1-11-2019

# 2011 - Economic Contributions of Monterey County Agriculture

# Economic Contributions *of* Monterey County Agriculture

*Leading the Field - 2011*

AGRICULTURAL COMMISSIONER'S OFFICE

*http://ag.co.monterey.ca.us*

# Table of Contents




*This report was produced by Dr. Jeff Langholz and Dr. Fernando DePaolis under contract with the Monterey County Agricultural Commissioner's Office.*


# Economic Contributions *of* Monterey County Agriculture

## Monterey County Agriculture:

- **...contributes a total of $8.2 billion to the local economy, including:**
  - $5.1 billion in direct economic output, which represents 18.5% of the county's total economic output and makes agriculture the county's largest economic sector.
  - $3.1 billion in additional economic output in the form of expenditures by agriculture companies and their employees.
- **…provides 73,429 jobs in Monterey County economy, including:**
  - 45,140 direct employees, which is about 20% of all jobs in the county, or 1 out of every 5 workers.
  - 28,289 additional jobs, made possible by expenditures by agriculture companies and their employees.
- **…makes $102.2 million in indirect business tax payments each year.**
- **…depends on the Salinas Valley for 70% of its economic output and 79% of agriculture jobs.**

## Introduction

Agriculture plays a key role in maintaining a vibrant local economy. Workers dot the farm fields, fresh produce fills the grocery shelves, and growers ship fruits and vegetables to all 50 states and to more than 26 foreign countries. Clearly, Monterey County stands as one of the nation's top agricultural producers. What remains unclear, however, is the overall role that agriculture plays in sustaining a healthy local economy. How much economic output do all the food growers and processors generate? How many jobs do they support? What economic "ripple effects" does agriculture create locally? In other words, just how important is agriculture as a driver of economic health?

This report sheds light on these and related questions. Using multiple data sources and advanced economic modeling techniques, this report analyzes Monterey County agriculture's total contribution to the local economy. The findings offer the fullest picture yet of agriculture's economic role. This report should be of interest to policymakers, the public, and anyone who values a vibrant local economy.

## Our Approach

When it comes to economic analysis, it's important to examine the fullest possible range of economic contributions. This report does that by focusing not just on *direct* economic effect such as farm production and employment, but also on *multiplier effects. Multiplier effects* are ripples though the economy. These ripples include inter-industry "business to business" supplier purchases, as well as "consumption spending" by employees. The ***Multiplier Effects*** section below explains this further.

It's appropriate to calculate *multiplier effects* when analyzing what economists call a *basic industry*. A *basic industry* is one that sells most of its products beyond the local area and thus brings outside money into local communities. Agriculture is a basic industry in Monterey County, so this report includes *multiplier effects* when describing agriculture's total economic contribution.

Our analysis only examines agriculture's economic contributions rather than attempt to calculate the costs. To understand agriculture's full economic impact, one would need to assess agricultural-related costs to society (e.g., natural resource impacts, housing pressure). These impacts are important but lie beyond the scope of this study.

Our calculations draw from local and national sources. Local sources include annual Crop Reports and industry experts. Local experts included local economists, agriculture industry organizations, and the 13-person Agricultural Advisory Committee for Monterey County that provided input into the research. National data sources included federal government statistics and a widely used economic modeling program called IMPLAN [1]. Except where otherwise noted, all figures are from the year 2009. Please contact the authors for additional details on the methods used.

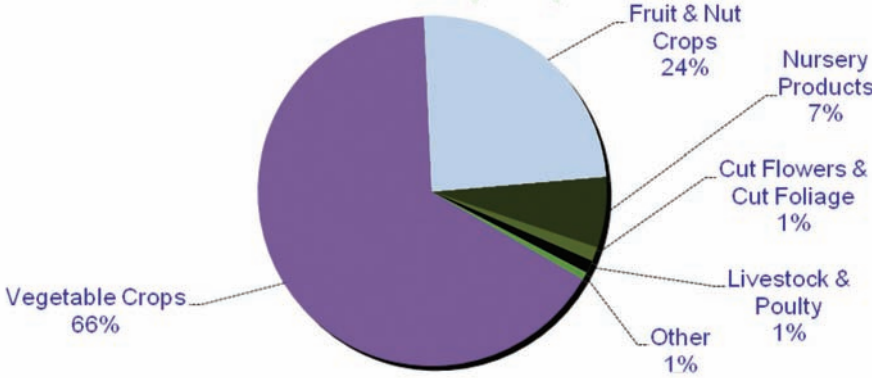
## "Direct Effects" of Monterey County Farm Production

This section focuses on the simplest measures of economic output: production and employment. It describes total farm production and how production has changed over recent years.

***Figure 1*** shows the various categories that make up Monterey County farm production value. Vegetable crops are the single largest production category by dollar value (66%). Key crops in this $2.7 billion category include lettuce ($1.2 billion), broccoli ($297 million), and celery ($176 million). Fruit and nut crops (24%) represent the second largest category, which includes crops such as strawberries ($751 million) and wine grapes ($238 million). Together, these two categories account for 90% of the county's farm production values.

Total farm production for 2010 was $4.03 billion. This figure comes from local industry surveys by the Agricultural Commissioner, with validation by the federal government's economic data and modeling from IMPLAN. This is a gross value that does not reflect net profit or loss experienced by individual growers, or by the industry as a whole.

**Figure 1. Distribution of Monterey County Farm Production (2010)**



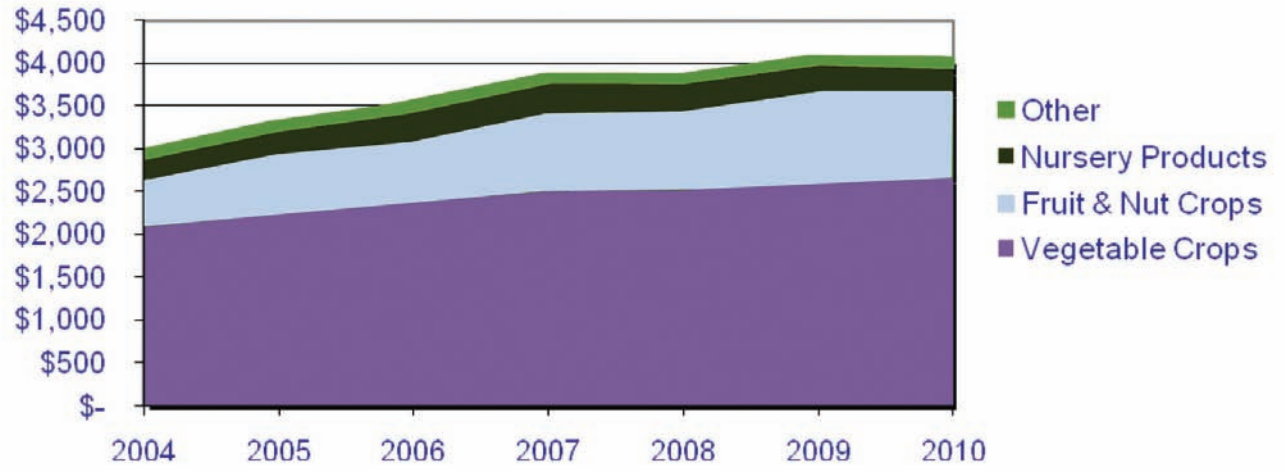

*Source: 2010 Monterey County Crop Report

[1] *IMPLAN © MIG, Inc.*

How has farm production changed over time? ***Figure 2*** shows how values have trended upward for all major production categories. Total growth for all categories from 2004 to 2010 was $641 million, which represents an 18.5% absolute increase, or a 3.0% rise after adjusting for inflation. For 2003 and prior years, crop production values were reported using different categories, making it hard to compare them to 2004 and beyond.

Despite the different categories used, we can still compare the total production values over a longer term. For example, over the past decade (since 2000), total production value grew 34% from $3.01 billion to $4.03 billion (in 2010). This represents a rise of 33.9% in absolute terms, or 7.3% after adjusting for inflation. The growth occurred despite two major economic recessions and a national food-borne illness outbreak linked to Central Coast agriculture.

**Figure 2. Gross Value of Monterey County Farm Production 2004-2010 ($ Millions)**




*Source: Monterey County Crop Report

How many people work in agricultural production? Agricultural production directly employed 42,176 people in Monterey County. This figure represents 18.4% of all Monterey County jobs. It includes farm workers as well as proprietors, but does not include food processing jobs *(see below)*.

## "Multiplier Effects" of Monterey 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 consist of "business to business" supplier purchases. For example, when a grower buys farm equipment, fertilizer, seed, insurance, banking services, and other inputs, the grower creates *indirect effects*. The second ripple type, *induced effects*, consist of "consumption spending" by agriculture business owners and employees. They buy housing, healthcare, leisure activities, and other things for their households. All of this spending creates ripples in the economy.

***Figure 3*** shows agriculture's *direct*, *indirect*, and *induced* economic effects within the county, for major production categories. The numbers are based on IMPLAN, which uses the U.S. Bureau of Economic Analysis production categories and data. Each category has an explicit definition used by the federal government to aggregate figures nationwide. For example, "Support activities for agricultural production" refers to soil preparation, planting, cultivating, harvesting, labor contracting, postharvest crop activities, and various other farm management services.

> ***Note:*** *Agricultural production created $6.6 billion in total economic output within the county (about 1.6 times the direct production value). The indirect and induced spending supported an additional 24,366 jobs within the county, bringing agricultural production's total employment to 66,542.*

**Figure 3: Economic Effects of Farm Production**

| Farm Production Sector | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| | Output Effect ($ Millions) | | | |
| Vegetable farming | $1,890.1 | $633.9 | $544.9 | $3,068.9 |
| Support activities for agric. production | $1,193.0 | $83.5 | $670.5 | $1,947.0 |
| Fruit farming | $389.0 | $130.0 | $139.5 | $658.4 |
| All other crop farming | $280.8 | $110.7 | $57.6 | $449.1 |
| Greenhouse, nursery, and floriculture | $266.1 | $50.6 | $91.6 | $408.3 |
| Cattle and other animal production | $52.7 | $22.5 | $6.7 | $81.9 |
| Grain farming | $3.5 | $1.3 | $0.5 | $5.3 |
| Tree nut farming | $1.4 | $0.4 | $0.6 | $2.4 |
| **Total Economic Output:** | **$4,076.5** | **$1,033.0** | **$1,511.8** | **$6,621.3** |
| | **Direct** | **Indirect** | **Induced** | **Total** |
| | **Employment Effect (# Jobs)** | | | |
| **Total Employment:** | **42,176** | **11,943** | **12,423** | **66,542** |

**Sources: IMPLAN, U.S. Bureau of Economic Analysis*

## Locally Sourced Value Added Food Processing

Farm production tells only part of the story. Monterey County is home to some of the nation's leading food processors, all of which play a key role in the local economy. This section captures the economic value of local food processing. It is not a full assessment, but rather gives the reader a basic overview of the topic. To avoid overstating the numbers, we only included food manufacturers and sectors that fit two criteria: 1) they use mostly local agricultural inputs; and 2) they are unlikely to exist here without the presence of the associated agricultural sector. For example, many processing plants would not exist in Monterey County were it not for the abundant supply of leafy greens, berries, wine grapes, and other raw agricultural products. In an opposite example, we did not include the county's $32 million per year chocolate and confectionary manufacturing sector because its raw product (cocoa beans and chocolate) are produced elsewhere.

We also took precautions to avoid double-counting. For example, we did not factor wine grape production into this section because the Farm Production section above already captures the dollar value of wine grapes. We only calculated the dollar value that wineries add to grapes, i.e., by producing wine.

***Figure 4*** shows the economic effects of locally sourced, value added food processing. It uses relevant categories and data from IMPLAN, which come from the U.S. Bureau of Economic Analysis. For example, the category "All other food manufacturing" includes processed leafy greens, peeled or cut vegetables, and other perishable prepared foods. We selected categories and validated the numbers in consultation with our advisory group of local experts.

***Note:*** *Local food processing produced an estimated $1.1 billion in direct output. Multiplier effects bring the total value to $1.6 billion. The sector directly employed 2,964 workers. These workers and their employers spent enough money in the local economy to support an additional 3,923 jobs. Indirect and induced spending brings the total food processing employment effect to 6,887. Food processing jobs are fewer than farm production jobs, but they pay more, which is why the employment multiplier effect is higher.*

**Figure 4: Economic Effect of Locally Sourced, Value-Added Food Processing**

| Selected Food Processing Sectors | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| | Output Effect ($ Millions) | | | |
| Fresh food manufacturing | $571.8 | $220.3 | $96.5 | $888.6 |
| Wineries | $409.2 | $148.9 | $74.5 | $632.6 |
| Seasoning and dressing manufacturing | $37.7 | $13.6 | $5.6 | $57.0 |
| Fruit & vegetable canning, pickling, and drying | $20.9 | $5.8 | $3.3 | $29.9 |
| Frozen food manufacturing | $11.7 | $3.6 | $2.3 | $17.7 |
| Animal & animal food processing | $5.5 | $1.6 | $4.7 | $7.7 |
| **Total Economic Output:** | **$1,056.8** | **$393.8** | **$182.9** | **$1,633.5** |
| | **Direct** | **Indirect** | **Induced** | **Total** |
| | **Employment Effect (# Jobs)** | | | |
| **Total Employment:** | **2,964** | **2,420** | **1,503** | **6,887** |

**Sources: IMPLAN, U.S. Bureau of Economic Analysis, and local industry experts*

## Total Economic Contribution of Monterey 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 effect of Monterey County agriculture.

As ***Figure 5*** shows, the total economic contribution of Monterey County agriculture is $8.2 billion. This consists of $5.1 billion in direct output plus $3.1 billion in *multiplier effects*. Total employment is 73,429. This includes 45,140 jobs directly in agriculture, plus another 28,289 employees supported by agriculture sector spending. Agricultural companies paid $102.2 million in indirect business taxes. This included excise taxes, property taxes, fees, licenses, and sales taxes. It did not include taxes on profit or income.

To put that number in perspective, the 2011-2012 overall general fund budget for Monterey County was approximately $534 million.

Putting the numbers in context, agriculture's $5.1 billion in direct output makes it the largest economic sector in Monterey County, accounting for 18.5% of all direct economic output. Meanwhile, the 45,140 jobs also make agriculture the county's top employer, with 19.7% of the county's 228,719 jobs. Government (includes public safety, education, military, social services) and real estate are the second and third largest contributors to economic output, respectively.

**Figure 5. Overall Economic Effect of Monterey County Agriculture**

| Type of Effect | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| **Farm Production Sector** | | | | |
| Output Effect *($ Millions)* | $4,077 | $1,033 | $1,512 | $6,622 |
| Employment Effect *(# Jobs)* | 42,176 | 11,943 | 12,423 | 66,542 |
| Tax Impact *($ Millions)* | -- | -- | -- | $62.2 |
| **Locally Sourced, Value-Added Food Processing Sector** | | | | |
| Output Effect ($ Millions) | $1,057 | $394 | $183 | $1,634 |
| Employment Effect *(# Jobs)* | 2,964 | 2,420 | 1,503 | 6,887 |
| Tax Impact *($ Millions)* | -- | -- | -- | $40.0 |
| **Total Value of Monterey County Agriculture Sector** | | | | |
| Output Effect *($ Millions)* | $5,134 | $1,427 | $1,695 | $8,256 |
| Employment Effect *(# Jobs)* | 45,140 | 14,363 | 13,926 | 73,429 |
| Tax Impact *($ Millions)* | -- | -- | -- | $102.2 |

## The Salinas Valley's Key Role

The Salinas Valley is widely regarded as one of the nation's great agricultural regions. Most people know the Salinas Valley plays a special role in the county's agriculture sector, but no one has attempted to quantify the true size of that role. To fill this knowledge gap, we analyzed the contribution that Salinas Valley communities make to agricultural output and employment.

As ***Figure 6*** shows, Salinas Valley communities contribute the overwhelming majority of the county's agricultural output and jobs. This includes 69.2% of the county's agricultural economic output and 78.5% of the employment. These numbers encompass both farm production and locally sourced, value-added food and wine processing.

Numbers for locally sourced, value-added food processing are especially high, with the Salinas Valley contributing 82.8% of the total economic output and 84.3% of employment. If wineries are excluded from the analysis, then the food processing numbers climb to 96.0% and 96.9%, respectively.

**Figure 6. The Economic Role of Salinas Valley Agriculture**

| | Salinas Valley Agricultural OUTPUT | | Salinas Valley Agricultural EMPLOYMENT | |
|---|---|---|---|---|
| | Direct Output ($ millions) | % of Monterey County Ag. Total (*) | Employment (# Jobs) | % of Monterey County Ag. Total (*) |
| Farm Production | $2,675 | 65.6% | 32,931 | 78.1% |
| Food Processing | $875 | 82.8% | 2,498 | 84.3% |
| **Total** | **$3,550** | **69.2%** | **35,429** | **78.5%** |

*(*) Figures respectively refer to to a "direct value effect" of 4,076.5 million, and a "direct employment effect" of 42,176 jobs, as shown in Figure 3.*

## Toward the Future

This report has documented the role that Monterey County agriculture plays as a driver of the local economy. Agriculture is the county's largest sector in terms of economic output, and the single biggest employer. Its economic contributions come mostly from the Salinas Valley, and the resulting benefits occur not just in Monterey County, but also in nearby counties as well as the winter production areas in southern California, Arizona and northern Mexico.

Agriculture is one of Monterey County's economic "pillars" and represents a vital link to both the county's cultural past and competitive future. Although the report has presented many facts and figures, it has barely begun to fill key information gaps about agriculture's role. The process of developing this report has raised several additional questions that lie beyond the scope of this report but may warrant future research. In the meantime, the findings here provide the clearest picture yet of Monterey County agriculture's economic role.

## Additional Questions to Answer

*These and other questions were raised during the process of developing this report. These questions lie beyond the scope of this report and were not used as factors within this report.*

- What is the dollar value of wildlife habitat, open space, and more than 20 other "ecosystem services" that the county's agricultural lands provide to society?

- How would certain "shocks" affect agriculture's economic results, for example significant new regulations, labor policies, or changes in the price of key inputs?

- What is the "net" economic impact of Monterey County agriculture after subtracting natural resource impacts and other costs to society? (This study has examined just one side of the coin).

- What is the estimated dollar value of Monterey County agriculture's contribution to the nation's public health? The county provides much of the nation's fresh produce, the consumption of which reduces disease, which in turn lowers health care expenses nationwide (perhaps by billions of dollars).

- How can we balance the costs and benefits of federal, state, and local laws and regulations? How can we identify and develop policies that maximize benefits while minimizing costs and unintended impacts?

## Acknowledgments

*This report was produced by Dr. Jeff Langholz (jeff.langholz@miis.edu) and Dr. Fernando DePaolis (fdepaolis@miis.edu) under contract with the Monterey County Agricultural Commissioner's Office. Ellen Kincaid and Pilar Chaves served as research assistants. Melanie Beretti supervised the project on behalf of the Agricultural Commissioner's Office, with input from Dawn Mathes, Eric Lauritzen, and Robert Roach.*

*External advisors included Jim Bogart (Grower-Shipper Association of Central California), Norm Groot (Monterey County Farm Bureau), Laura Tourte (University of California Cooperative Extension), and Mary Zischke (Leafy Greens Research Board). The Agriculture Advisory Committee (AAC) for Monterey County met with the research team on two occasions to provide direct input. AAC members included: Christopher Bunn, Jr. (Monterey County Farm Bureau), David Costa (Grower-Shipper Association of Central California), Alexandra Eastman, DVM (At-Large), Kurt Gollnick (District 1-Armenta), Bill Hammond (District 3-Salinas), Steve de Lorimier (District 2-Calcagno), Mike Manfre (At-Large), Steve McIntyre (Monterey County Vintners and Growers Association), Mike Miller (District 4-Parker), Manual Morales (At-Large), Tom Am Rhein (California Strawberry Commission), Ridge Watson (District 5-Potter), and Scott Violini (Cattlemen's Association).*

## Publication Reproduction Acknowledgements

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