economic impact of food system investment, through the hypothetical example of attracting a peach processing facility in the region. The integrated tools show how more jobs, value add, and taxes currently flowing out of the Sacramento region could stay in the area if this potential scenario is implemented, with a net increase of 600 jobs, $43 million in value added, and $146 million in total output value to the regional economy from this one business attraction scenario alone. Notably, these 600 additional jobs consist of employment opportunities for the full region, be it on the farm, at the processing facility, or in the community in general.

Application of Tools: Peach Processing Case Study

608 Additional Jobs

$43 million Increase in Value Add
Conclusion

The specialty crop agricultural economy in the Sacramento region starts at the field – the several hundred thousand specialty crop acres harvested regionally a year employ over 10,000 workers in producing food worth $1.5 billion. Yet while the specialty crop economy begins at the field, this project has shown that its economic contribution to greater Sacramento certainly does not end there. Specialty crop growers engage with suppliers, processors, and distributors to form a larger cluster, while each dollar generated by a specialty crop business then leads to a multiplier effect in other industries. By expanding the food system beyond the farm, this study finds the contribution of the specialty crop base economy to be over 31,000 jobs, $2.4 billion in value add, and $5.8 billion in total output value in the Sacramento region. And perhaps to an extent not achieved by any other segment of the economy, this specialty crop food system helps also connect the region’s many rural and urban communities.

To arrive at the full economic contribution of specialty crops, the project draws on a data and modeling effort unprecedented in understanding specialty crop agriculture in the region. The findings are underpinned by interviews conducted with local specialty crop producers, processors, and distributors, with numerous additional data sources supplementing this primary data collection. The project’s dual technical deliverables describe the substantial data collection efforts and citations, while this executive summary has focused on the top level findings to succinctly demonstrate the role of specialty crop agriculture in the Sacramento region. The results of this technical undertaking have led to an updated and much more accurate multiplier for the regional economy compared to default economic modeling and prior analyses not customized to the Sacramento region.

Overall the Sacramento region boasts an unrivaled array of assets supporting the specialty crop food system, including productive soils and farmland, multi-generational knowhow, food entrepreneurs, favorable climate and water supply, and supportive institutions such as RUCS and the world-renowned departments at UC Davis. These assets, coupled with recent specialty crop employment and output growth, suggest strong positioning for specialty crop production in the region into the future. This project’s integrated toolkit provides a means to test scenarios, strategies, and investments that capitalize on our competitive strengths and momentum to make specialty crop agriculture an even more impactful economic engine for the entire region.

The project’s demonstration scenario models the effect of attracting a peach processing facility on regional employment and output. The results lead to even more jobs and economic growth, with an additional 600 jobs and $150 million in total output value from the peach processor scenario. Yet this scenario represents just one possible investment in the specialty crop cluster. Future work can not only test a broader range of policy considerations and possible market outcomes, but also expand the look at the food system to include wholesale, retail, and consumption activities. SACOG looks forward to working with specialty crop farmers, stakeholders, investors, and policymakers to leverage these new tools, data, and capacity in support of specialty crop agriculture.
“By demonstrating the economic potential of agricultural lands and related food industries, there may be more incentive to invest in specialty crop production and food chain infrastructure and to preserve working lands. This can enhance the marketability and competitiveness of specialty crops, inform potential regulatory reform at various levels, and facilitate development of effective policies and strategies supporting specialty crop agriculture.”