CALIFORNIA'S FOOD CHAIN AT WORK

Agriculture Production, Processing, Distribution and Support

Prepared for the

CALIFORNIA ECONOMIC STRATEGY PANEL

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California Economic Strategy Panel

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CALIFORNIA ECONOMIC STRATEGY PANEL

PREFACE

The bipartisan California Economic Strategy Panel was established in 1993 to develop an overall economic vision and strategy to guide public policy. The Panel engages in an objective and collaborative biennial planning process that examines economic regions, industry clusters, and cross-regional economic issues. The 15-member Panel is comprised of eight appointees by the Governor, two appointees each by the California Senate President Pro-Tempore and the California Assembly Speaker and one appointee each by the Senate and Assembly Minority Floor Leaders. The Secretary of the California Labor & Workforce Development Agency serves as the Panel Chair.

The California Regional Economies Project is currently the lead research mechanism for the Panel to identify economic policy issues. The project provides the state's economic and workforce development systems with data and information about changing regional economies and labor markets. The information provides a new resource in economic and workforce development planning, and a bridge connecting economic and workforce policies and programs at the state and regional levels.

The California Regional Economies Project is sponsored by the California Labor and Workforce Development Agency, California Employment Development Department, and California Workforce Investment Board.

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EXECUTIVE SUMMARY

California is a leader in the global Food Chain. Not only is California the country's top exporting state of agricultural products, but the state's innovative capacities make it a global pacesetter in the world food markets. The Food Chain consists of agricultural products, related specialized support activities, food and beverage manufacturing, and distribution of food and beverage products. Through the continued development of innovative products, processes, technologies, and services, California has the resources to nimbly adapt to market changes as well as drive these changes.

California is the nation's preeminent exporting state of agricultural products and outpaces the second ranked state (Iowa) by almost three-times in export value. Not only does the state produce the most in export value, it also produces the most diverse mix of export food products. Top on California's list of profitable export products are almonds and wine. This fact demonstrates the scope of California's Food Chain and that the state generates significant value from both agricultural commodities as well as from highly processed food products. In addition to the magnitude of California's food production in relative and absolute terms, California is experiencing greater growth in food production than any other state.

California's Food Chain is increasing in value not only in exports but in job quality. Three-quarters of Food Chain Employment—and virtually all job growth— are outside of production. The Food Chain consists of four segments: Production, Support, Processing, and Distribution. Most jobs are mid-level or higher. Wages are growing in all regions, and jobs are growing in some segment in the Food Chain in almost every region. Each region has a unique food chain profile and specializations that create added statewide diversity.

Innovation is central to all segments of California's Food Chain. Innovation is increasing efficiencies all along the Food Chain in the form of improved allocation of natural resources in production, novel plant varieties, advanced materials for retaining freshness in packaging, and tighter communications throughout the stages from field to market.

California's competitive edge is partially in the size and diversity of its food products, but it is the state's capacity to adapt to global market changes and drive change that is core to its competitive edge. The implication of this is that in order for the state to maintain its global competitiveness, it must ensure that its innovative capacities continue to thrive. While this does include continued research and development efforts, on a larger scale, ensuring California's competitiveness means ensuring that the state's workforce has the technical skills required to drive continued technological advancement in California's Food Chain.

INTRODUCTION

The focus of this cluster of opportunity report is on the industry sectors that comprise the agricultural value chain in California. These sectors include not only agricultural production, but also food processing, and a range of support industries providing specialized equipment and services at different stages of the "Food Chain." Employment in California's Food Chain makes up 5.9 percent of the state's economy; in contrast, nationally, these sectors make up 4.3 percent of the nation's workforce. The Food Chain cluster includes established agricultural strengths as well as emerging specialty products and services, and California is an innovative leader in both.

The report begins with a description of trends impacting California's Food Chain and some of the global forces involved. For the purposes of this report, the term "globalization" is used to describe the acceleration of the processes in the world and domestic economies that operate toward creating a single world market.[1] The second part describes California's Food Chain Cluster of Opportunity and explores the regional Food Chain clusters. Finally, state and regional policy implications for workforce development and economic development are discussed as well as policy recommendations.

I. The Strength & Diversity of California's Food Chain

Global market forces are transforming California's Food Chain, as local firms become multinational firms and foreign firms produce locally in order to efficiently tailor products for local markets. As globalization has increased competition, it has also brought new opportunities in the form of new products for the state's consumers and new markets for the state's firms. Technology's role has been central as an enabler and driver in these global processes through advances in production, packaging, shipping and communications. This section of the report briefly describes the global context and the changing nature of California's agricultural industry providing the framework for the discussion of California's Food Chain. It discusses the current trends impacting the California food chain as well as the components that make up the state's food chain and the dynamics of the California Food Chain vital cycle.

Globalization Brings Worldwide Competition & New Opportunities for California

As the processes of globalization have created new competitors in the world's food products markets, they have also opened new world markets to producers and provided consumers with new products. While large firms in the world's food retail industry are rapidly expanding into new markets, many food manufacturing and production industries are developing global strategic alliances and investing abroad. Goods available globally are becoming increasingly diverse as producers and distributors compete for local consumer markets with widely varying demands.

According to the U.S. Department of Agriculture (USDA), the top 15 global supermarkets originate from the U.S., Europe, and Japan and "account for more than 30 percent of world supermarket sales."[2] This global trend in mega distributors is driven by business strategies to benefit from efficiencies of scale; by some accounts, this trend is more pronounced in California than other states.[3] This trend entails the centralization of large-scale distribution networks spanning across multiple countries and, in some cases, links firms in the northern and southern hemispheres for the purpose of supplying fresh produce year-round. The expansion of these supermarkets in the developing world is meeting the demands of consumers with growing incomes in these regions and therefore, increasing global demand in processed foods. Manufacturers and producers are investing abroad and forming alliances for greater access to world markets. For instance, as world demand is growing, stiff competition is evident in the world dairy industry in which competitors are forming strategic alliances and multinational corporations seek to control all stages of the production process.[4]

California's Global Leadership in Commodity and Specialty Markets

Already a leader in agricultural commodity production, the state's producers are increasing production of specialized products. California is a global leader in agricultural exports in volume, export value and diversity of products. Further, the state's producers are enhancing their competitive edge through the introduction of new, specialized products and familiar products in new formats. These efforts include regional marketing, organic production and processing, convenience marketing, and novel product development.

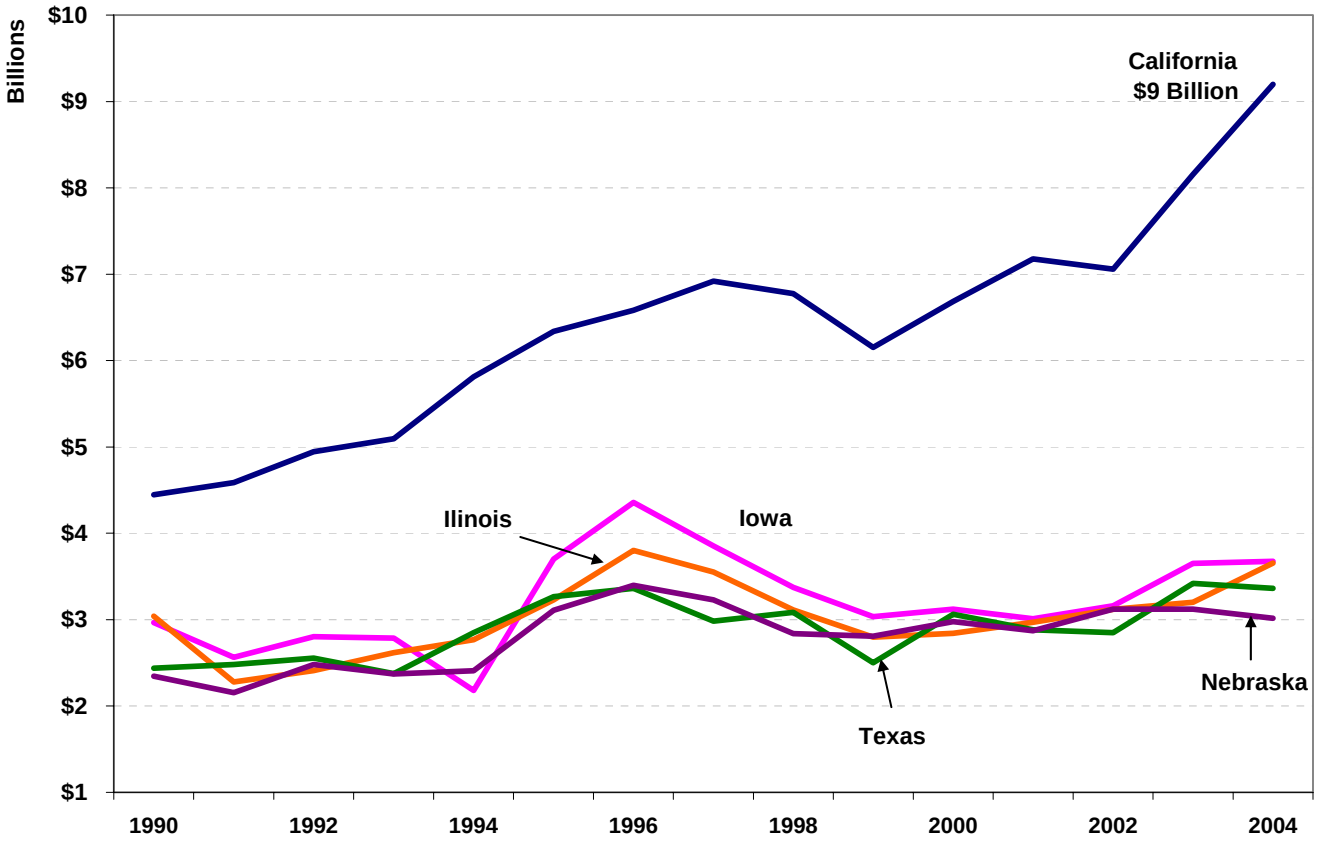
Figure 1 California's Top 10 Agricultural Export Markets by Value of Principal Exports, 2004

Rank	Country	$ Millions	Leading Exports
1	European Union	$1,698	Almonds, wine, walnuts, pistachios, raisins, dried plums, cotton, table grapes, processed tomatoes, flowers and nursery
2	Canada	1,467	Lettuce, strawberry, table grapes, processed tomatoes, wine, oranges, almonds, carrots, peaches and nectarines, broccoli
3	Japan	905	Rice, almonds, hay, wine, oranges, strawberry, cherries, broccoli, walnuts, dried plums
4	Mexico	527	Dairy and products, cotton, table grapes, tomatoes, almonds, beef and products, tomatoes, peaches and nectarines, lettuce, flowers and nursery
5	China/ HongKong	456	Cotton, oranges, table grapes, almonds, beef and products, dairy and products, pistachios, raisins, wine, lemons
6	Korea	259	Oranges, cotton, almonds, rice, hay, beef and products, walnuts, processed tomatoes, wine, grape juice
7	Taiwan	179	Cotton, rice, peaches and nectarines, almonds, table grapes, hay, broccoli, cherries, beef and products, lettuce
8	India	114	Almonds, cotton, tablegrapes
9	Malaysia	85	Table grapes, oranges, raisins, almonds, dried plums
10	Indonesia	78	Cotton, table grapes, dairy and products, beef and products

Non-food products such as cotton and flowers are not included in the Food Chain analysis.

Source: California Department of Food & Agriculture/University of California, Agricultural Issues Center

Figure 2 Leading US Agriculture Exporting States 1990-2004

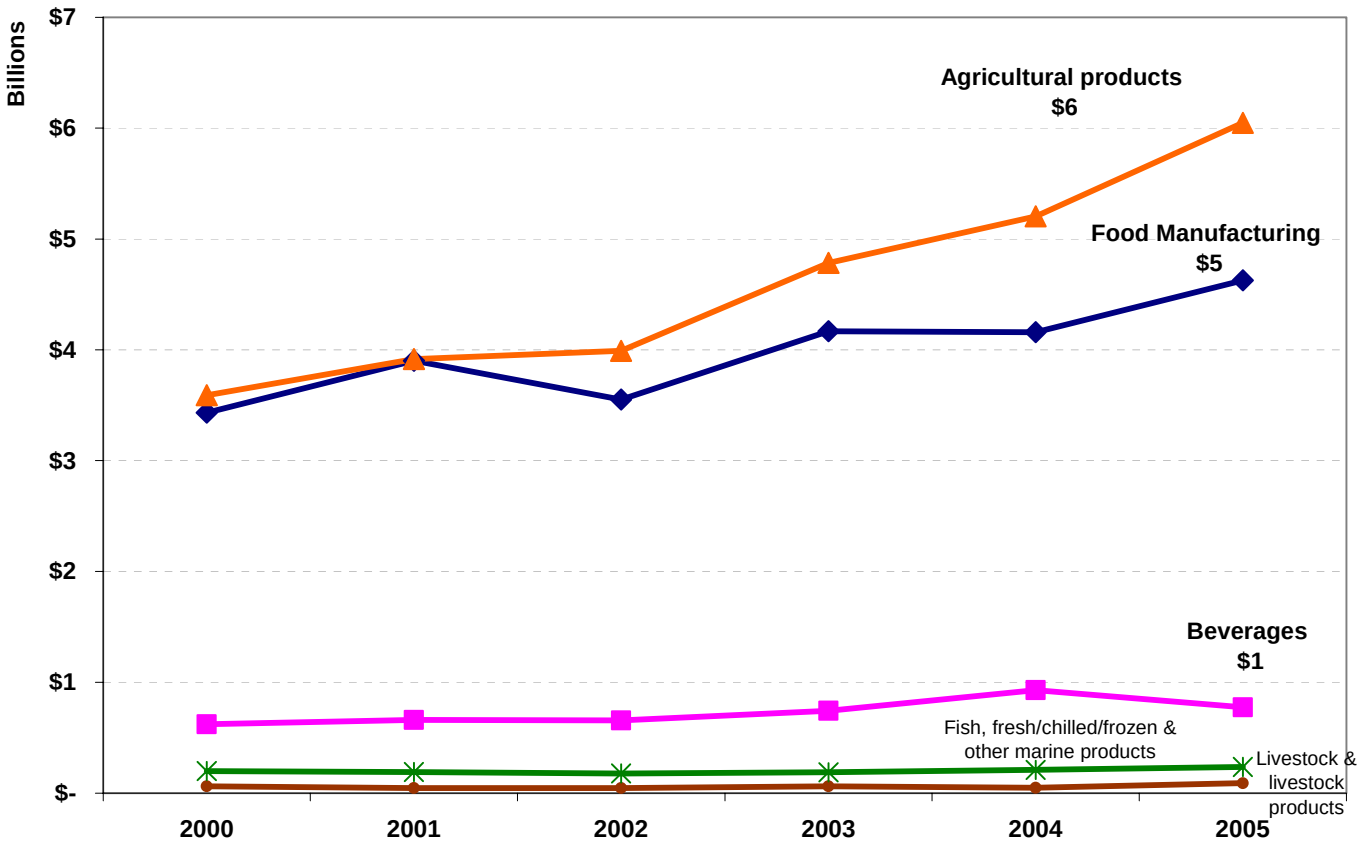


Source: ERS/USDA State Exports

Represented data does not include non-food agricultural exports.

In terms of trade in agricultural commodities, California is a major global player in export volume, value and product diversity. California sells 18 percent of its produce overseas[5] to the far reaches of the globe (**Figure 1**).[6] Of the top 20 U.S. agricultural exports, California produces 16 commodities of these exports. California is the top producer in seven commodity groups of the exports.[7] A summary of the leading food commodities produced in California regions may be found in **Appendix A**. Not only does California export more than any other state, its growth in agricultural exports is unmatched, as is illustrated in **Figure 2**. Looking in more detail at California's food exports in **Figure 3**, growth in exports and export value is strong in both Agricultural Products and Food Manufacturing. [8]

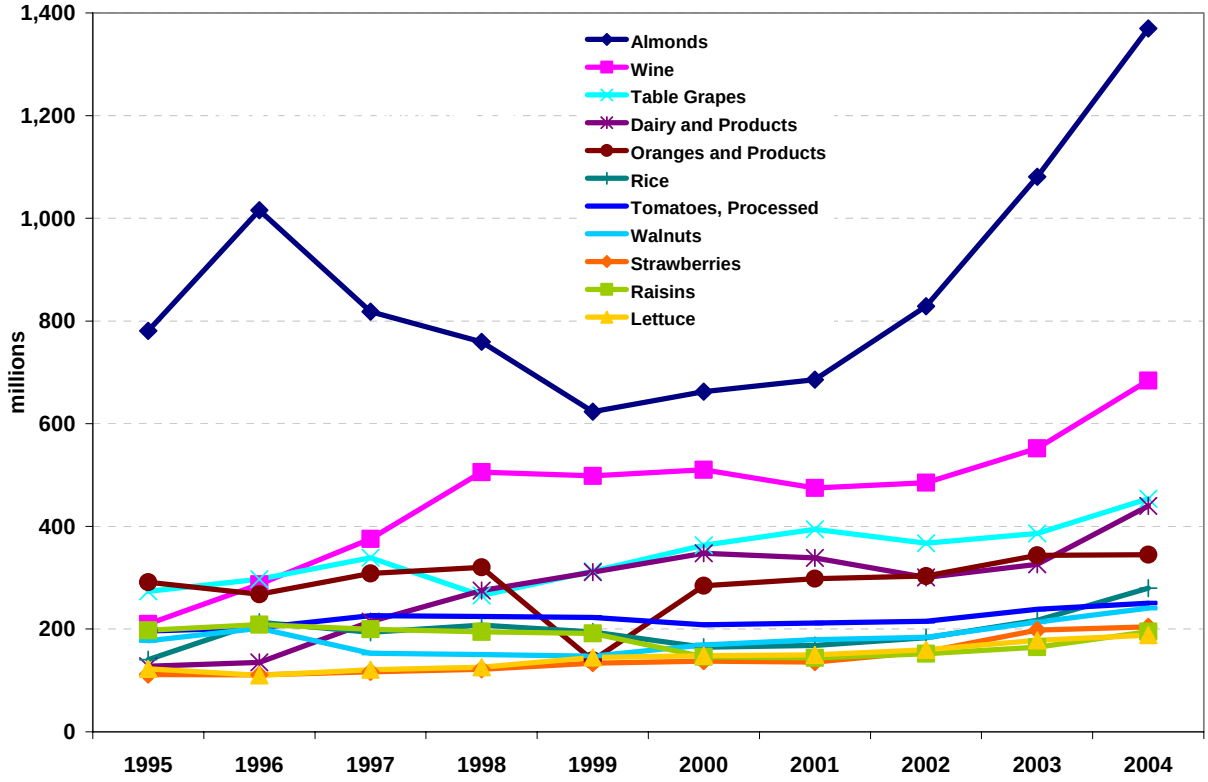
Figure 3 Trends in California's Food Exports 2000-2005



Source: U.S. Department of Commerce, Office of Trade and Industry Information, Manufacturing and Services, International Trade Administration, TradeStats Express

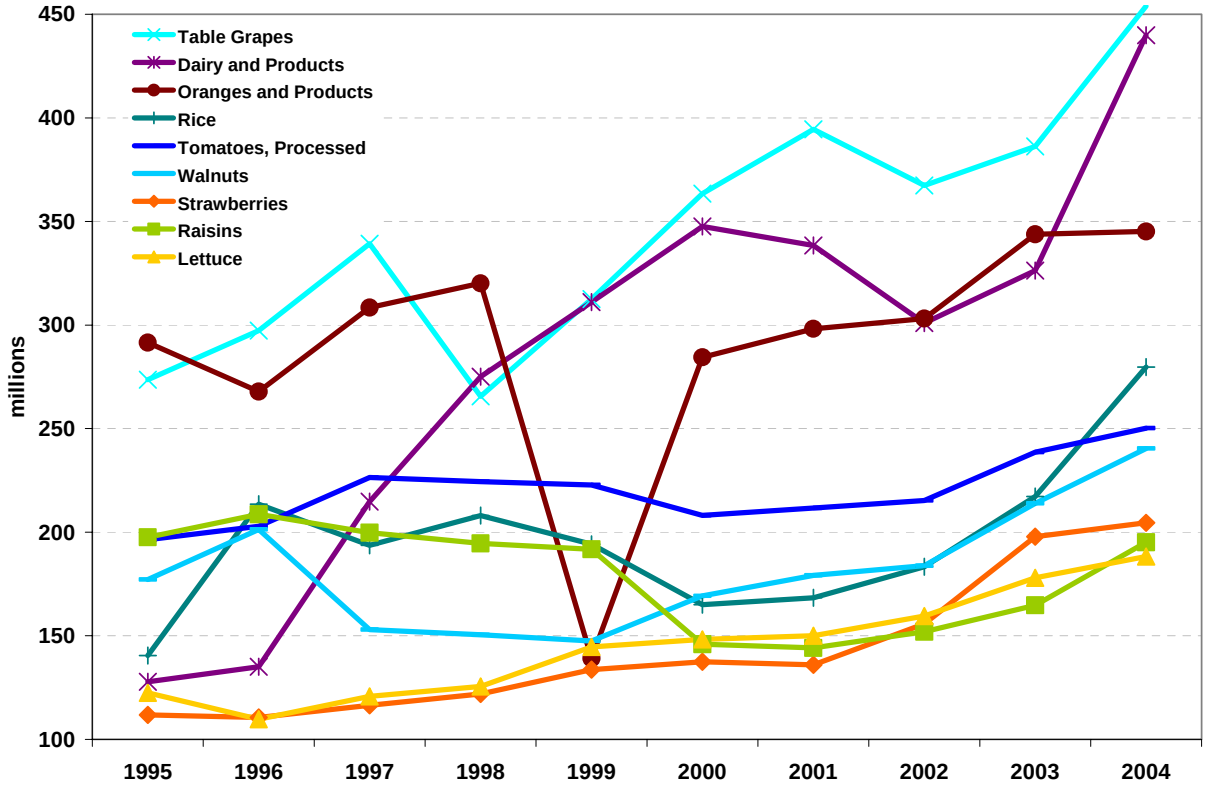
The diversity and significance of California's production is demonstrated by the fact that the state produces 100 percent of U.S. exports in twelve products: raisins, dried plums, olives, dates, kiwi, figs, tree nuts, almonds, walnuts, pistachios, garlic, and artichokes. **Figures 4 and 5** below illustrate the growth in California's top ten agricultural exports from 1995 to 2004.[9] Of the state's top ten agricultural exports in 2004, trade in almonds constituted 30 percent with a value of $1,369,687,000. Almond exports are followed in value by wine, table grapes, dairy and related products, oranges and related products, rice, processed tomatoes, walnuts, strawberries, and raisins.[10] In addition to the consistent growth witnessed in exports of almonds and wine, there has been strong growth in the export of table grapes and dairy products in the last few years.

Figure 4 California's Top Ten Export Commodities



Source: California Department of Food & Agriculture/University of California, Agricultural Issues Center

Figure 5 California's Top Export Commodities Excluding Almonds & Wine



Source: California Department of Food & Agriculture/University of California, Agricultural Issues Center

In order to enhance their global competitiveness, growers in the state are expanding food production abroad to places such as Mexico while increasing their production of specialty crops in California.[11] Product differentiation is taking place along various dimensions to promote regional suppliers, meet particular demands based on consumer concerns about healthy products and ethical production methods, provide added convenience, and create new, high-value products. A strong force supporting the state's growers in their efforts toward food product differentiation is the Buy California Initiative, a campaign of the California Department of Food & Agriculture (CDFA). Funded by the federal Specialty Crop Block Grant and the state, the campaign focuses efforts on a variety of education, research, and marketing efforts. [12]

The California Grown Campaign is a statewide branding strategy funded by the Buy California Initiative, the California Department of Food & Agriculture, the U.S. Department of Agriculture (USDA), and scores of state agricultural associations.[13] The project simultaneously promotes healthy eating and the state's food growers, and it includes licensing of the "CA Grown" logo.[14] Other regional branding campaigns in the state seek to define regional uniqueness and sometimes involve "regional experience" tourism such as agricultural tourism. Other regional strategies aim to leverage established local distinction by protecting the brand through legal means. For example, the protection of the Napa appellation aims to restrict the use of "Napa" by winemakers to wines with at least 75 percent[15] of their grapes from the Napa region.[16] The legal protection of regional appellation is a practice which has been used to great effect in Europe with products such as Champagne as well as Parmigiano-Reggiano and Emmentaler cheeses. Regional branding efforts can involve requirements such as regional boundaries, labeling, growing and production standards, and a self-governing body.[17]

California is a leader in organic farming and products. The state has more organic cropland than any other state, and of the 8,035 certified organic operations in the U.S. in 2003, almost a quarter (1,907) were located in California.[18] The state's organic producers include many small farms producing for local, high-end restaurants and other particular markets as well as the country's largest organic produce company which farms 26,000 organic acres.[19] The rising demand for organic produce reflects growing consumer concerns for perceived safer and healthier foods as well as environmentally sound and ethical production processes. Such is the case also with the growing demand for non-genetically altered products and grass-fed, hormone- and antibiotic-free meat, poultry and dairy products. Innovative producers advance these efforts symbiotically. For example, in place of herbicides, some organic growers of grapes hire herds of sheep three times a year to clean and fertilize the vineyards; these sheep in turn, produce organic lamb.[20] Knowledge about organic and sustainable farming practices is growing, and California universities are making significant contributions toward the further development and dissemination of this knowledge.[21]

In addition to improved quality, convenience is the driver behind the innovative repackaging which is bringing new market life to familiar products (as well as new product varieties). Consumers with busy modern lifestyles and an interest in healthy eating are driving demand for fresh products packaged in time-saving formats; examples include pre-washed salad greens, pre-sliced fruit and individually packaged fruit and vegetables. California's largest organic producing company, Earthbound in San Juan Bautista, California, started out supplying local restaurants and now ships its bagged salads to 74 percent of the nation's supermarkets.[22]

A host of specialty products is emerging on store shelves as entrepreneurial producers seek to carve out new market niches. Demographic changes and higher incomes in the state are partially responsible for the growing demand in exotic produce. Specialty products include "heirloom" tomatoes, bison meat, boutique honey, herbs and extracted oils, and exotic produce originating from other continents like the rainbow of potato varieties from South America. Other niche products that have not been grown in California but which are processed here include organic, fair trade coffees and chocolate. In addition, some producers apply sustainable practices to their packaging. For example, Gaia chocolate is sold in 100 percent recyclable packaging made from a minimum of 65 percent post-consumer content and printed in soy-based ink.[23]

In a systemic view, new specialty food products are often relatively small operations and accompanied by new processing and higher value-added processing. The broader economic implications of this trend in product differentiation could include growth in small food production firms unbound by large initial capital requirements, growth in higher-wage food manufacturing jobs, and new demand for manufacturing equipment.

GOING ORGANIC – A NEW DEMAND MARKET

GRIMMWAY FARMS
Arvin, CA

Grimmway Farms works hard to respond to consumers' changing demands. After working for over ten years on efficiencies in their processing of baby carrots, adopting a number of innovative new processes in order to provide convenient quality foods for consumers while remaining competitive, the company is now dealing with a growing demand for organically grown carrots and other produce.

"During the past several years, we have pushed to expand into the organic produce market," said Sean McNally, Vice President of Human Resources. "From Wal-Mart to Whole Foods, large customers are demanding more and more organically grown produce to offer to consumers."

This new market is very labor-intensive and not easily compatible with many of the streamlined production and processing techniques that they have perfected over the years, yet Grimmway is looking to the future and finding innovative ways to meet this new demand.

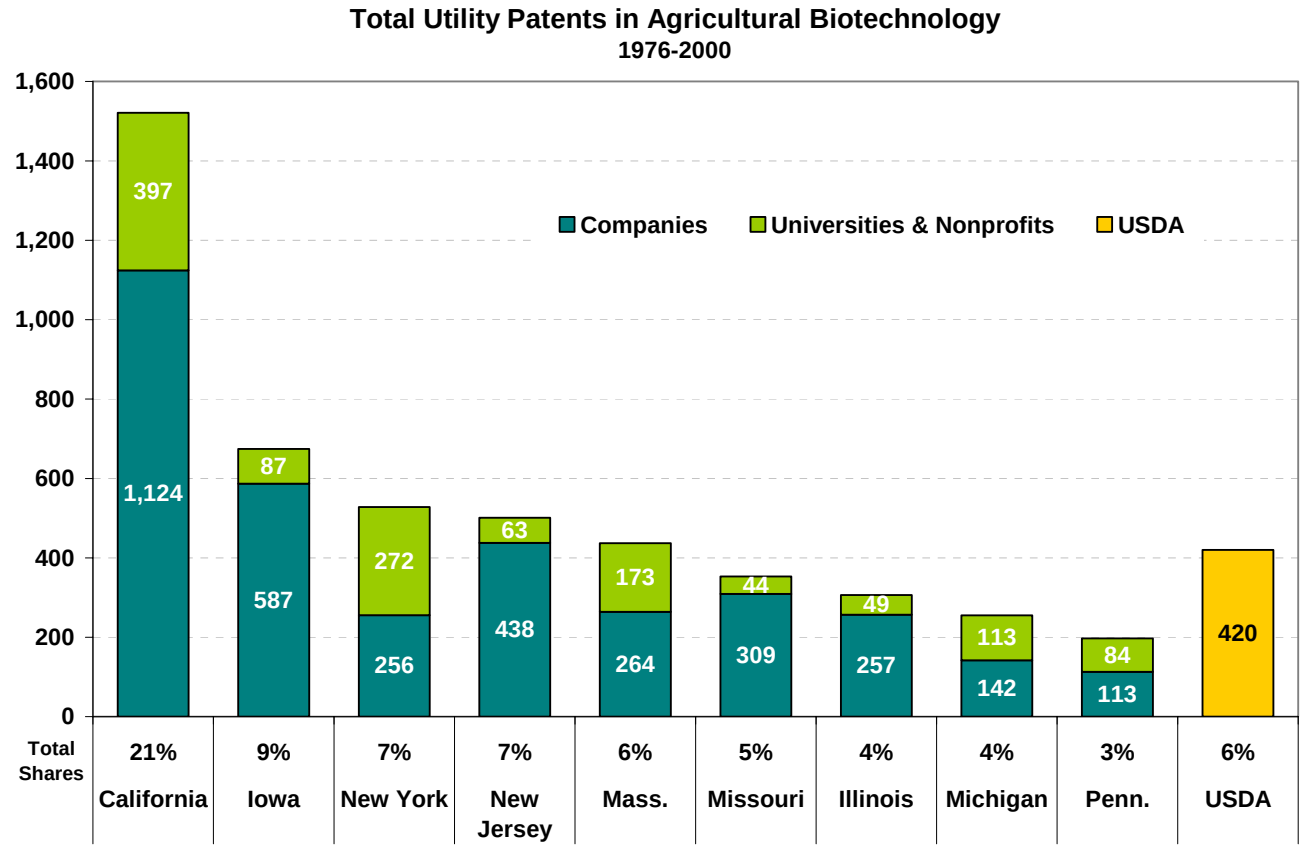
Grimmway Farms has grown from a roadside produce stand in 1968 to be the world's largest producer of carrots today.

Technological Innovation Drives Change in California's Food Chain

Technological innovations are both driving change in all segments of the Food Chain and creating California's competitive advantage in the global food market. As a world leader in technological development and commercialization, California has been at the forefront of scientific advancement in agricultural technology including environmentally sustainable practices as well as other technology fields (e.g. communications) central to the advanced efficiencies and quality in global food chain activities.

California university R&D centers and private companies have revolutionized agriculture[24] in biotechnological innovations. The U.S. accounts for 66.9 percent of world utility patents in agricultural biotechnology, and California represents 21 percent of the national total, the largest share of any state (**Figure 6**).[25] Utility patents include all sorts of biotechnology inventions, agricultural equipment and techniques, and many other inventions. In the food industry, public research centers register ten times the number of patents than in other industries; and the University of California, along with the U.S. Department of Agriculture (USDA), account for the largest shares of patents registered by public research centers.[26] By far, private companies generate the vast majority of patents in agricultural biotechnology.

Figure 6 Top Agricultural Patent-Holding States



Source: USDA/ERS Agricultural Biotechnology Intellectual Property Data

San Carlos, California is the home of the first agricultural biotechnology company, ESCAgenetics Corporation. Besides developing novel plants with enhanced attributes, biotechnology research has produced advanced means for quality testing. For example, diagnostic tests derived through biotechnology are used to detect animal and plant diseases and food processors use biotechnology to diagnose food and feed contaminants.

California's innovative climate is supporting technological advances that improve production efficiency through resource conservation and other environmentally sustainable practices. Examples include precision irrigation (sensor controlled drip irrigation) and GPS-directed micro tractors with weed triggers and herbicide. In the bagged salad industry, computer-controlled mechanized systems of chutes, spinners and scales have vastly improved efficiency and the introduction of nitrogen in salad bags has improved product freshness and quality. Advances in environmental monitoring and solutions are addressing issues related to agricultural waste management, air and water quality, encroaching urban development, biodegradable plastics and packaging, and renewable energy resources. Recycled materials from agricultural waste products such as rice straw, nut shells, fruit and nut tree waste products are finding applications in construction and industrial uses. Rice straw, for instance, is being processed into particle board for construction.

Advances in communications technology have revolutionized supply chain efficiencies and in so doing, the entire Food Chain. Technological advances including scan-based inventory systems, point of sale data, electronic data interchange (EDI) and category management (e.g. "snacks") have enabled real-time understanding of changing consumer needs. They have enabled momentous timing improvements in logistics thereby increasing product quality. Further, the advents of the internet and e-commerce have enabled small producers to access broader markets which have contributed to greater product diversity and greater demand for specialty products.

CALIFORNIA'S FOOD CHAIN: How the Components Work Together in a Vital Cycle

California's Food Chain is a dynamic system of multi-faceted components and interactive processes that are driving competition and enabling California's competitiveness in the global food market. Central to the state's Food Chain vital cycle is the role of innovation.

The segments of the Food Chain consist of 1) Support, 2) Production, 3) Package/Processing, and 4) Distribution. Described in the table below are examples of the processes and occupations related to each of the four segments. Many occupations are common across multiple segments of the Food Chain.

Food Chain Vital Cycle		
Segment	**Process**	**Example Occupations**
Support	The broad range of agricultural support encompasses activities related to production including field work, veterinary services, agricultural implement manufacturing, food product machinery manufacturing, irrigation systems construction, pesticide and fertilizer manufacturing, and technical consulting	• Veterinarian technician • Enologist • Surveyor • Landscape architect • Construction worker • Tool designer • Mechanical engineer • Chemical engineer • Laboratory technician • Accountant
Production	Agricultural production processes are specific to the commodity raised. Processes vary widely across crop farming, vegetable farming, animal farming, poultry and egg production, and animal aquaculture.	• Farm worker • Horticulturalist • Nursery worker • Aquaculturalist • Veterinarian technician • Enologist
Processing/ Packaging	Food packaging and processing includes packaging fresh produce for safe transport as well as the range of processes involved in canning products such as tomatoes, baking tortillas, producing specialty cheeses, and fermenting wine.	• Baker • Butchers & meat cutter • Enologist • Cook • Kitchen worker • Machinist
Distribution	The processes related to distribution get the food products to the store shelves. In an effort to ensure quality and appropriate supply levels, communications is central to these processes.	• Machinist • Truck driver • Communications specialist • Logistician • Computer network analyst • Food product sales representative • Cargo freight agent • Agricultural inspector • Export Merchant • Customs Inspector • Purchasing agent & buyer

The diagram in **Figure 7** illustrates the dynamics in the Food Chain Vital Cycle. The four segments are linked together by the manifold processes (represented in the yellow arrows) that begin in the field and result in food products arriving in the hands of consumers. Central to this cycle is the element of innovation that infuses the cycle at each segment with new products, new processes, new materials and increased efficiencies. Finally, the vital role of consumer demand cannot be overlooked in this system: innovation is both the product and the driver of consumer demand. Consumer demand is driven by the demands for quality, convenience, variety and by the perception of limited environmental impact. Examples of technological advances that are spurring on the Food Chain Vital Cycle at each segment are depicted in **Figure 8**.

Figure 7 Food Chain Vital Cycle

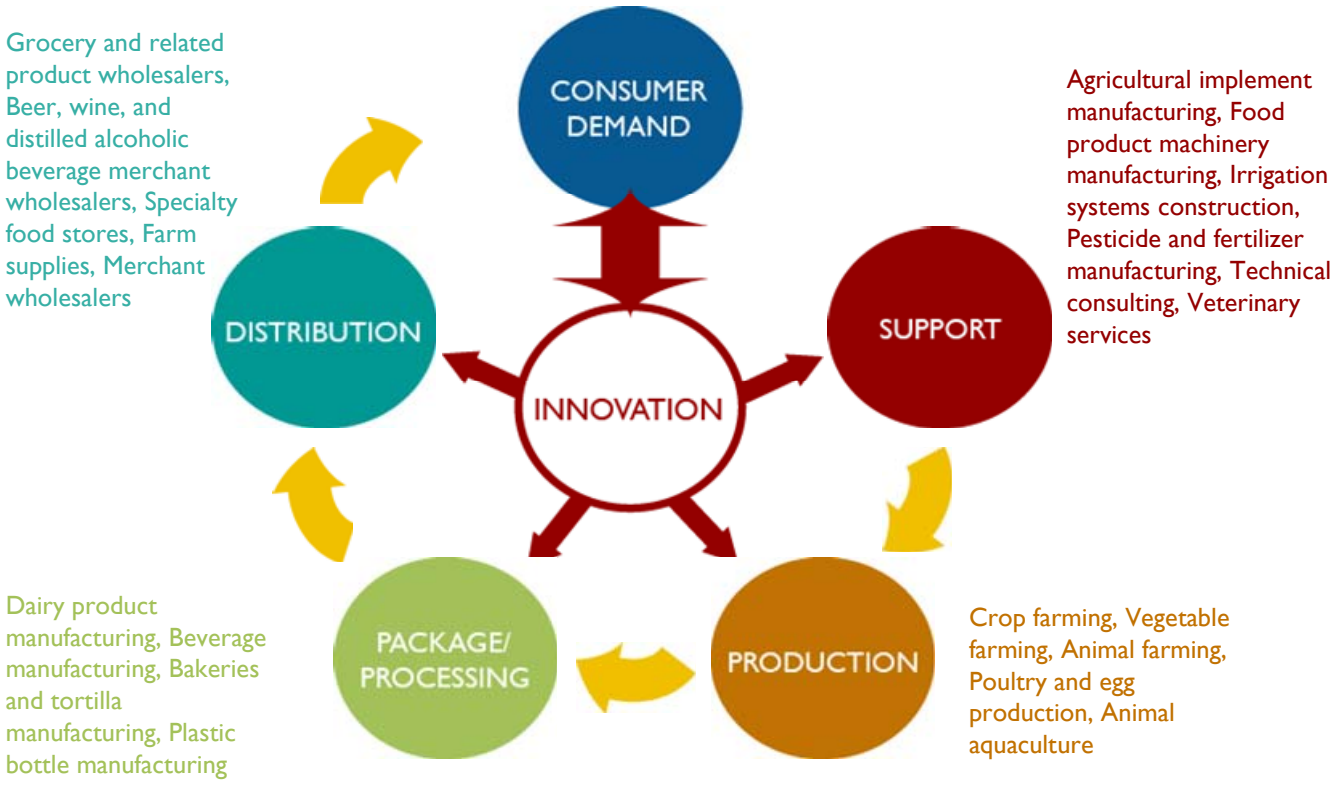
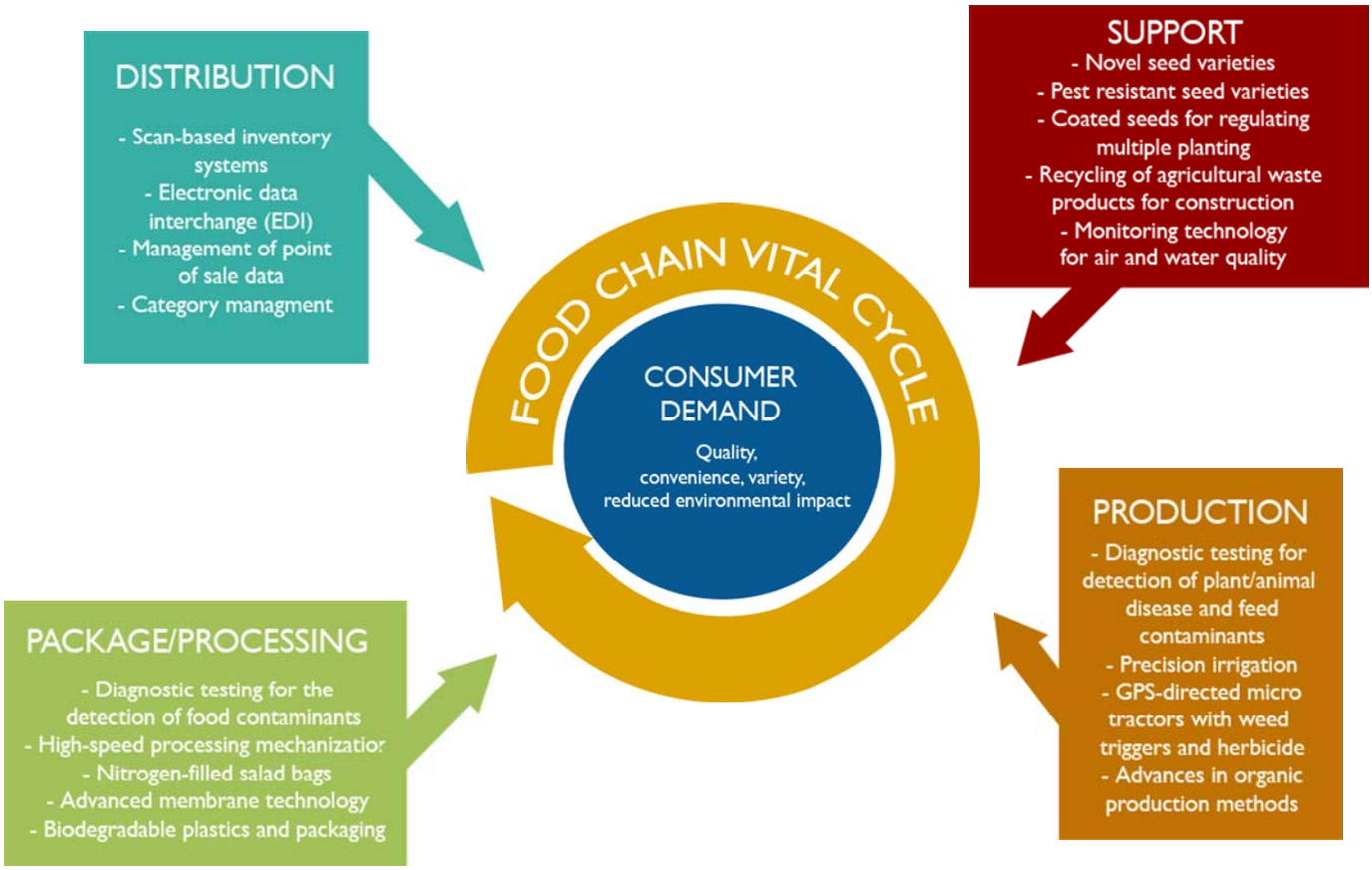


Figure 8 Innovation in the Food Chain Vital Cycle



II. The Food Chain as Cluster of Opportunity

The Food Chain plays an important role in the California economy. Constituting 5.7 percent of the state's workforce, the Food Chain is more concentrated in California than in the nation as a whole where Food Chain activities represent 4.3 percent of employment. Below we present the results of the statewide analysis, which are followed by the findings from each of the nine California Economic Strategy Panel regions.

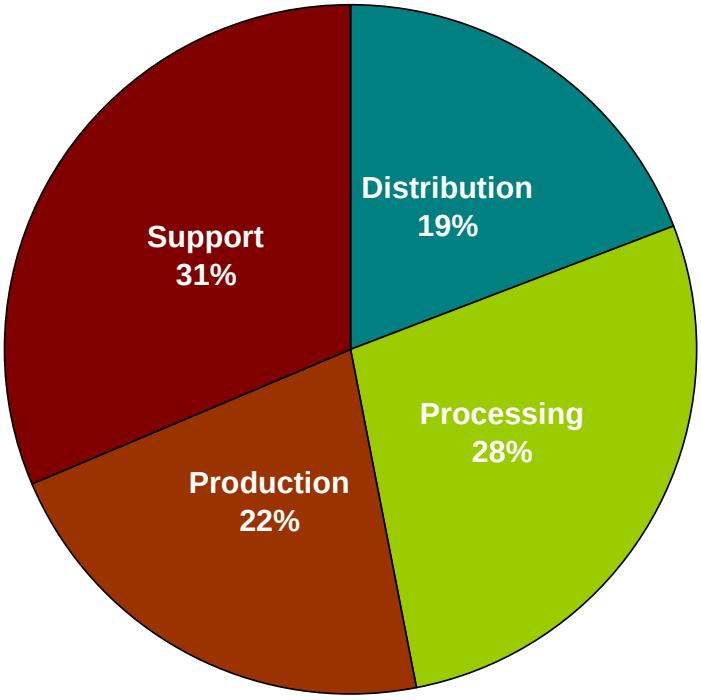
The report's industry and employment analysis is based on data from the Quarterly Census of Employment & Wages (QCEW) collected by the US Bureau of Labor Statistics (BLS). The analysis of the individual nine regions utilized the California Regional Economies Employment (CREE) Series produced by the California Employment Development Department's (EDD) Labor Market Information Division. In order to make national comparisons and to establish longer term trends back to 1990, the statewide analysis is based on the Bureau of Labor Statistics' QCEW file. All reported employment totals have been rounded for the purpose of ensuring data confidentiality.

Statewide Profile

In addition to its broad array of products, California's Food Chain consists of a variety of activities. The four categories of the Food Chain (Support, Production, Processing, and Distribution) all have strong representation in the state while at the same time variations exist in recent growth in employment and wages as well as in occupational mix.

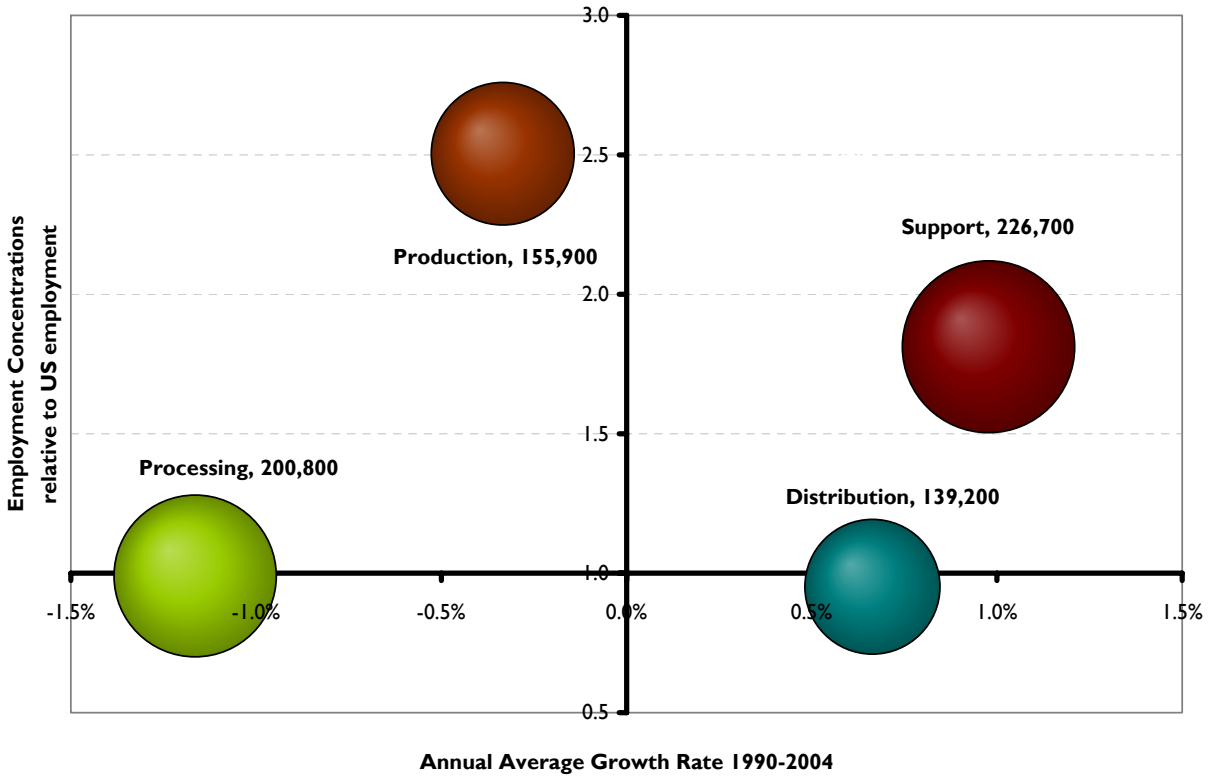
Over three-quarters of the state's Food Chain employment is outside of Production. Support activities make up the bulk with 31 percent, employment in Processing makes up 28 percent and in Distribution, 19 percent (**Figure 9**). California's Support segment primarily consists of Support Activities for Crop Production, Veterinary Services, and Water & Sewer Line & Related Structures Construction. The Processing segment is mainly made up of Bakeries & Tortilla Manufacturing, Wineries, and Fruit & Vegetable Preserving & Specialty Food Manufacturing. The bulk of Production employment is in Fruit & Tree Nut Farming (e.g., grapes and almonds), Cattle Ranching & Farming, and Vegetable & Melon Farming. Distribution consists primarily of Grocery & Related Product Wholesalers & Specialty Food Stores.

Figure 9 Composition of California Food Chain 2004



Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

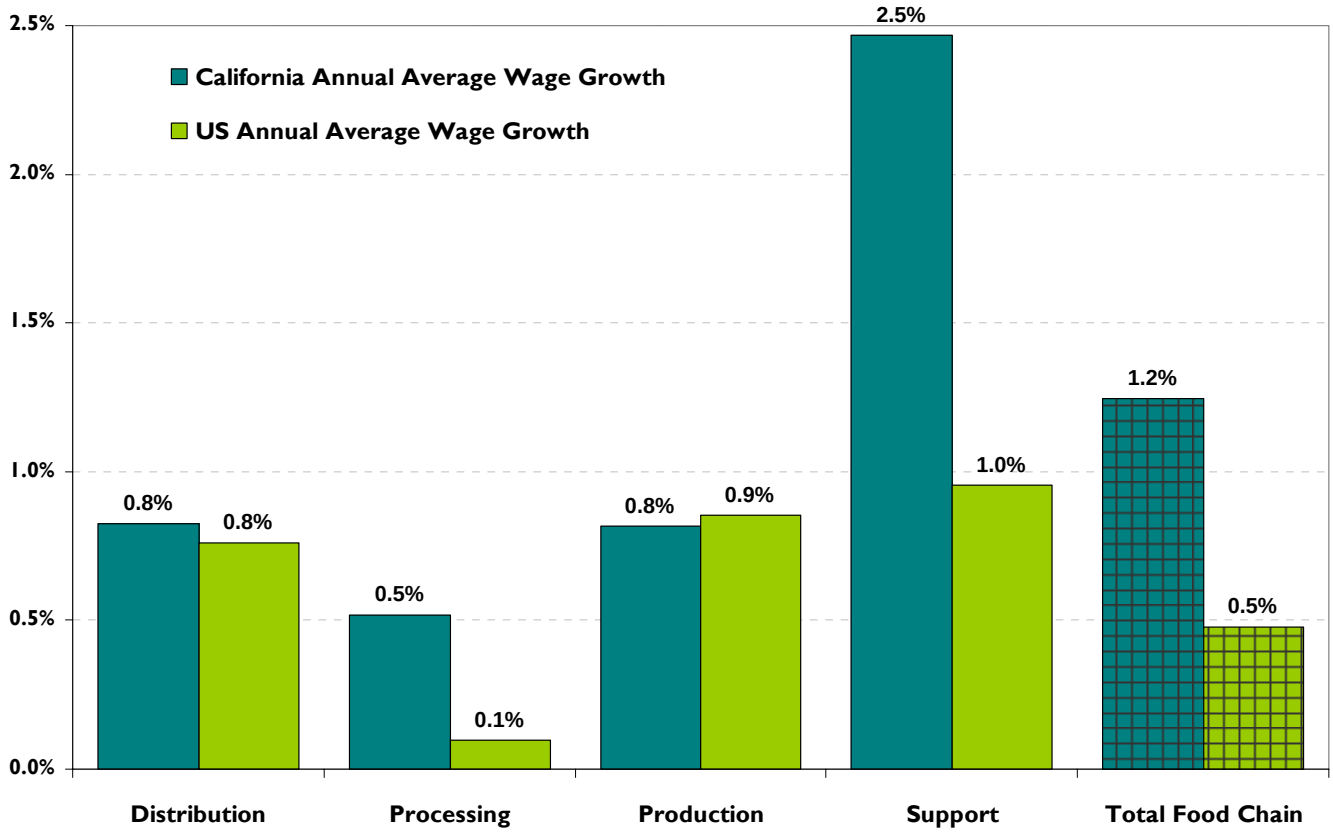
Figure 10 Growth in California Food Chain Cluster 1990-2004



Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

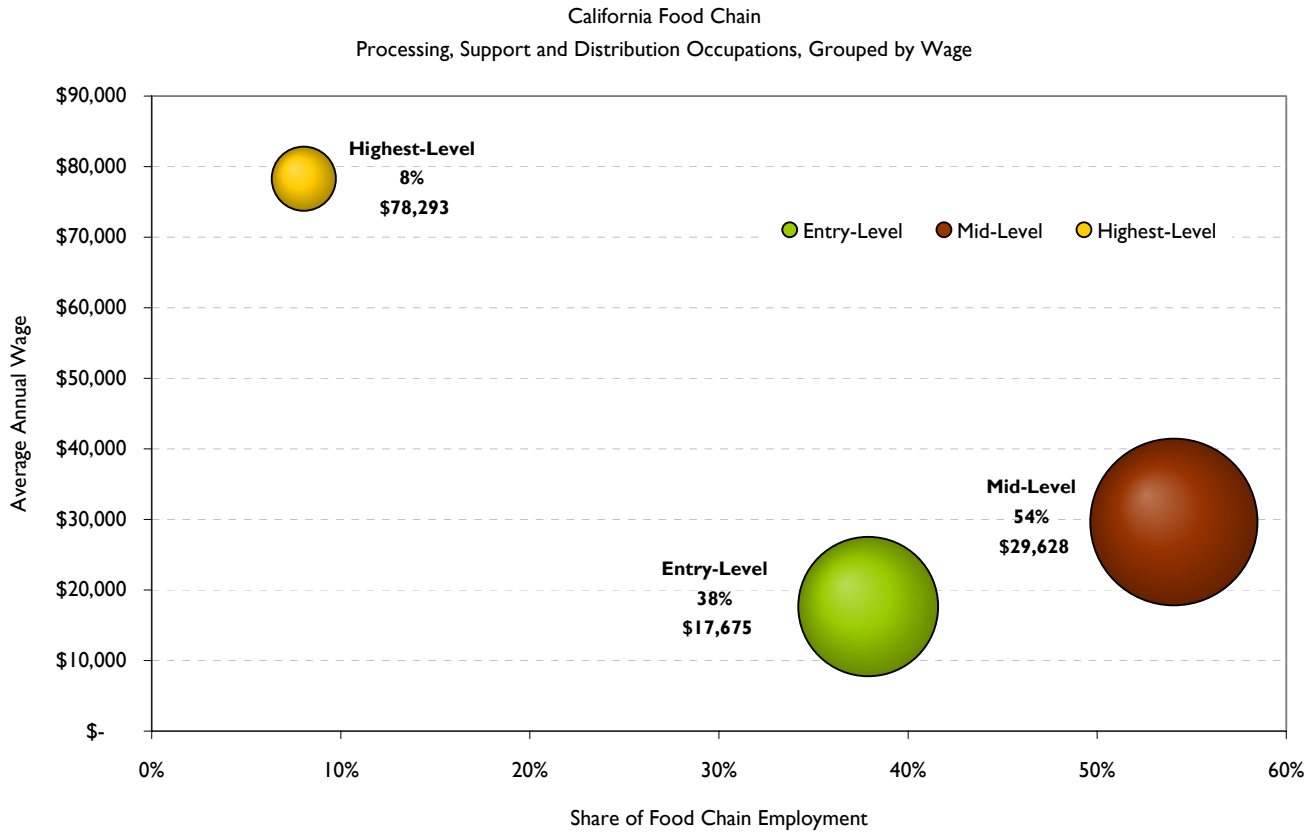
Comparing California's Food Chain to the nation's food industry, California has similar employment concentrations in Processing and Distribution (**Figure 10**). However, the state's employment shares in Support are almost twice the nation's; and in Production, California's shares are two-and-a-half-times that of the country (as illustrated along the y-axis of Figure 10). Furthermore, in three of the four categories, wage increases in California have exceeded increases at the national level between 2000 and 2004 (**Figure 11**). In the lead, earnings in Support grew at an average annual rate of 2.5 percent in California and of one percent in the nation. California's earnings growth reported during this period can be explained, in part, by two increases to the state's minimum wage from $5.75 to $6.75 per hour over this period. In other cluster dynamics, Support and Distribution have experienced modest employment growth (0.9% and 0.7%) between 1990 and 2004 (**Figure 10**).

Figure 11 California Food Chain Cluster Wage Growth 2000-2004



Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Figure 12 Food Chain Occupational Levels & Earnings



Source: Occupational Employment Statistics, California Employment Development Department, Labor Market Information Division

Typical earnings in the Food Chain are low relative to other industries; however, cluster earnings are on the rise as described above, and there is evidence of career potential in some categories. Fifty-four percent of California's Food Chain workforce earns on average $29,628, which is 33 percent lower than the state average of $44,021 for private employment in all industries (US average Food Chain wage for 2004 is $39,127). One-third of the workforce is employed in the lowest level jobs while eight percent is earning an average of $78,293 in the highest level occupations (**Figure 12**).

In view of the distribution of occupations across the four categories represented in **Figure 13**, there appears to be similar occupational mixes and broad potential for earnings mobility. For instance, in Processing and Distribution, it is conceivable to move from a packer or laborer to a material mover or packing machine operator. More importantly, as the processes advance technologically in the Food Chain, higher skills are required of its workforce. According to industry sources, skills currently in strong demand include computer skills, mechanics/fine mechanics, and forklift operation. Other critical skills in need are English proficiency and leadership skills for leading multigenerational teams.

Figure 13 Food Chain Occupations & Income levels

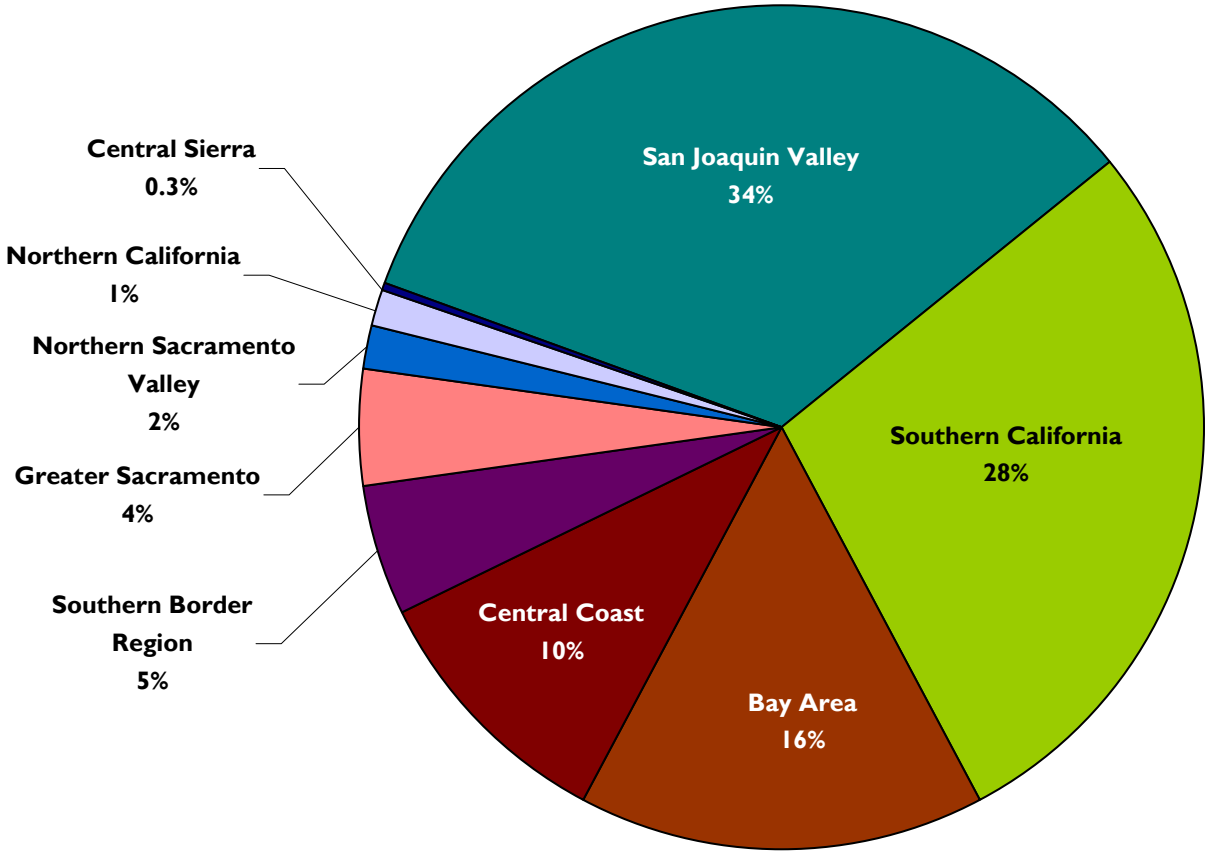
	ENTRY-LEVEL			MID-LEVEL			HIGHEST-LEVEL		
	Occupation	Average Wage	Jobs	Occupation	Average Wage	Jobs	Occupation	Average Wage	Jobs
DISTRIBUTION	Packers and packagers, hand	$ 19,083	3,130	Laborers and freight, stock, and material movers, hand	$ 24,543	11,620	Sales representatives, wholesale and manufacturing, except technical and scientific products	$ 58,460	8,870
	Combined food preparation and serving workers, including fast food	$ 20,101	3,010	Truck drivers, heavy and tractor-trailer	$ 38,609	7,830	General and operations managers	$ 103,497	2,900
	Food preparation workers	$ 19,491	1,860	Cashiers	$ 20,665	7,450	First-line supervisors/managers of non-retail sales workers	$ 67,879	1,290
	Graders and sorters, agricultural products	$ 17,219	1,270	Driver/sales workers	$ 32,820	6,470	Sales managers	$ 93,336	1,230
				Sales representatives, wholesale and manufacturing, except technical and scientific products	$ 49,735	4,610			
PROCESSING	Packers and packagers, hand	$ 19,381	4,670	Packaging and filling machine operators and tenders	$ 26,112	17,920	Sales representatives, wholesale and manufacturing, except technical and scientific products	$ 58,059	3,710
	Production workers, all other	$ 18,405	4,480	Bakers	$ 23,964	8,150	General and operations managers	$ 111,129	2,640
	Cashiers	$ 17,944	2,770	Laborers and freight, stock, and material movers, hand	$ 25,450	6,970	Industrial production managers	$ 81,970	1,460
	Food batchmakers	$ 19,679	2,550	Food batchmakers	$ 25,260	6,440	First-line supervisors/managers of mechanics, installers, and repairers	$ 62,659	970
				Industrial machinery mechanics	$ 40,796	2,320			
SUPPORT	Packers and packagers, hand	$ 16,879	7,760	Veterinary technologists and technicians	$ 30,690	6,210	Veterinarians	$ 90,310	3,870
	Graders and sorters, agricultural products	$ 17,700	7,060	Receptionists and information clerks	$ 24,336	4,250	General and operations managers	$ 88,940	1,300
	Agricultural equipment operators	$ 19,682	4,300	First-line supervisors/managers of farming, fishing, and forestry workers	$ 29,098	3,670	Farm, ranch, and other agricultural managers	$ 60,127	380
	Laborers and freight, stock, and material movers, hand	$ 17,817	1,790	Farm equipment mechanics	$ 17,219	1,600	Sales representatives, wholesale and manufacturing, except technical and scientific products	$ 69,796	410

Source: Occupational Employment Statistics, California Employment Development Department, Labor Market Information Division

Regional Profiles

Although roles vary, every California region contributes to the state's Food Chain. Regions concentrate in different segments of the Food Chain, experience different growth dynamics, and produce different products. In some regions, the Food Chain is the core economic driver. As **Figure 14** illustrates, almost two-thirds of Food Chain employment is located in the two regions of San Joaquin Valley and Southern California. These top players are followed by the Bay Area (16%) and Central Coast (10%). Each of the remaining regions accounts for five percent or less of the state's Food Chain workforce.

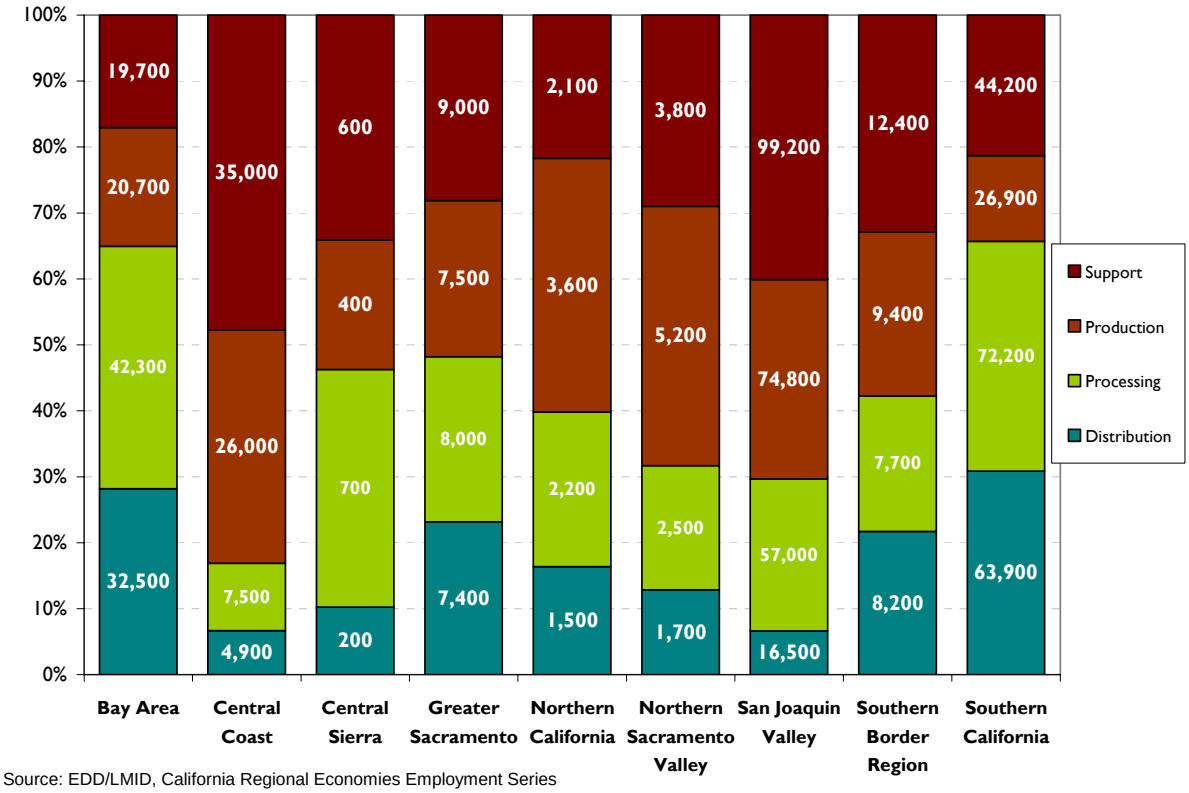
Figure 14 Regional Distribution of California Food Chain Employment 2004



Source: EDD/LMID, California Regional Economies Employment Series

The concentration of Food Chain activities varies by region. As **Figure 15** illustrates, although San Joaquin Valley and Southern California represent the largest shares of Food Chain employment, most of San Joaquin Valley's workforce is in Support and Production, while in Southern California, most Food Chain employment is in Processing and Distribution. Similar to Southern California, although with roughly half the number of Food Chain jobs, Bay Area Food Chain employment is also concentrated in Processing and Distribution. This pattern exhibits the different roles filled by primarily urban and primarily rural regions. The numbers in the bars represent annual average employment in 2004.

Figure 15 Distribution of Regional Food Chain Employment 2004



Source: EDD/LMID, California Regional Economies Employment Series

The Central Coast and Central Sierra regions have led the state in both employment and wage growth in the state Food Chain. In general, annual employment growth in Food Chain industries between 2001 and 2004 in the state has been limited. Nonetheless, this period has witnessed consistent wage increases across all four categories and in all but two regions. These regional patterns of employment and wage trends from 2001 to 2004 are represented in **Figure 16.** Overall, the state Food Chain experienced annual wage increases of two percent in this period. Central Sierra and San Joaquin Valley are leading in wage growth each with an average annual rate of three percent. For every region, the segments with the highest employment shares are experiencing earnings growth even where employment is dropping. As mentioned in the statewide analysis, gains in earnings depicted in **Figure 16** could be attributed in part to the increase in the minimum wage that took effect in January 2001 and 2002 that raised wages from $5.75 to 6.75. In terms of jobs, Central Coast and Central Sierra are leading the state in Food Chain employment growth each with an average annual rate of four percent.

Figure 16 Regional Employment Growth & Wage Increases by Food Chain Category 2001-2004

	Workforce	Distribution		Processing		Production		Support		Total Food Chain	
	2004	Jobs	$	Jobs	$	Jobs	$	Jobs	$	Jobs	$
San Joaquin Valley	247,500	2%	0%	3%	2%	-1%	2%	-2%	3%	**0%**	**3%**
Southern California	207,300	0%	1%	-1%	2%	0%	0%	0%	2%	**-1%**	**1%**
Bay Area	115,200	-1%	1%	-2%	2%	-4%	0%	1%	-1%	**-1%**	**1%**
Central Coast	73,400	1%	3%	-5%	0%	3%	1%	8%	0%	**4%**	**0%**
Southern Border Region	37,700	0%	4%	0%	0%	-2%	3%	-2%	2%	**-1%**	**2%**
Greater Sacramento	31,900	0%	3%	-2%	3%	-5%	-1%	2%	2%	**-1%**	**2%**
Northern Sacramento Valley	13,100	1%	3%	-1%	1%	-3%	1%	4%	0%	**0%**	**1%**
Northern California	9,500	-3%	2%	-5%	2%	-2%	0%	0%	4%	**-2%**	**1%**
Central Sierra	1,900	-3%	6%	7%	2%	-5%	4%	10%	2%	**4%**	**3%**
California Totals	**737,500**	**0%**	**1%**	**0%**	**2%**	**-1%**	**1%**	**0%**	**2%**	**0%**	**2%**

Source: EDD/LMID, *California Regional Economies Employment Series*

Although overall employment in California's Food Chain cluster was limited between 2001 and 2004, many Food Chain industries experienced an increase in both employment and earnings during this period of economic slow-down, as is outlined in **Figure 17**. Ordered by net employment gains, Grocery & Related Product Wholesalers and Wineries top the list of industry drivers with 4,700 and 4,200 net new jobs respectively; and Wineries reported the highest annual percentage gains in earnings of 3.9 percent (totals have been rounded). Average annual job growth was highest in Hay Farming with a rate of 14.2 percent. Of these growth industries, Beer, Wine, & Distilled Alcoholic Beverage Merchant Wholesalers reported the highest average annual wages of $55,813. Six of the fourteen growth industries reported annual earnings above the statewide cluster total of $30,469. Next, we will take a more detailed look at each individual region.

Figure 17 Growth Industries in California's Food Chain

	Employment	Average Wages	Average Annual Wage Growth	Average Annual Employment Growth	Net Employment Gains
	2004	2004	2001-2004	2001-2004	2001-2004
Grocery & Related Product Wholesalers	80,000	$ 43,010	1.4%	2.1%	4,700
Wineries	23,700	$ 46,100	3.9%	6.7%	4,200
Veterinary Services	26,900	$ 29,525	2.8%	4.3%	3,200
Vegetable and Melon Farming	35,600	$ 24,709	1.8%	2.8%	2,800
Cattle Ranching and Farming	22,100	$ 25,223	0.8%	1.7%	1,100
Water and Sewer Line and Related Structures Construction	18,100	$ 53,522	0.1%	2.0%	1,000
Dairy Product Manufacturing	16,500	$ 52,110	0.0%	2.0%	900
Hay Farming	2,500	$ 24,967	0.2%	14.2%	800
Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	12,700	$ 55,813	2.3%	1.9%	700
Animal Slaughtering and Processing	20,600	$ 31,216	2.3%	0.9%	600
Support Activities for Crop Production	154,400	$ 17,866	2.4%	0.1%	300
Plastics Bottle Manufacturing	4,700	$ 36,988	0.1%	1.4%	200
Oilseed and Grain Farming	2,500	$ 25,687	2.5%	1.1%	100
Support Activities for Animal Production	2,900	$ 24,022	3.2%	0.8%	100
California Food Chain Total	737,500	$ 30,469	1.6%	-0.3%	-6,800

Source: EDD/LMID, *California Regional Economies Employment Series*

San Joaquin Valley

While the San Joaquin Valley accounts for 35 percent of California's Food Chain employment (2004), the region generated nearly $15 billion dollars in food production, making up 57.5 percent of the state's total production value in 2004. [27]

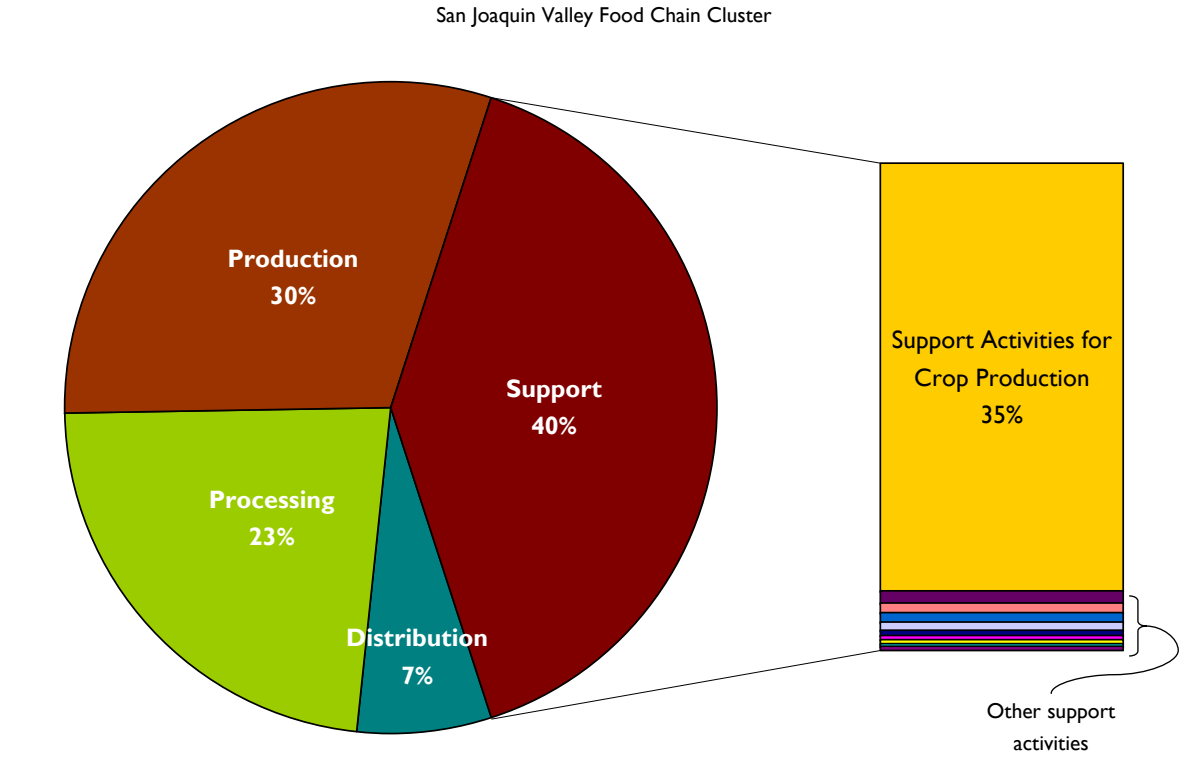
The San Joaquin Valley is California's leading producer in all of the region's chief commodities listed in **Figure 18**. Of the region's top ten commodities, milk products generate $2.7 billion and make up the largest share (29%) of San Joaquin Valley's total production value. Following milk, almonds account for over $2 billion and 13.9 percent of the region's total production value.

Seventy-percent of San Joaquin Valley's Food Chain employment is roughly evenly distributed between Support and Production (**Figure 19**). The region's

Figure 18 San Joaquin Valley Leading Food Commodities

San Joaquin Valley Top Ten Commodities 2004		
Share of state Food Chain		57.5%
Total value of production $million		$ 14,954.0
	$million	Regional share
Milk, All	$ 4,342.9	29.0%
Almonds, All	$ 2,084.6	13.9%
Grapes, All	$ 1,902.1	12.7%
Cattle, All	$ 1,507.2	10.1%
Citrus, All	$ 984.2	6.6%
Poultry, All	$ 783.0	5.2%
Tomatoes, All	$ 726.7	4.9%
Hay, All	$ 560.9	3.8%
Pistachios	$ 368.0	2.5%
Peaches, All	$ 242.9	1.6%

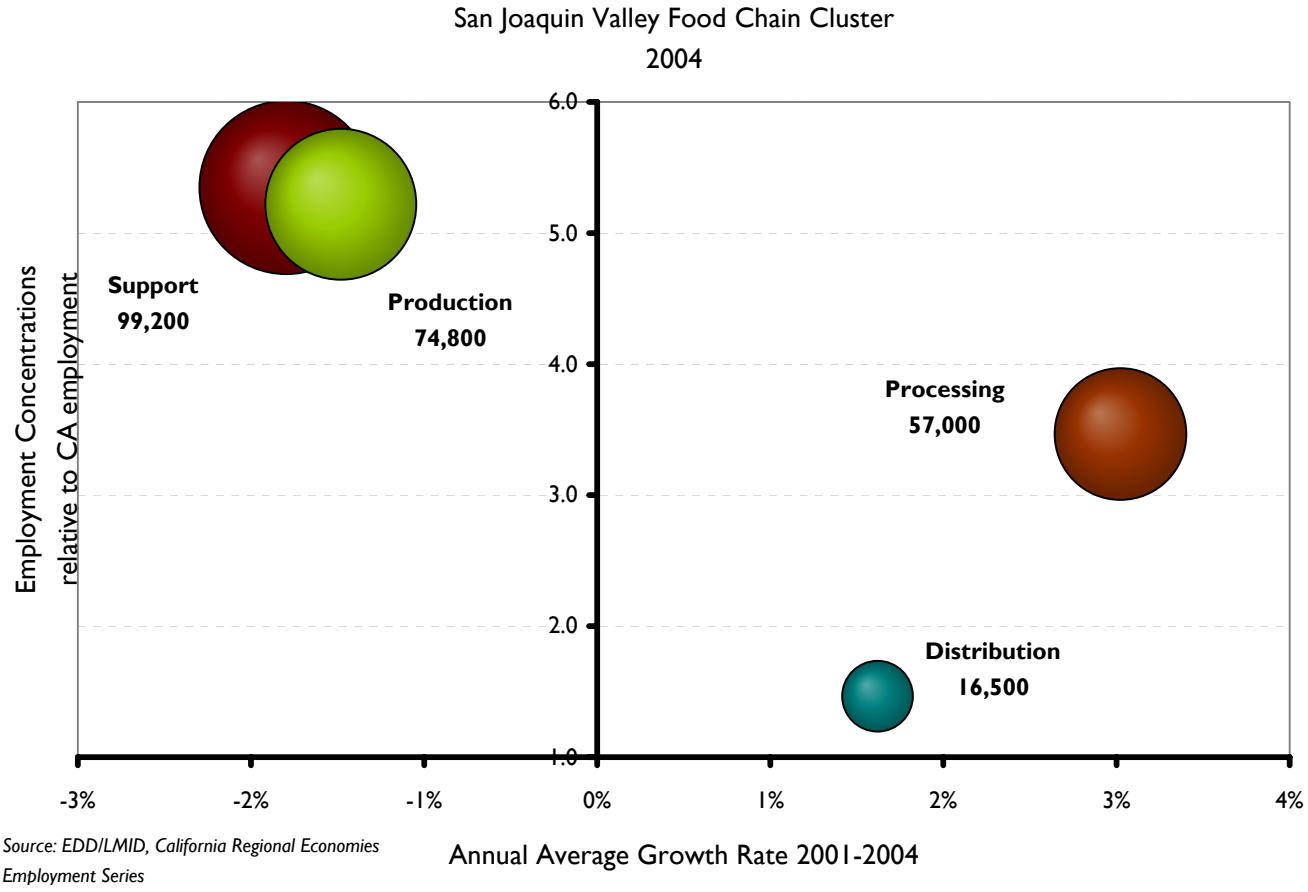
Figure 19 San Joaquin Valley Food Chain Segments



Source: EDD/LMID, California Regional Economies Employment Series

Support employment is primarily in Support Activities for Crop Production, which makes up 34 percent of the region's total Food Chain workforce. Production employment is distributed across more industries and mainly in Fruit & Tree Nut Farming, Cattle Ranching & Farming, Vegetable & Melon Farming, and Poultry & Egg Production.

Figure 20 San Joaquin Valley's Food Chain Cluster



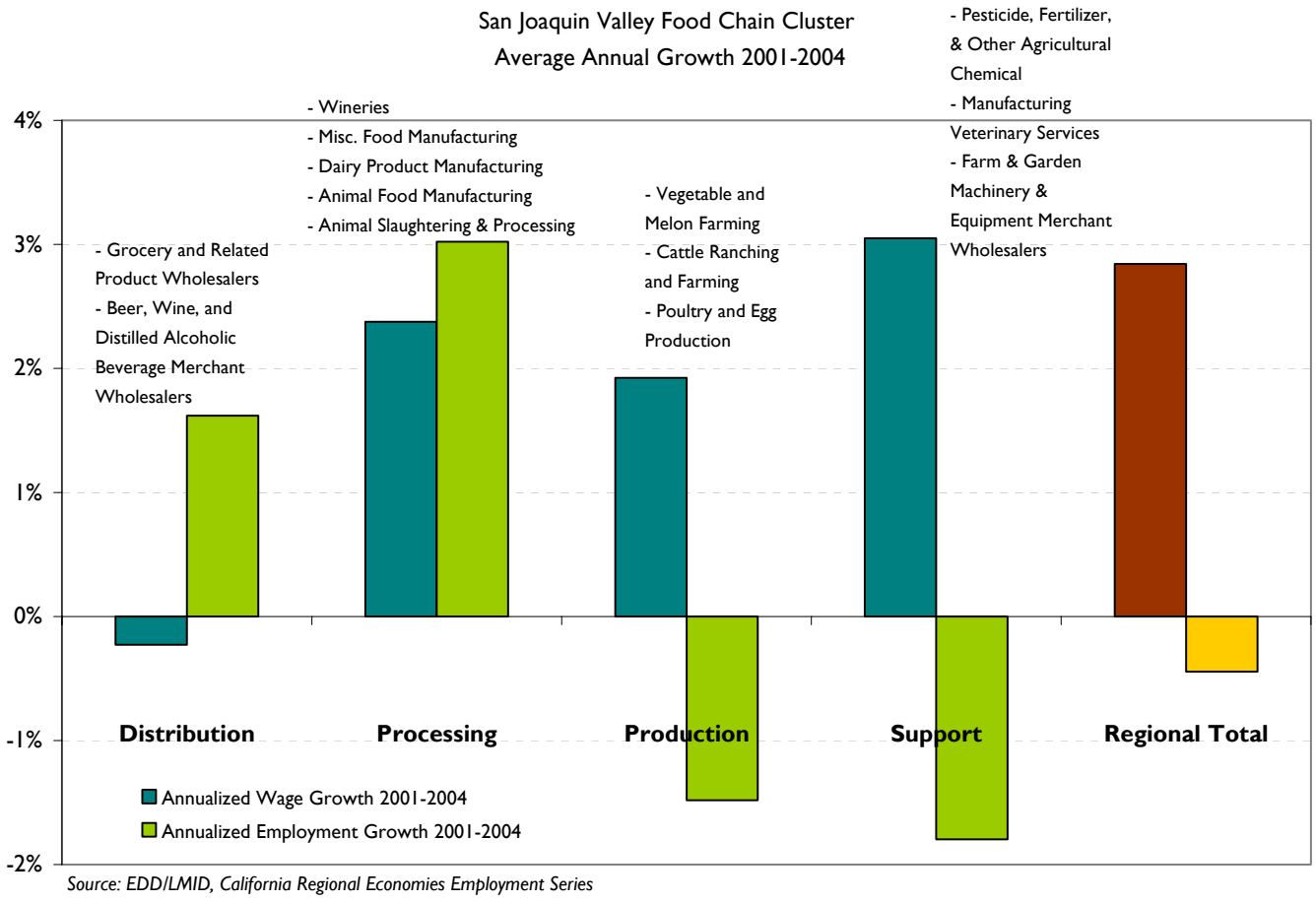
Source: EDD/LMID, California Regional Economies Employment Series

Employment in all four Food Chain categories is more heavily concentrated in San Joaquin Valley than the state as a whole. In fact, as illustrated in **Figure 20**, Support and Production are each roughly five times more concentrated in this region than in the state. In terms of employment growth between 2001 and 2004, Support and Production have seen modest losses while Processing and Distribution have expanded employment.

Overall, San Joaquin Valley's Food Chain workforce has experienced the strongest wage increases. As depicted earlier in **Figure 17**, the region's Food Chain wages increased by 9 percent between 2001 and 2004 (this was also the case for Central Sierra). **Figure 21** illustrates wage and employment growth across all four segments. The specific industries experiencing both job and wage gains in the observed period are listed next to the bars.[28]

Processing has experienced both employment and wage growth. Gains in jobs and wages were witnessed in the region in Wineries, Other Food Manufacturing (e.g., snack foods, coffee, tea, dressings, spices), Dairy Product Manufacturing, and Animal Food Manufacturing. While Support and Production have shed jobs, earnings have increased over the same time period. This suggests that jobs are requiring higher skill-levels and producing higher value. Although wages dropped in Distribution, employment was up; employment and wages increased in Grocery & Related Product Wholesalers and in Beer, Wine & Distilled Alcoholic Beverage Merchant Wholesalers.

Figure 21 San Joaquin Valley Food Chain Employment & Wage Growth



Source: EDD/LMID, California Regional Economies Employment Series

Southern California

With 28 percent, the Southern California region represents the second largest share of California's Food Chain employment. Although Production is not at the core of Southern California's Food Chain activities, the region's agricultural production was valued at $2.3 billion in 2004, making up nine percent of the state's total food production value.[29]

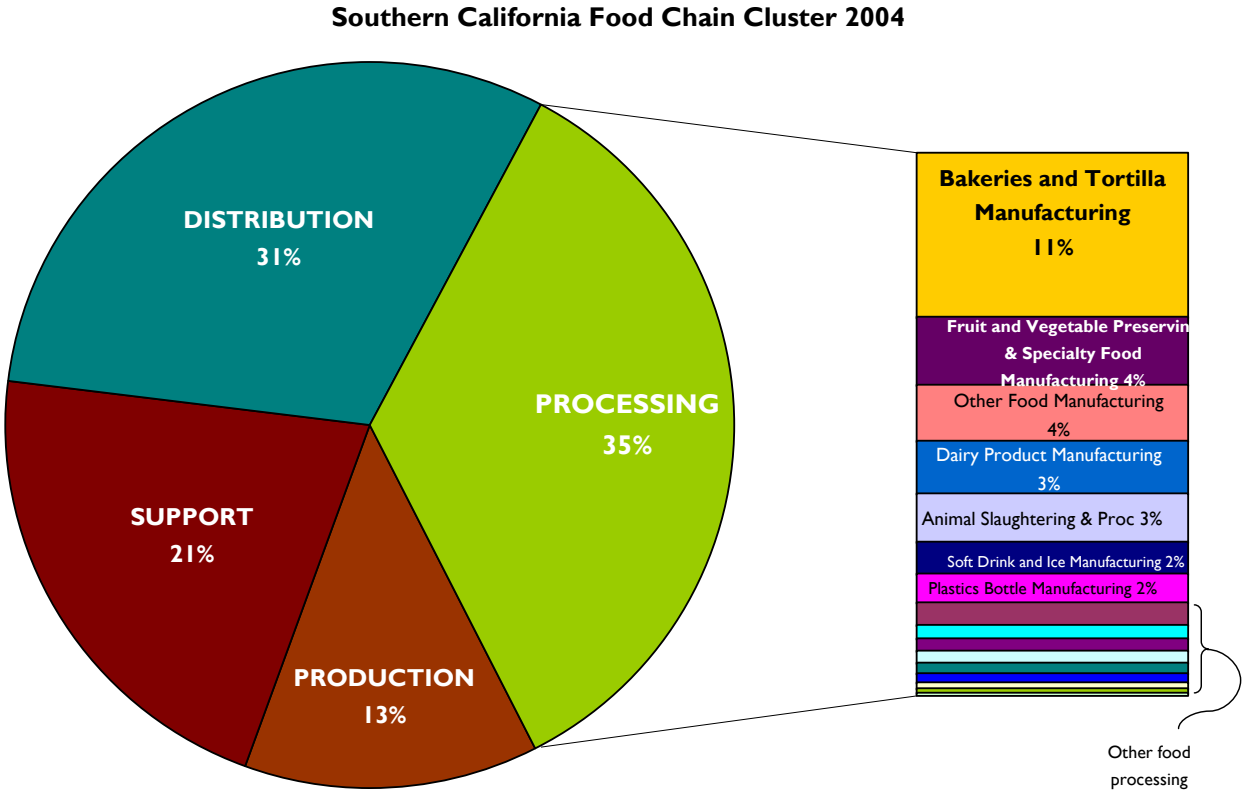
Southern California's milk and dairy production generated $621.1 million in 2004. The region's other leading commodities include fresh and processed strawberries, lemons, avocados, celery, and grapes.

Two-thirds of Southern California's Food Chain employment is in Processing and Distribution **(Figure 23)**. Employment in Distribution covers a range of activities. Bakeries & Tortilla manufacturing make up the largest share of Processing

Figure 22 Southern California Leading Commodities

Southern California Top Ten Commodities 2004		
Share of state Food Chain		9.0%
Total value of production $million	$	2,338.5
	$million	Regional share
Milk	$ 621.1	26.6%
Strawberries	$ 416.9	17.8%
Lemons	$ 211.1	9.0%
Avocados	$ 190.4	8.1%
Celery	$ 122.8	5.3%
Grapes, Table	$ 112.4	4.8%
Eggs	$ 108.8	4.7%
Peppers	$ 83.7	3.6%
Tomatoes	$ 71.7	3.1%
Cattle, All	$ 71.0	3.0%

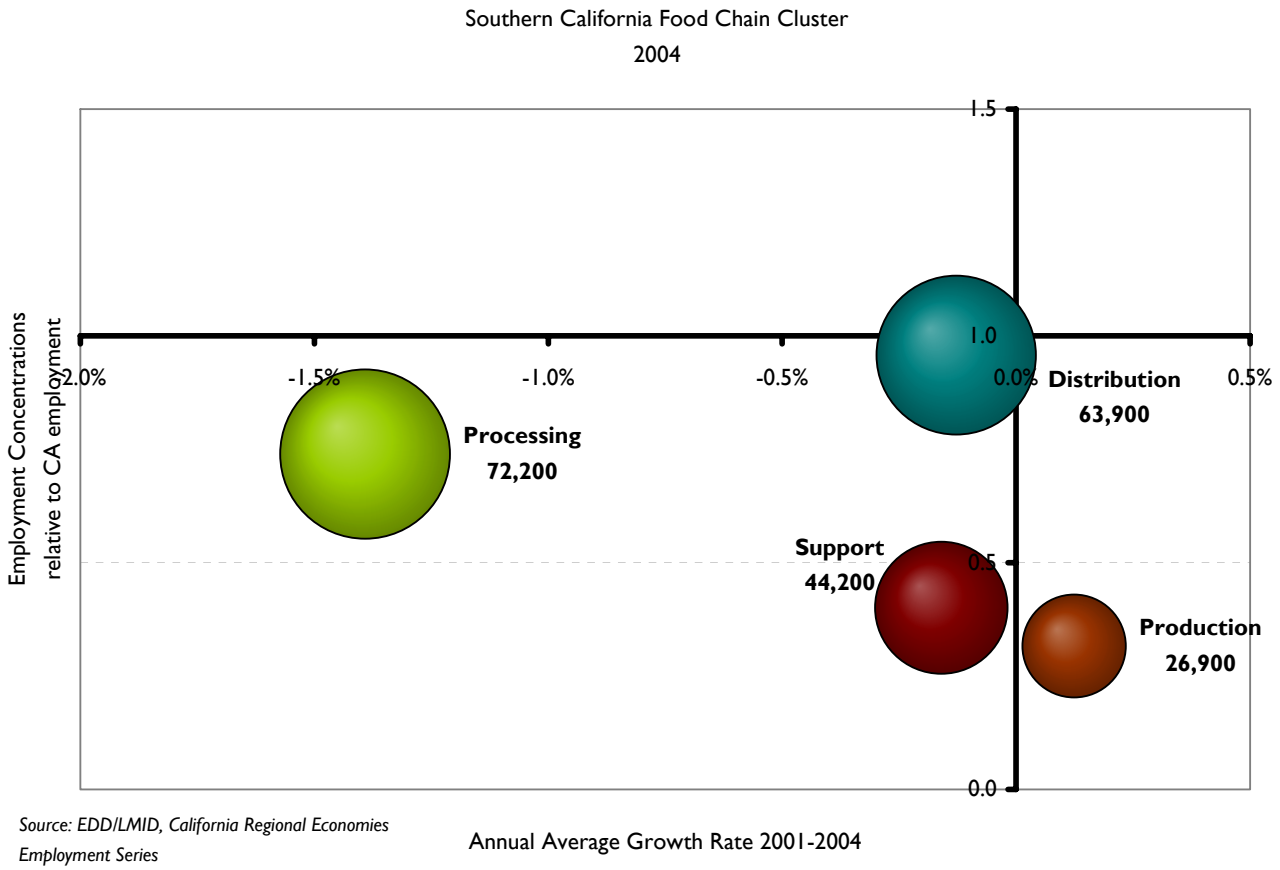
Figure 23 Southern California Food Chain Segments



Source: EDD/LMID, California Regional Economies Employment Series

employment with 11 percent. This is followed by manufacturing of Fruit & Vegetable Preserving & Specialty Foods, Other Food (includes snacks, coffee, dressings, spices, etc.), Dairy Products, and Beverages. Beverage manufacturing in Southern California consists primarily of soft drinks & ice followed by breweries and wineries. The region's Distribution employment is primarily in Grocery and Related Product Wholesalers (67%) and Specialty Food Stores (25%).

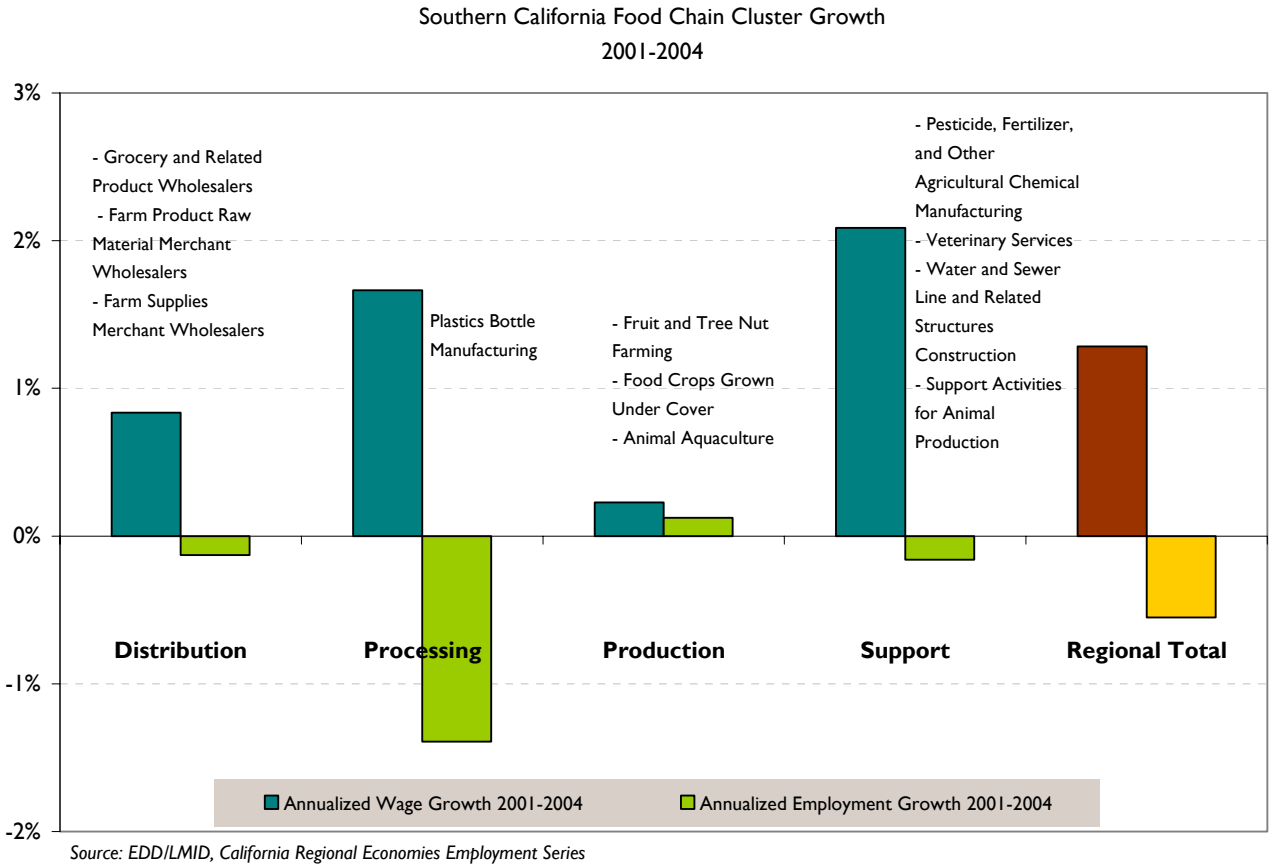
Figure 24 Southern California Food Chain Cluster



Source: EDD/LMID, California Regional Economies Employment Series

Despite the fact that Southern California accounts for the second largest share of the state's Food Chain workforce, the region's economy is not dominated by Food Chain activities **(Figure 24)**. Employment growth has been flat between 2001 and 2004, yet earnings have seen modest increases. Represented in **Figure 25**, wages in Support grew annually by two percent over the observed period, similar to the statewide Food Chain trend **(Figure 17)**. Earnings and job gains in Support have been mainly in Veterinary Services, Pesticide, Fertilizer & Other Agricultural Chemical Manufacturing, and Food Product Machinery Manufacturing. In Processing, wage and job gains were made in the category of Other Food Manufacturing, which comprises snack foods, coffee, dressing spices and other miscellaneous food items.

Figure 25 Southern California Food Chain Employment & Wage Growth



Source: EDD/LMID, California Regional Economies Employment Series

Bay Area

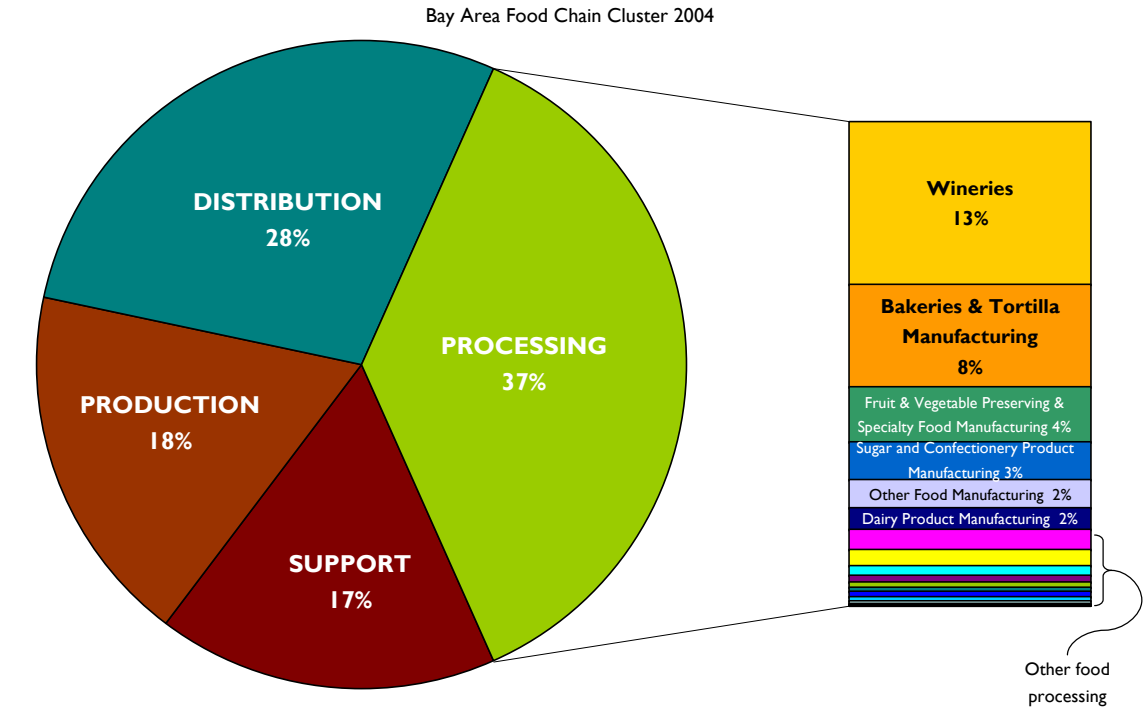
Sixteen percent of California's Food Chain workforce is located in the Bay Area region. Similar to Southern California in its urban character, the Bay Area's Food Chain activities are mainly in Processing and Distribution. The wine industry's leading role in the region is evident in all segments of the Bay Area's Food Chain, and the realm of specialty foods is also a driver in multiple Food Chain segments.

In terms of commodity production, the Bay Area contributed 6.6 percent to the state's total in 2004; and 53 percent of the region's production value was generated in wine grapes **(Figure 26)**.[30] Though they trail grapes at a distance, other leading products in the region include strawberries, milk, raspberries, lettuce and other commodities.

Figure 26 Bay Area Leading Food Commodities

Bay Area Top Ten Commodities 2004		
Share of state Food Chain		6.6%
Total value of production $million		$1,721.6
	$million	Regional share
Grapes, Wine	$ 704.0	53%
Strawberries	$ 194.9	9%
Milk, Market	$ 144.8	8%
Raspberries	$ 101.4	4%
Lettuce, all	$ 97.9	4%
Cattle	$ 78.8	4%
Mushrooms	$ 71.0	4%
Livestock & Poultry	$ 56.7	3%
Vegetable crops	$ 55.1	2%
Hay & alfalfa	$ 26.4	2%

Figure 27 Bay Area Food Chain Segments

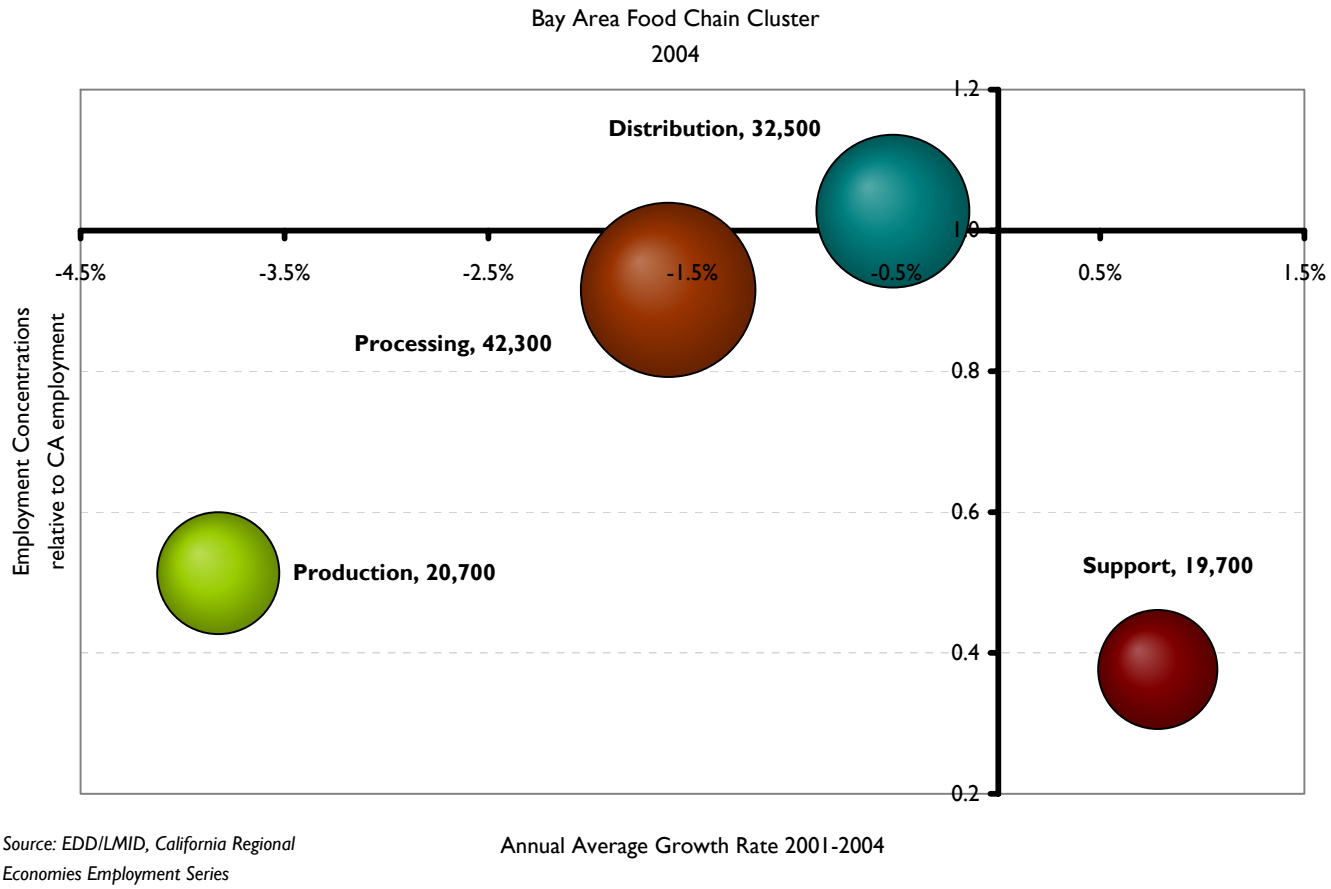


Source: EDD/LMID, California Regional Economies Employment Series

Two-thirds of the Bay Area Food Chain employment is in Processing and Distribution **(Figure 27)** similar to urban Southern California. Wineries alone make up 12 percent of the region's Food Chain workforce. The Bay Area's numerous bakeries account for 8 percent of the region's Food Chain employment while specialty food and chocolate manufacturing follow with 4 and 3 percent, respectively. Employment in Distribution is predominantly related to wholesalers of specialty foods and wine.

Even though the Bay Area's economy is not dominated by Food Chain activities, 15 percent of the region's total workforce is employed in the Food Chain. As **Figure 28** displays, only employment in Distribution is slightly more concentrated in the Bay Area than in the rest of the state. The Bay Area was the region hardest hit by the recent economic downturn following 2000, and this in part helps explain the lack of employment growth witnessed between 2001 and 2004.

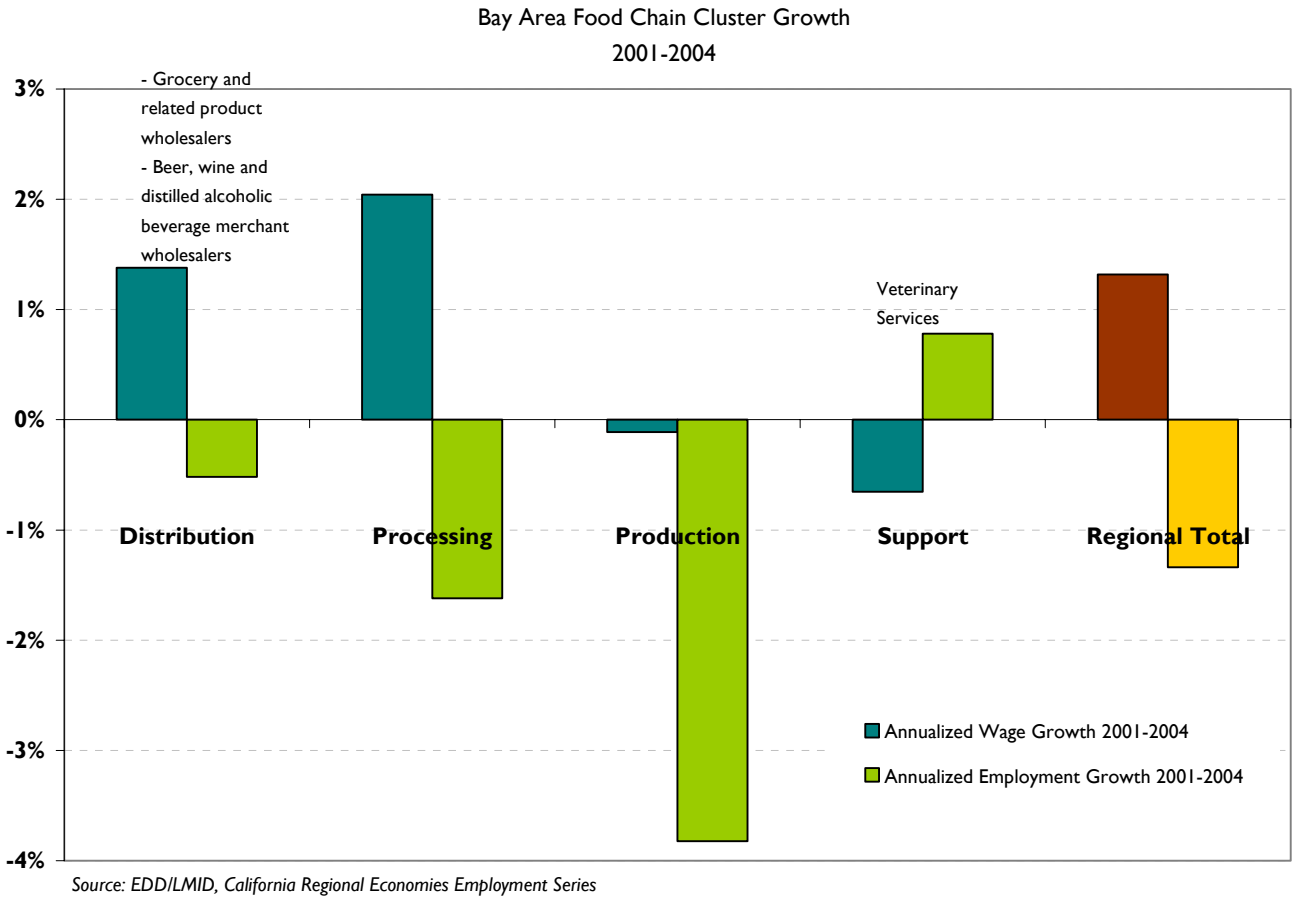
Figure 28 Bay Area Food Chain Cluster



Source: EDD/LMID, California Regional Economies Employment Series

Although jobs were shed, the region experienced increased earnings in its core Food Chain activities: Distribution and Processing **(Figure 29)**. In fact, earnings and net employment rose in Distribution in both, Beer, Wine & Distilled Alcoholic Beverage Merchant Wholesalers as well as in Grocery & Related Product Wholesalers. In Processing, job growth with wage increases was witnessed in Wineries. Despite the net losses in Production jobs, wage and job gains were made in both Cattle Ranching & Farming and in Hay Farming.

Figure 29 Bay Area Food Chain Employment & Wage Growth



Source: EDD/LMID, California Regional Economies Employment Series

Central Coast

The Central Coast region represents ten percent of California's Food Chain workforce. Generating $3.2 billion in 2004, the region accounts for 12.3 percent of the state's total food production value.[31]

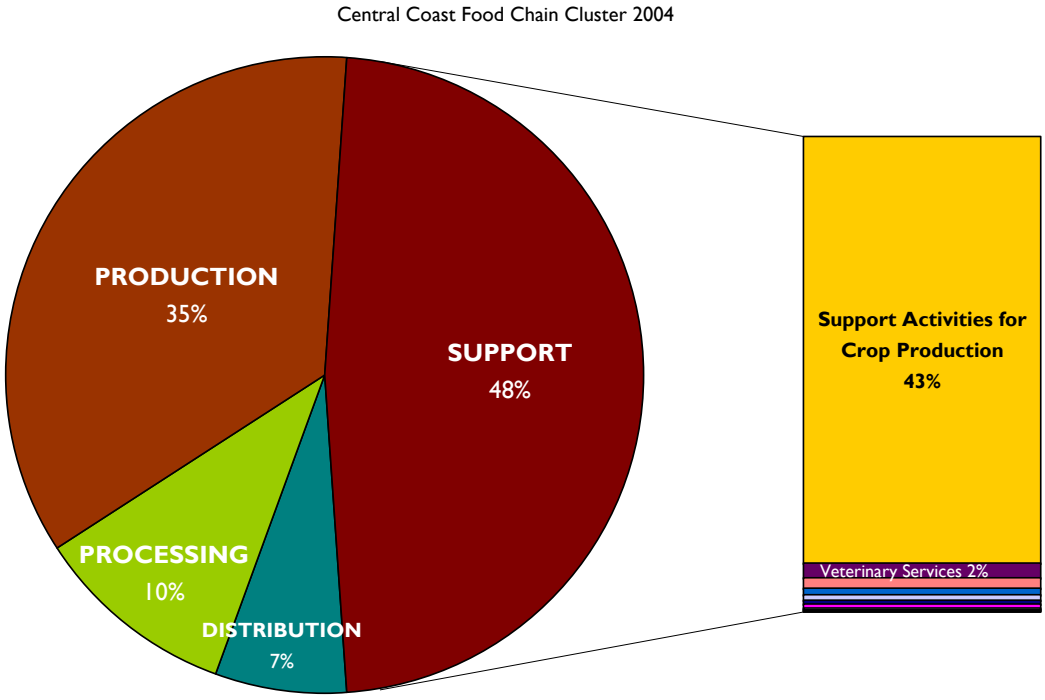
The Central Coast is California's salad bowl. The region generates over $1 billion in leaf and head lettuces alone, $141 million in spring mix salad greens, and $188 million in spinach. In addition to being the state's capital of leafy greens, the Central Coast also surpasses all other regions in production value of broccoli and cauliflower, generating $440 million and $141 million respectively in 2004. Further, the Central Coast is the state's top producer of strawberries ($526.8 million) and mushrooms ($73.7 million).

Figure 30 Central Coast Leading Food Commodities

Central Coast Top Ten Commodities 2004		
Share of state Food Chain		12.3%
Total value of production $million		$ 3,197.8
	$million	Regional share
Lettuce, all	$ 1,049.0	32.8%
Strawberries	$ 526.8	16.5%
Broccoli	$ 440.8	13.8%
Grapes, all	$ 385.2	12.0%
Spinach	$ 187.9	5.9%
Cauliflower	$ 141.0	4.4%
Spring Mix	$ 141.0	4.4%
Celery	$ 140.0	4.4%
Cattle and Calves	$ 83.0	2.6%
Avocados	$ 55.4	1.7%

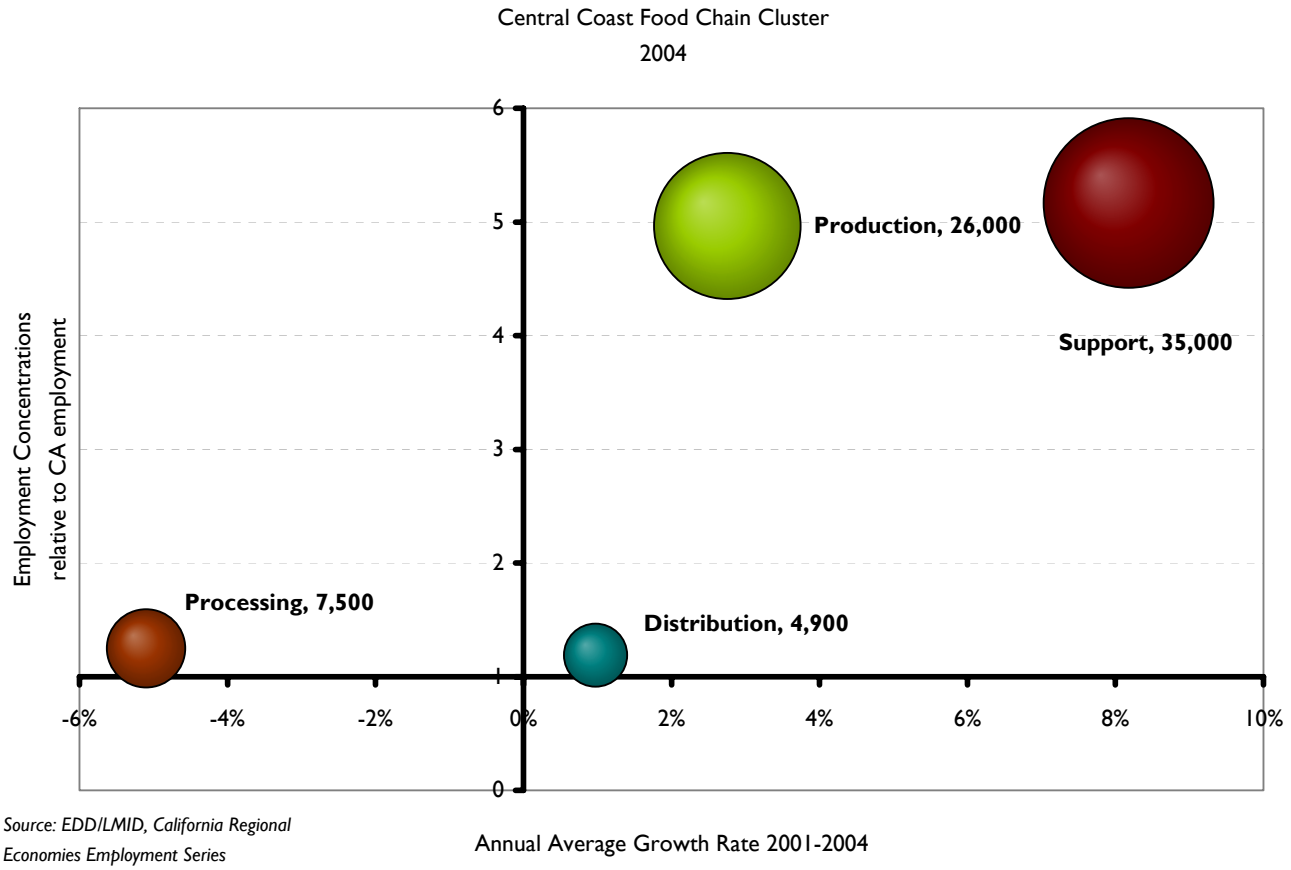
Almost half of the Central Coast's Food Chain employment is in Support, which, like San Joaquin Valley, predominately consists of Support Activities for Crop Production **(Figure 31)**. The Central Coast's Production employment is mainly in Vegetable & Melon Farming, Fruit & Nut Tree Farming, and Crops Grown Under Cover.

Figure 31 Central Coast Food Chain Segments



Source: EDD/LMID, California Regional Economies Employment Series

Figure 32 Central Coast Food Chain Cluster

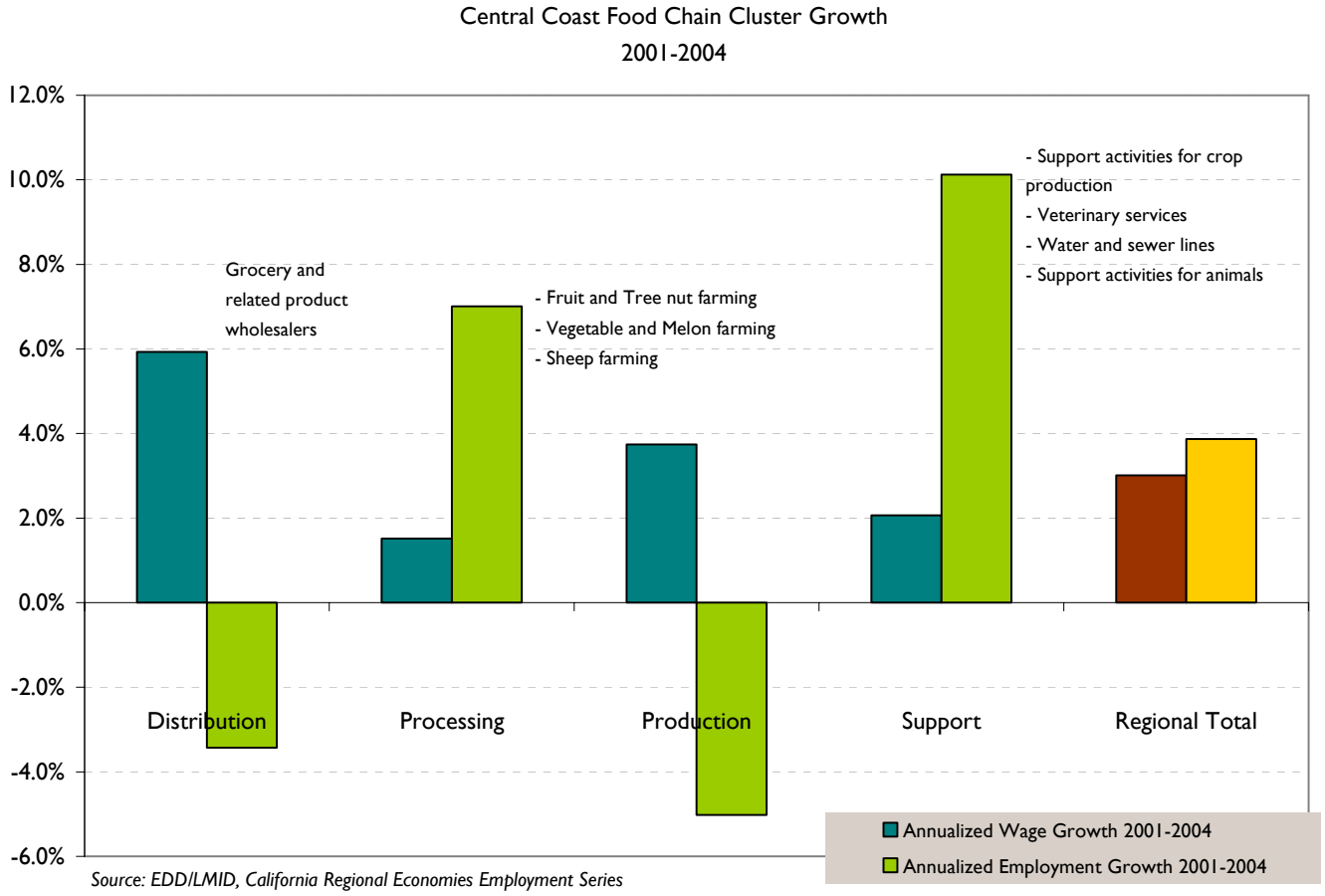


Source: EDD/LMID, California Regional Economies Employment Series

Food Chain activities are vital to the Central Coast regional economy; and, the region's Food Chain is three times more concentrated than the state's (**Figure 32**). Every segment of the Food Chain in the Central Coast has a greater employment concentration than the rest of California. Employment in Production and Support are each five times more concentrated than the state and employment is growing in each. Between 2001 and 2004, employment in Support grew by eight percent; and in Production and Distribution, employment grew by three percent and one percent respectively.

The Central Coast is one of only two regions (with Central Sierra) that experienced annual employment growth in its total Food Chain employment of four percent in the period 2001-2004. Unlike any other region, the Central Coast has experienced greater employment growth than wage increases in this period. As **Figure 33** illustrates, only Processing had net job losses over this period, but within Processing, Wineries experienced gains in jobs and wages. Wage and employment growth in Production has been mainly in Fruit & Nut Tree Farming and Vegetable & Melon Farming. Support has witnessed increases in jobs and wages in Support Activities for Crop Production, Veterinarian Services, Water & Sewer Line & Related Construction and Support for Animal Production Activities. Although total employment in Distribution dropped slightly, this segment of the Food Chain has seen strong wage increases particularly in Grocery & related product wholesalers.

Figure 33 Central Coast Food Chain Employment & Wage Growth



Source: EDD/LMID, California Regional Economies Employment Series

Southern Border Region

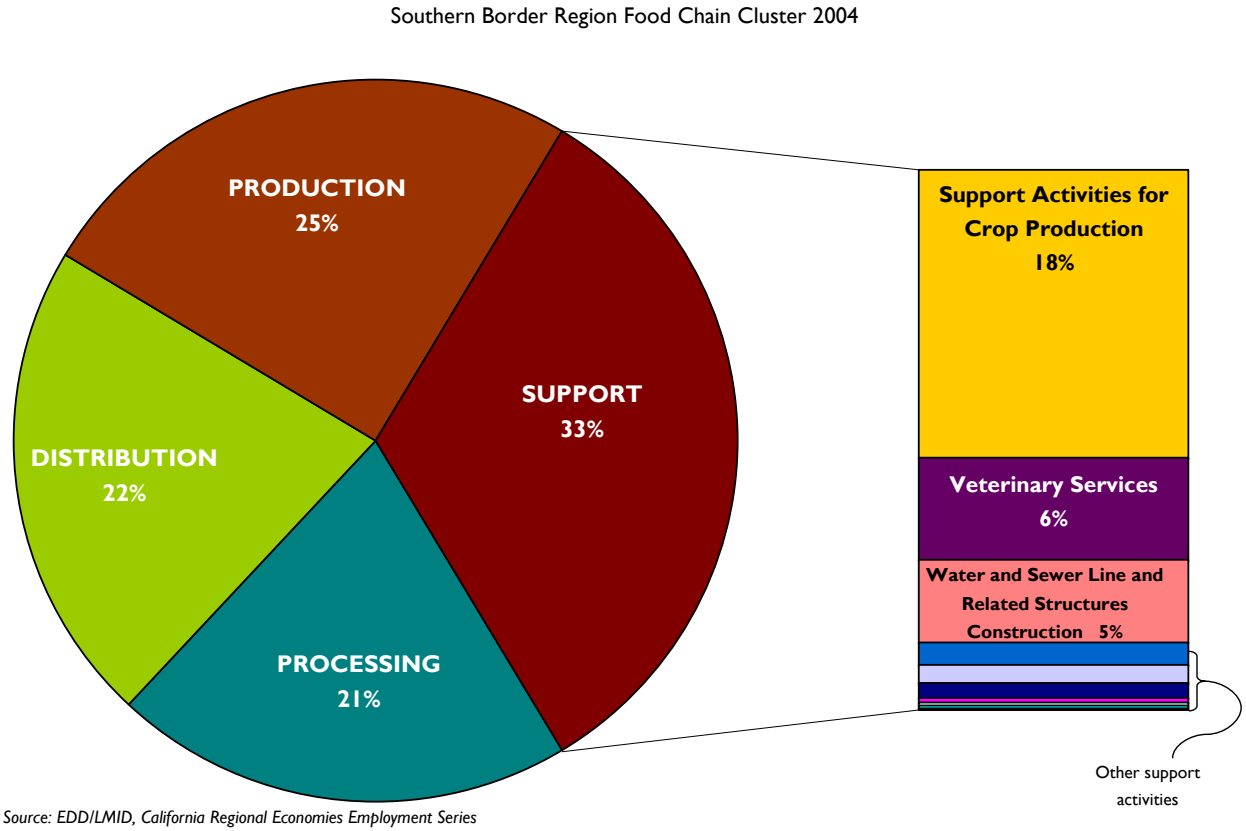
Five percent of California's Food Chain workforce is located in the Southern Border Region. Although a leader in non-food agriculture production (e.g. house plants), this hot, dry region accounted for $1.1 billion or 4.4 percent of the state's total value of production in food commodities **(Figure 34)**. The region's leading agricultural food commodities are primarily in cattle, avocados, and lettuce. [32]

One-third of Food Chain employment in the Southern Border Region is in Support activities and the rest is spread almost evenly across Production (25%), Distribution (22%), and Processing (21%). Employment in Support is mainly in Support Activities for Crop Production, Veterinary Services, and in the construction of water and sewer line and related structures **(Figure 35)**. That five percent of employment is in irrigation-related activities is reflective of the region's dry climate. Employment in Production is mainly in Vegetable and Melon Farming, Fruit & Tree Nut Farming, and Hay Farming (includes alfalfa).

Figure 34 Southern Border Region Leading Food Commodities

Southern Border Region Top Ten Commodities 2004		
Share of state Food Chain		4.4%
Total value of production $million	$	1,138.2
	$million	Regional share
Cattle	$ 259.1	22.8%
Avocados	$ 175.0	15.4%
Lettuce, All	$ 166.7	14.6%
Alfalfa	$ 99.1	8.7%
Tomatoes, Fresh	$ 68.0	6.0%
Carrots	$ 58.3	5.1%
Livestock	$ 48.2	4.2%
Eggs, Chicken	$ 47.0	4.1%
Sugar Beets	$ 44.9	3.9%
Vegetables Crops	$ 40.6	3.6%

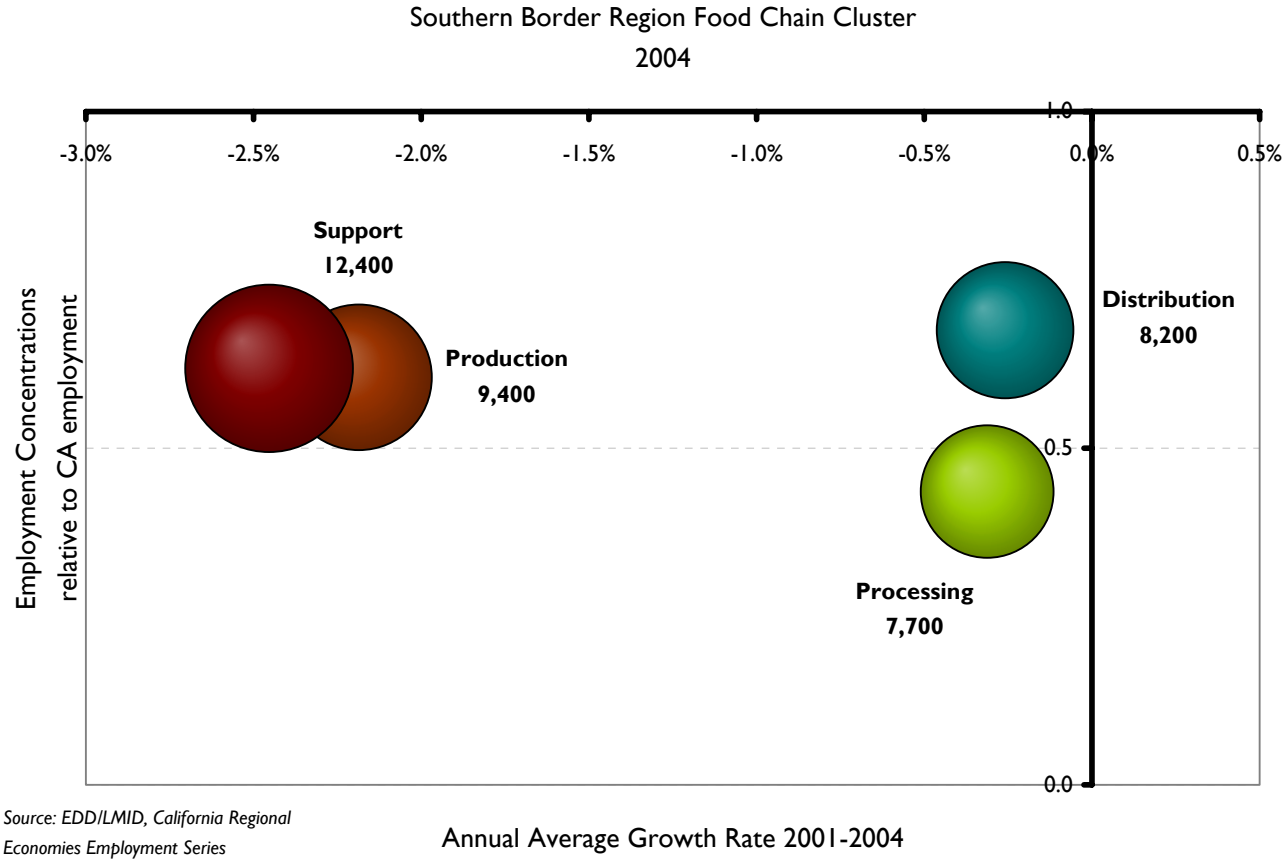
Figure 35 Southern Border Region Food Chain Segments



Source: EDD/LMID, California Regional Economies Employment Series

California's Food Chain activities are not highly concentrated in the Southern Border Region as a whole; however, stark differences exist between San Diego and Imperial Counties. The region's Food Chain experienced very low employment growth between 2001 and 2004 **(Figure 36)**.

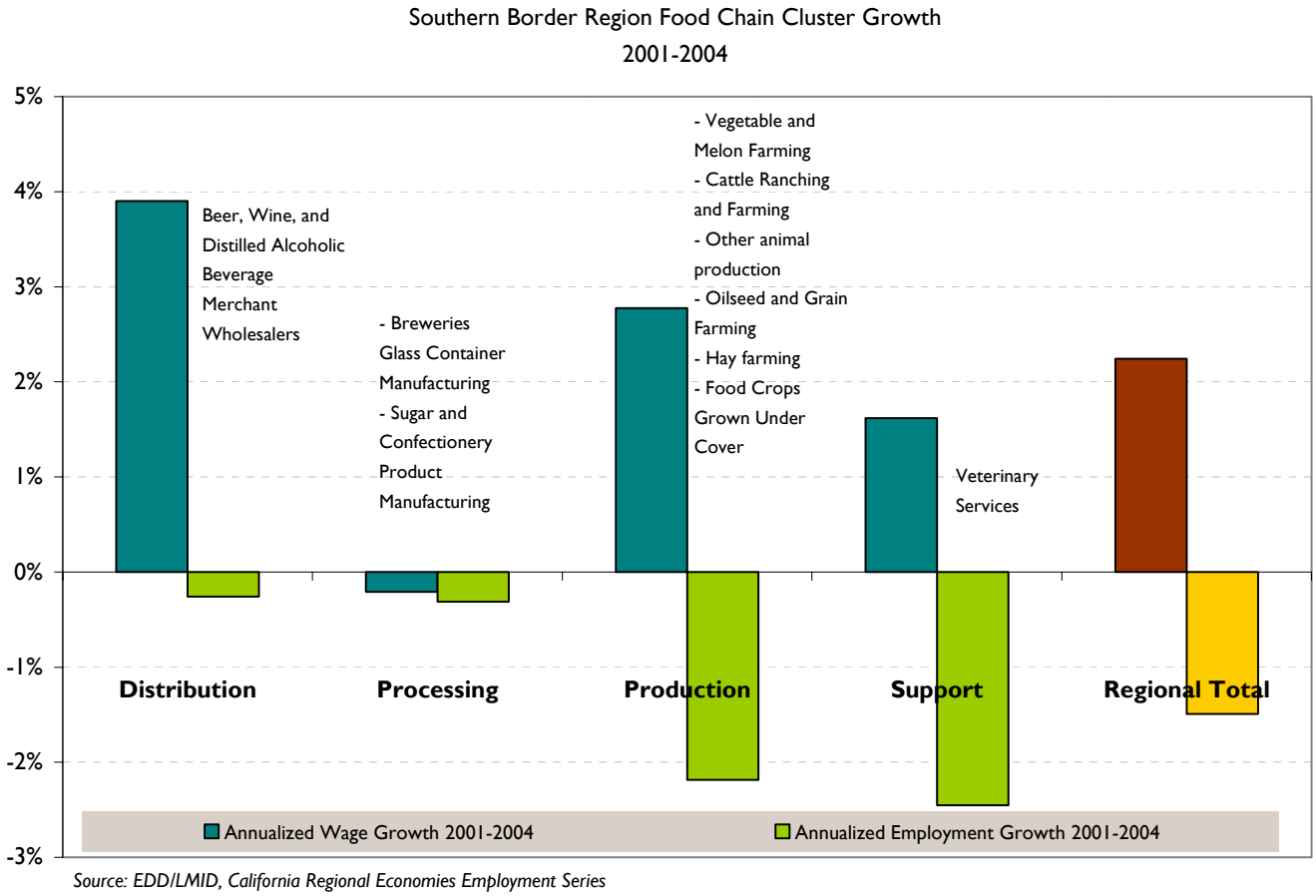
Figure 36 Southern Border Food Chain Cluster



Source: EDD/LMID, California Regional Economies Employment Series

Despite flat job growth and job losses during this period, average annual wage gains of four percent in Distribution were double the statewide average (**Figure 37)**. Both wage and employment gains were experienced in Beer, Wine & Distilled Alcoholic Beverage Merchant Wholesalers. Annual average wage gains in Production of two percent also surpassed gains in Food Chain statewide. These gains were driven by Vegetable & Melon Farming with 1,034 net new jobs in this period.

Figure 37 Southern Border Region Employment & Wage Growth



Source: EDD/LMID, California Regional Economies Employment Series

Greater Sacramento

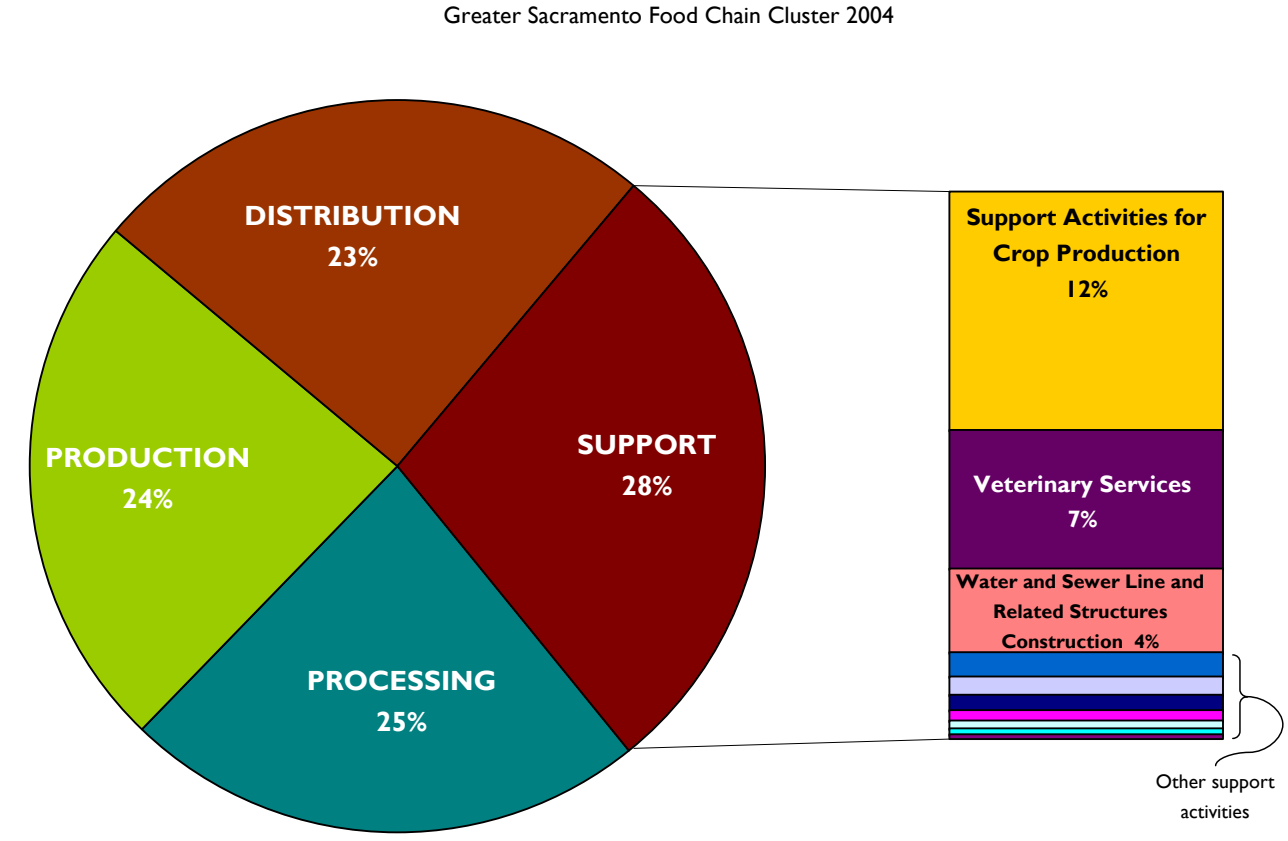
The Greater Sacramento region represents four percent of California's Food Chain employment and accounted for 3.6 percent of the state's total value of production in 2004, valuing $928.9 million. [33]

Greater Sacramento is the state's second leading producer of rice (after Northern Sacramento Valley). Together, rice and rice milling make up 21.9 percent of the region's total production value, which equaled $203.5 million in 2004. Following rice in value, wine grape production is $112 million and tomatoes and tomato processing is $98.6 million. The region's production is also characterized by orchards and produces large shares of the state's stone fruit (i.e. plums and peaches).

Figure 38 Greater Sacramento Leading Food Commodities

Greater Sacramento Top Ten Commodities 2004		
Share of state Food Chain		3.6%
Total value of production $million	$	928.9
	$million	Regional share
Rice, all	$ 203.5	21.9%
Grapes, Wine	$ 112.4	12.1%
Tomatoes	$ 98.6	10.6%
Stone fruit	$ 98.1	10.6%
Field Crops	$ 85.9	9.2%
Walnuts, all	$ 77.1	8.3%
Cattle and Calves	$ 67.9	7.3%
Almonds, All	$ 36.6	3.9%
Livestock & Poultry	$ 27.6	3.0%
Pasture, All	$ 10.8	1.2%

Figure 39 Greater Sacramento Food Chain Segments

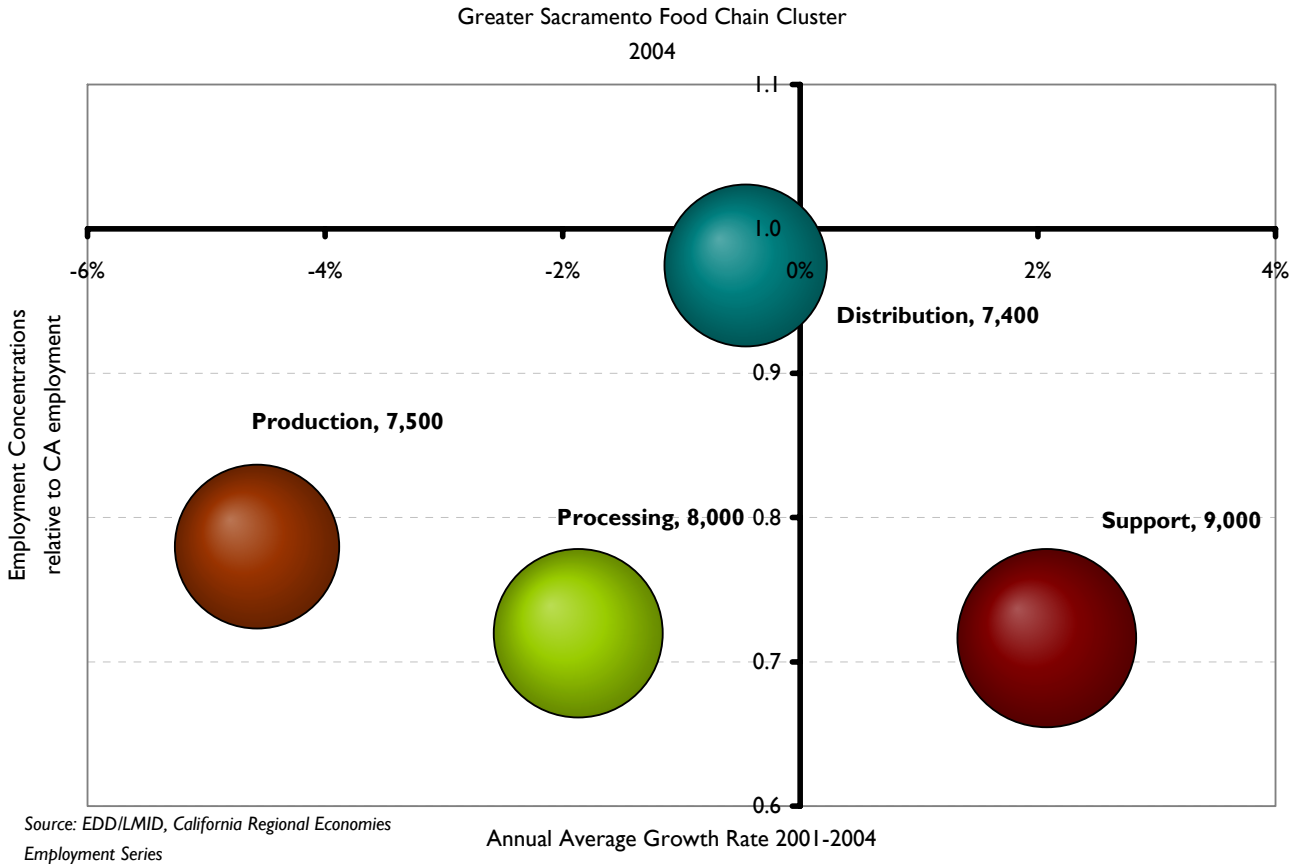


Source: EDD/LMID, California Regional Economies Employment Series

Greater Sacramento's Food Chain employment is the most evenly distributed across the Food Chain segments **(Figure 39)**. Employment shares are only slightly largest in Support (28%). Within this segment, employment is mainly in Support Activities for Crop Production, Veterinary Services, and 4 percent of the region's employment is in construction of water and sewer line and related structures, which reflects the water-intensive nature of rice farming.

As with the other relatively urban regions (Southern California, Bay Area, and Southern Border Region), the state's Food Chain employment is not heavily concentrated in Greater Sacramento, yet employment shares in Distribution are similar to statewide shares **(Figure 40)**.

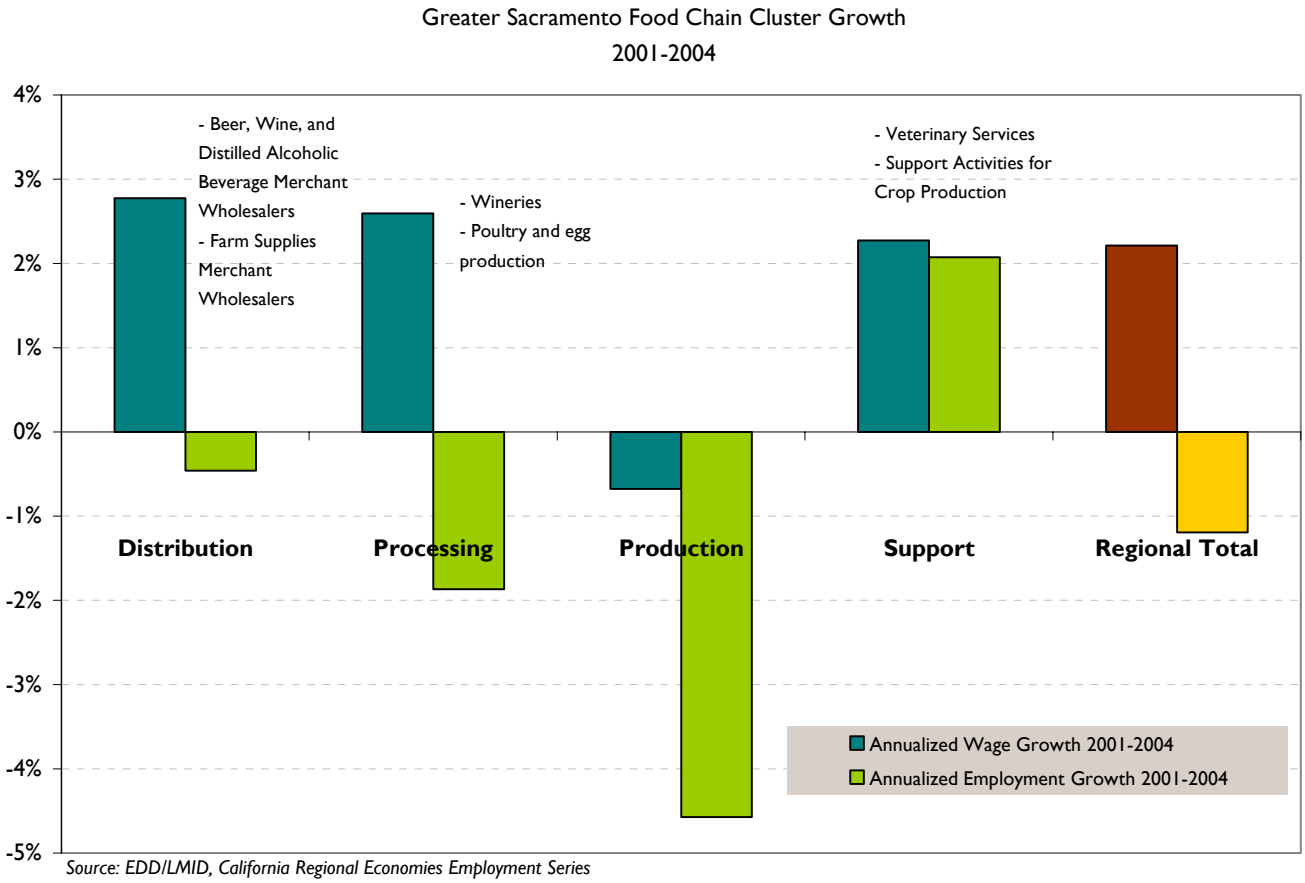
Figure 40 Greater Sacramento Food Chain Cluster



Source: EDD/LMID, California Regional Economies Employment Series

Between 2001 and 2004, Support activities experienced average annual growth in jobs and wages of two percent. Earnings growth in Distribution (2.8%), Processing (2.6%) and Support (2.3%) **(Figure 41)** outpaced state Food Chain wage increases during the observed period, (as depicted earlier in **Figure 17)**. In Support, job and wage gains were in Veterinarian Services and Support Activities for Crop Production. Employment as well as wages grew in Distribution in Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers and Farm Supplies Merchant Wholesalers. Growth in Processing was driven by Beverage Manufacturing.

Figure 41 Greater Sacramento Food Chain Employment and Wage Growth



Source: EDD/LMID, California Regional Economies Employment Series

Northern Sacramento Valley

The Northern Sacramento Valley region represents only two percent of California's Food Chain workforce but it is a leading producer of several food commodities in the state. Northern Sacramento Valley's total food production valued over $1 billion and made up 4.1 percent of the state's total value.[34]

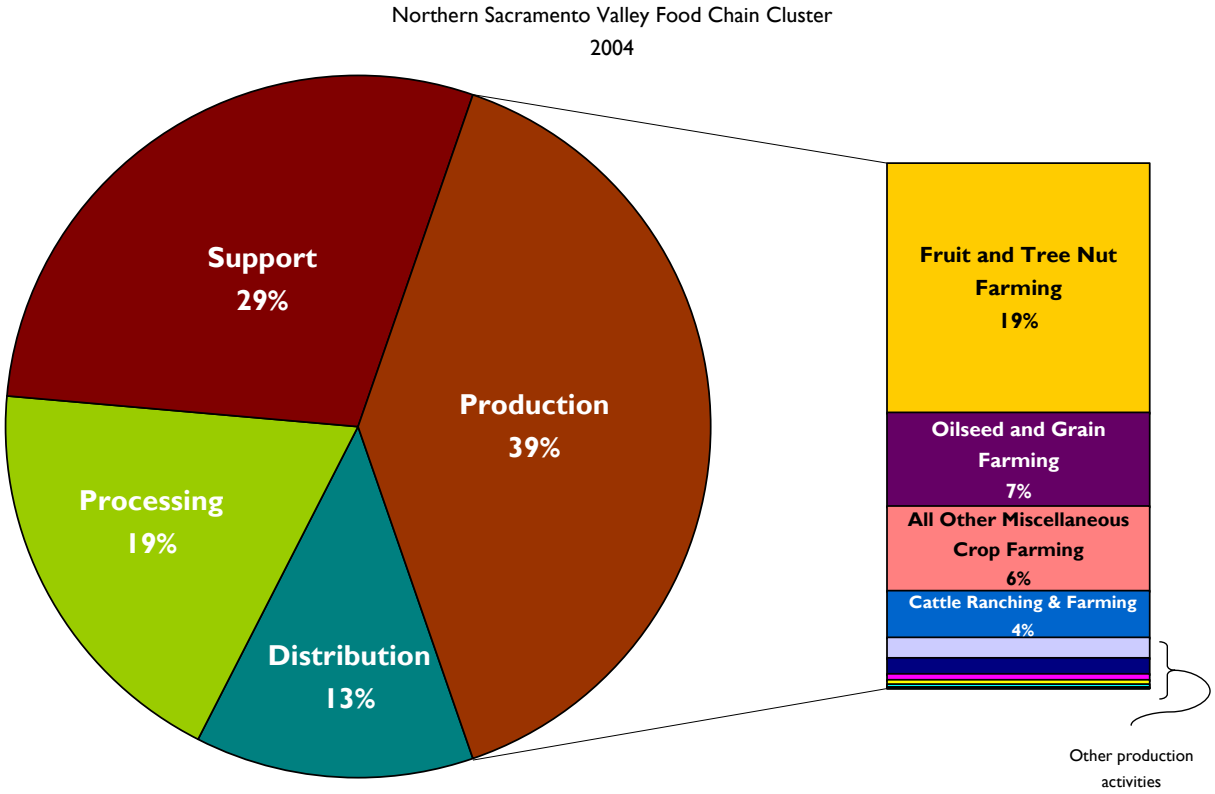
Northern Sacramento Valley is California's top producer of rice which generated $325 million in value in 2004. In addition, the region is only second to San Joaquin Valley in the production of almonds and plums.

Most Food Chain employment in Northern Sacramento Valley is in Production and Support **(Figure 43)**. Production accounts for 39 percent of Food Chain jobs and these are mainly in Fruit & Tree Nut Farming, Oilseed & Grain Farming, and Hay/Alfalfa Farming (Other field crop farming).

Figure 42 Northern Sacramento Valley Leading Food Commodities

Northern Sacramento Valley Top Ten Commodities 2004		
Share of state Food Chain		4.1%
Total value of production $million	$	1,064.0
	$million	Regional share
Rice, All	$ 325.0	30.5%
Almonds, All	$ 281.5	26.5%
Walnuts, All	$ 109.8	10.3%
Cattle, All	$ 73.8	6.9%
Milk & Dairy	$ 70.9	6.7%
Tomatoes, Processing	$ 44.3	4.2%
Plums, Dried	$ 27.4	2.6%
Olives	$ 25.7	2.4%
Hay, All	$ 21.3	2.0%
Pasture, All	$ 15.1	1.4%

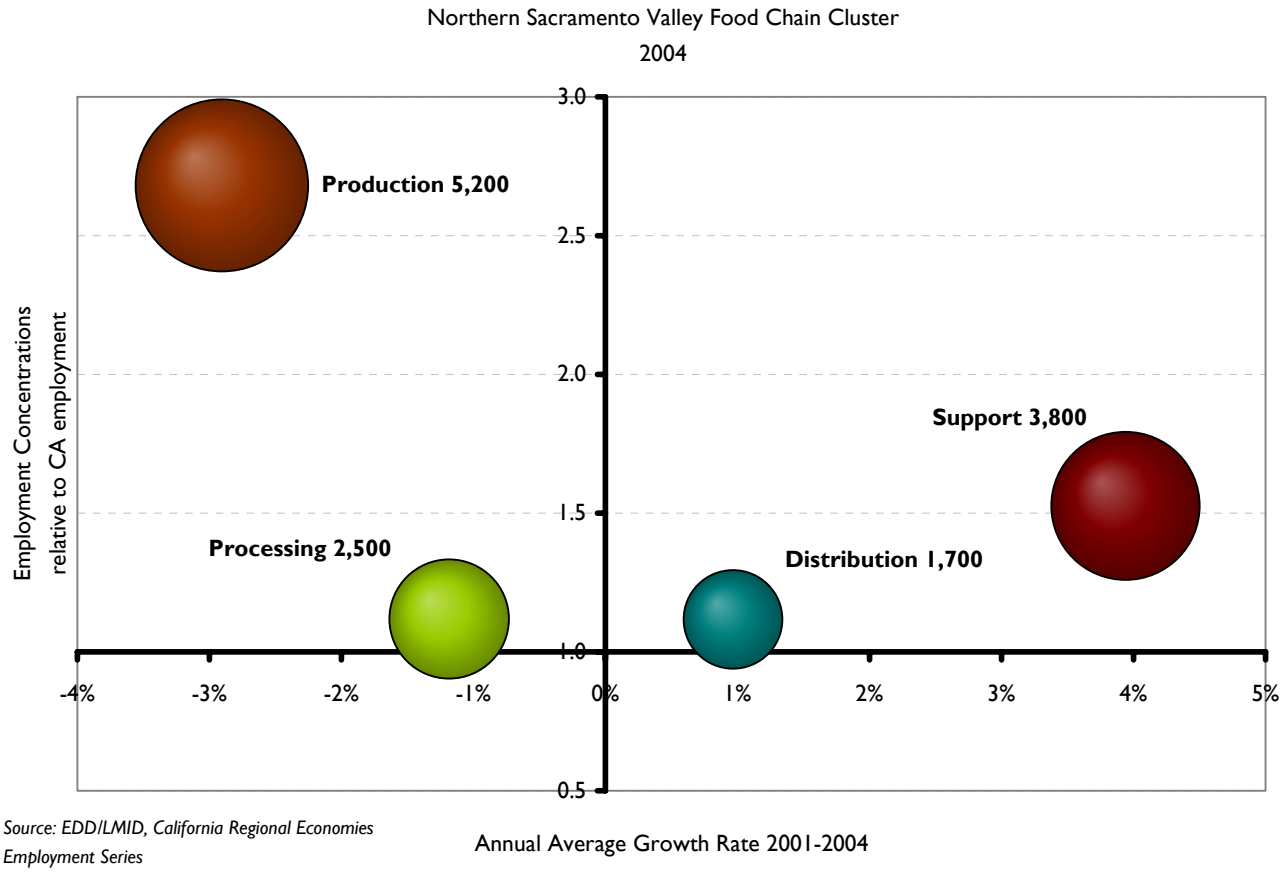
Figure 43 Northern Sacramento Valley Food Chain Segments



Source: EDD/LMID, California Regional Economies Employment Series

Although Northern Sacramento Valley represents only two percent of California's Food Chain workforce, the region's employment is highly concentrated in the Food Chain as is illustrated in **Figure 44**. Food Chain Production employment is two-and-a-half-times more concentrated and employment in Support is one-and-a-half-times more concentrated in the region. Further, concentrations are slightly higher in Processing and Distribution in the region. While jobs have dropped in Production and Processing, average annual employment gains were made of four percent in Support and one percent in Distribution.

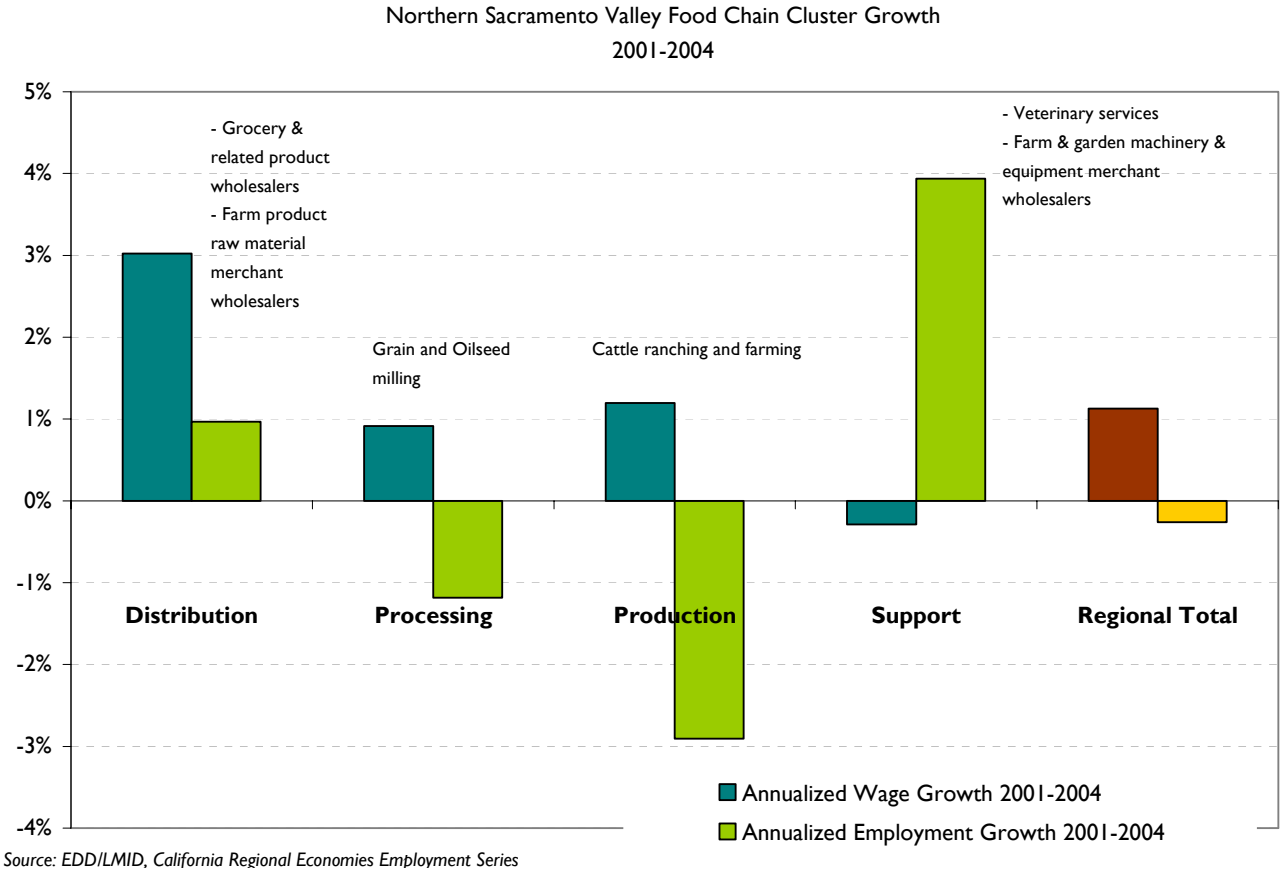
Figure 44 Northern Sacramento Valley Food Chain Cluster



Source: EDD/LMID, California Regional Economies Employment Series

Overall, average annual employment growth in the region has been flat. Wages increased modestly by one percent and at a slower rate than statewide Food Chain wage growth of two percent **(Figure 17).** Results illustrated in **Figure 45** indicate that the Support workforce grew at an annual rate of four percent between 2001 and 2004. Job and wage increases were witnessed in Veterinary Services and in Farm & Garden Machinery & Equipment Merchant Wholesalers. Distribution exhibited modest employment growth but strong earnings growth of three percent. Wage and job gains were had in Grocery and Related Product Wholesalers and Farm Product Raw Material Merchant Wholesalers.

Figure 45 Northern Sacramento Valley Food Chain Employment and Wage Growth



Source: EDD/LMID, California Regional Economies Employment Series

Northern California

Northern California's Food Chain employment constitutes one percent of the state's Food Chain workforce and two percent on the state's total value of food production in 2004.[35]

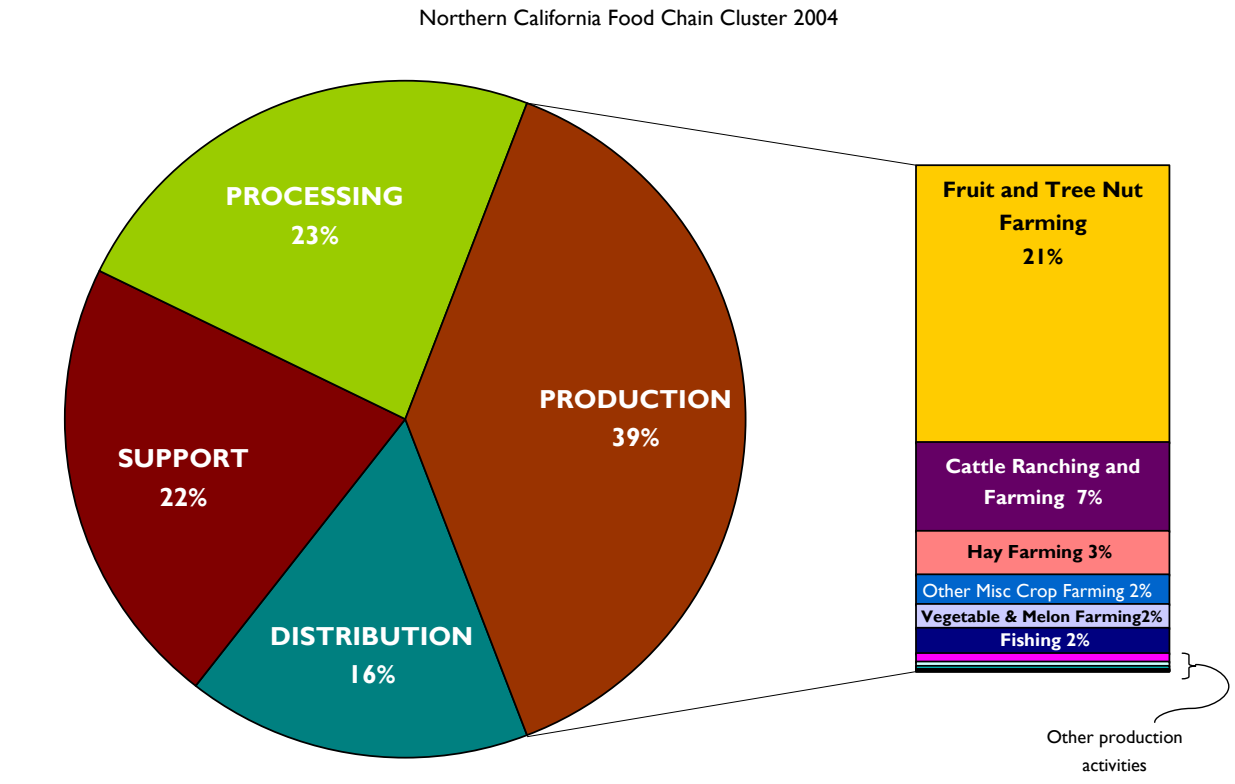
Cattle of all varieties and uses makes up the region's leading commodity in value of production and generated $110 million in 2004. Wine grapes follow in value at $94.3 million. Other top commodities include hay and milk.

Northern California's largest share of Food Chain employment is in Production and makes up 38 percent. Twenty-one percent of the region's Food Chain employment is in Production jobs in Fruit & Tree Nut Farming. Jobs in Cattle Ranching & Farming account for seven percent of employment. Processing makes up 24 percent of Food Chain employment and almost half of

Figure 46 Northern California's Leading Food Commodities

Northern California Top Ten Commodities 2004		
Share of state Food Chain		2.0%
Total value of production $million	$	511.1
	$million	Regional share
Cattle, all	$ 110.0	21.5%
Grapes, Wine	$ 94.3	18.5%
Hay, all	$ 74.6	14.6%
Milk, all	$ 62.4	12.2%
Pasture, all	$ 36.9	7.2%
Pears, all	$ 33.7	6.6%
Plants, Strawberry	$ 25.9	5.1%
Livestock	$ 21.1	4.1%
Potatoes, Irish	$ 17.9	3.5%
Other field crops	$ 17.7	3.5%

Figure 47 Northern California Food Chain Segments

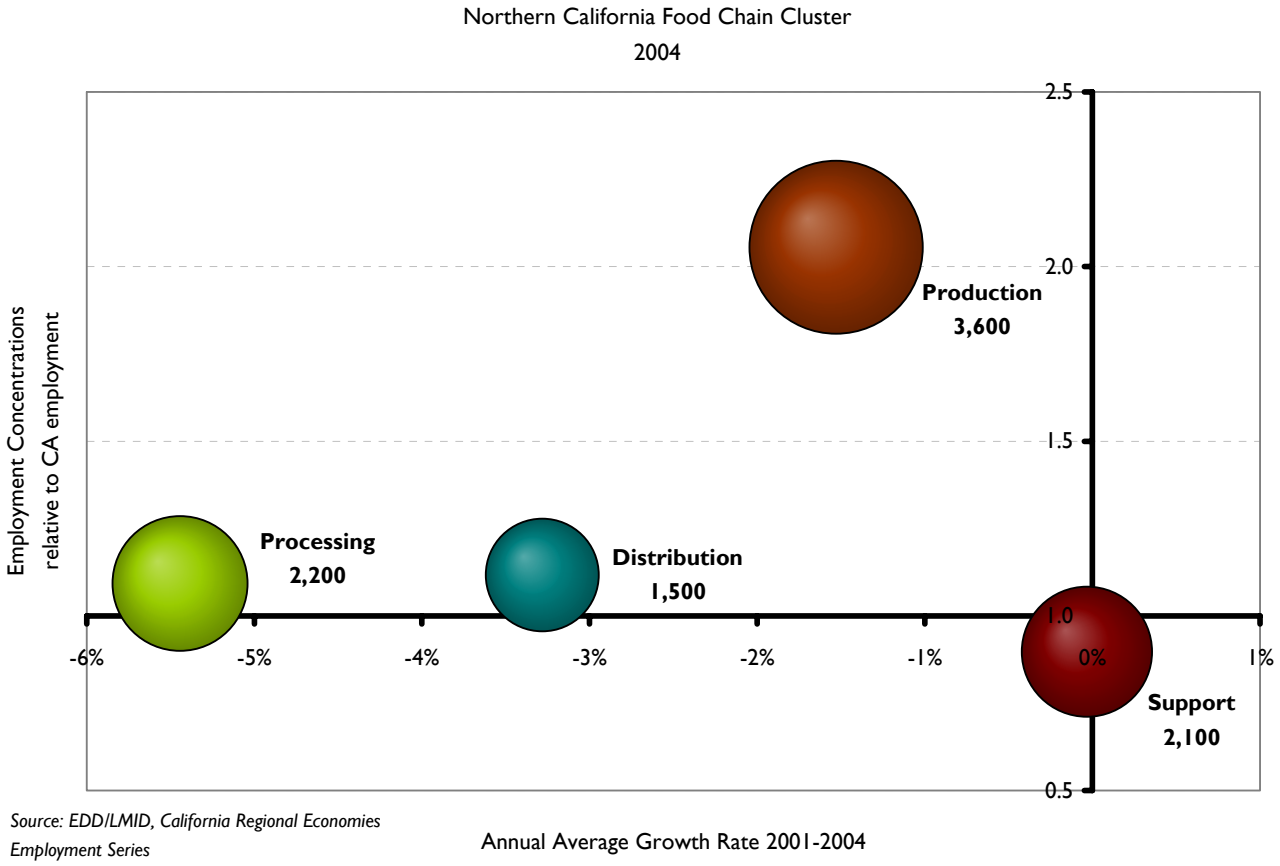


Source: EDD/LMID, California Regional Economies Employment Series

Processing employment (44%) is in Wineries alone. Following Wineries in employment shares is Seafood Product Preparation & Packaging (18%) and Dairy Product Manufacturing (10%).

Relative to the statewide Food Chain, Northern California's employment is concentrated in Production activities. Employment shares in Processing and Distribution are slightly higher than statewide; however, employment in Support is slightly lower **(Figure 48)**. This region experienced mainly job losses between 2001 and 2004.

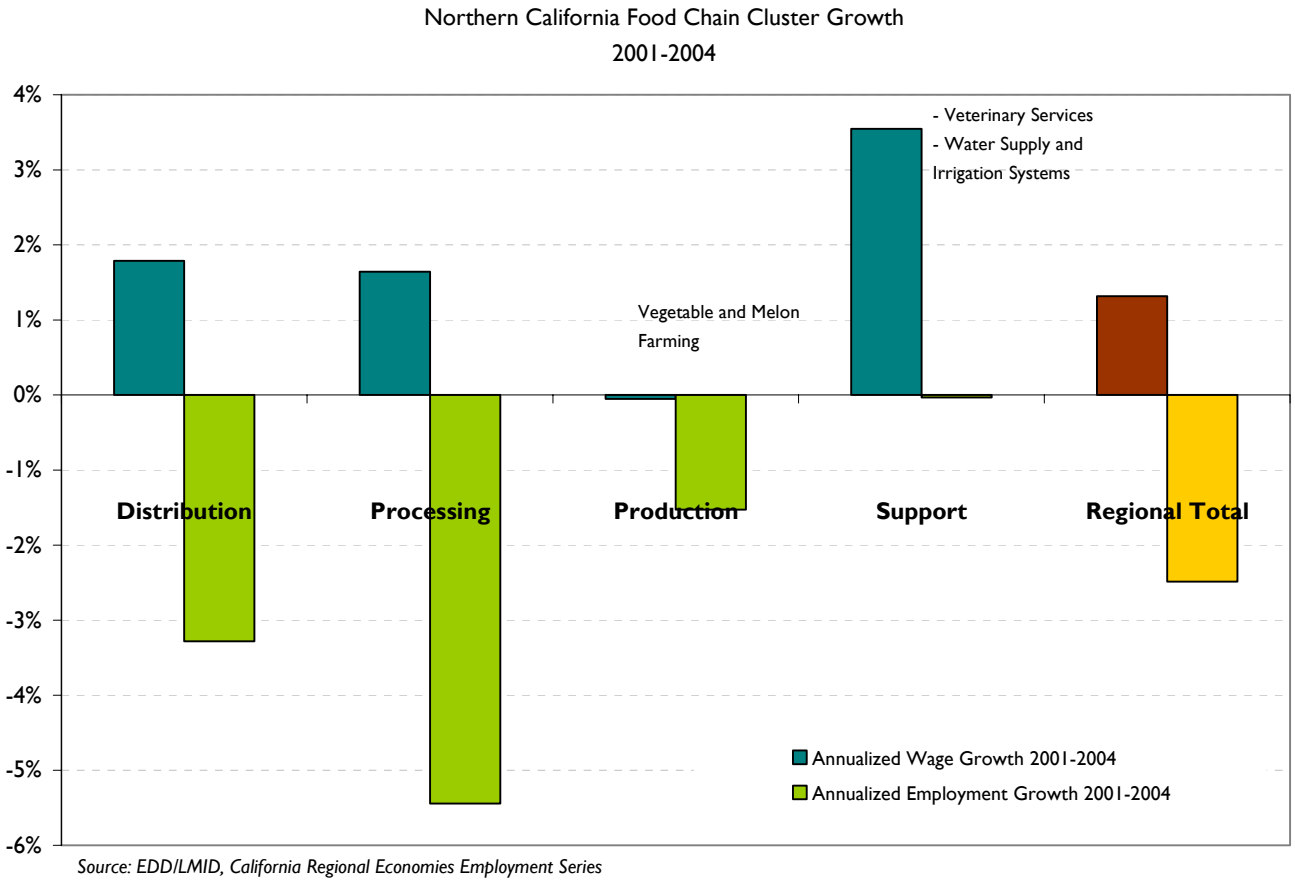
Figure 48 Northern California Food Chain Cluster



Source: EDD/LMID, California Regional Economies Employment Series

Nonetheless, average annual wage gains of 3.5 percent were exhibited in the region's Support activities **(Figure 49)**. Veterinary Services and Water Supply & Irrigation Systems accounted for the greatest boosts in earnings and even reported employment growth during this period.

Figure 49 Northern California Food Chain Employment & Wage Growth



Source: EDD/LMID, California Regional Economies Employment Series

Central Sierra

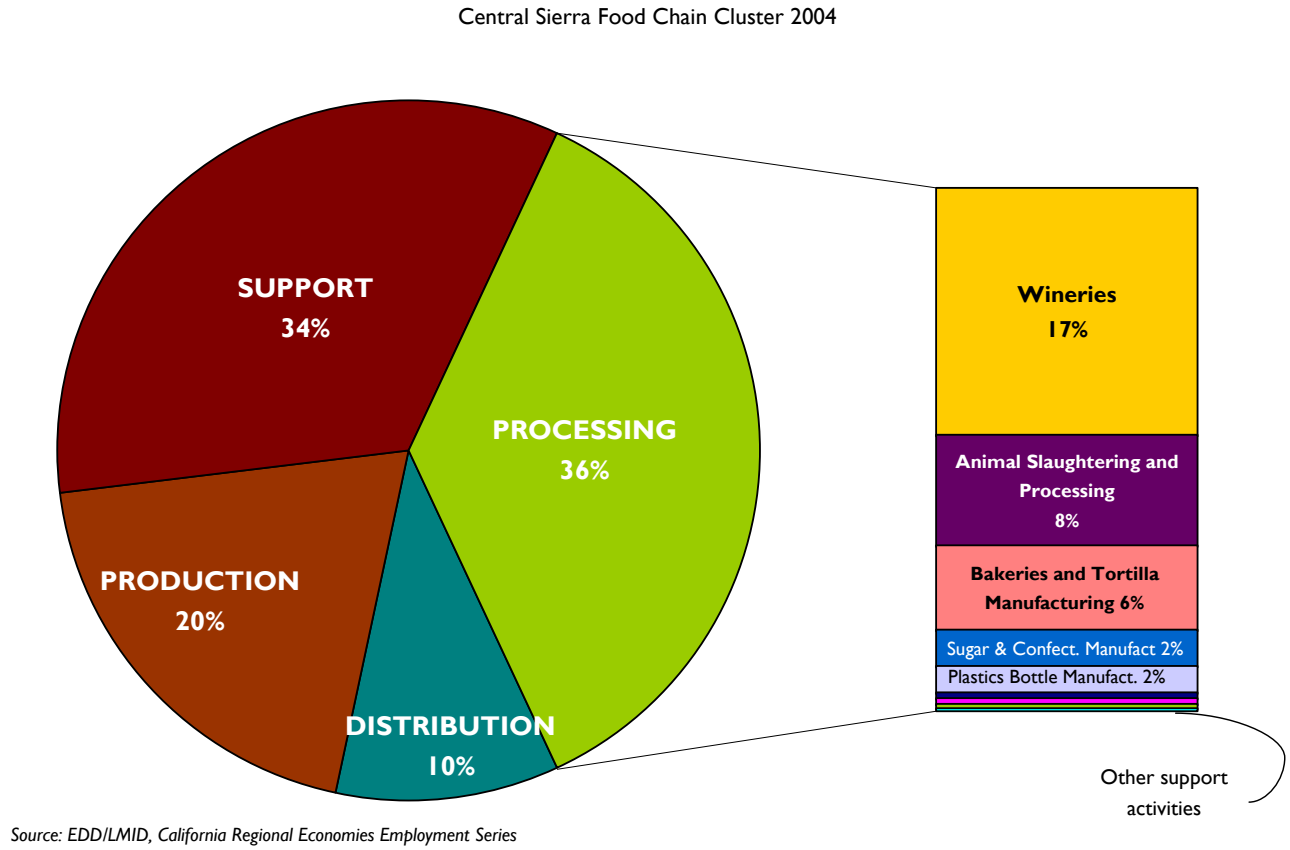
Central Sierra's Food Chain accounts for less than one percent of California's Food Chain workforce, and the value of the region's total food commodity production constitutes just one-half of a percent of the state's total.[36]

Central Sierra's leading food commodities are centered in animal production and animal feed production **(Figure 50)**. Representing 45.6 percent of the region's total production value at $59.5 million in 2004, cattle is the Central Sierra's top commodity. Livestock other than cattle (including poultry) and pasture followed with 14 percent and 13 percent of total regional production value. Grapes constituted 11 percent of the region's total production value.

Figure 50 Central Sierra Leading Food Commodities

Central Sierra Top Ten Commodities 2004			
Share of state Food Chain			0.5%
Total value of production $million			$ 130.4
	$million		Regional share
Cattle, all	$	59.5	45.6%
Livestock and Poultry Products	$	18.4	14.1%
Pasture, all	$	17.1	13.1%
Grapes, Wine	$	14.7	11.3%
Carrots	$	7.8	6.0%
Hay, all	$	7.7	5.9%
Sheep and Lambs	$	1.9	1.4%
Fruit & nut crops	$	1.2	0.9%
Garlic, All	$	0.9	0.7%
Vegetable Crops	$	0.4	0.3%

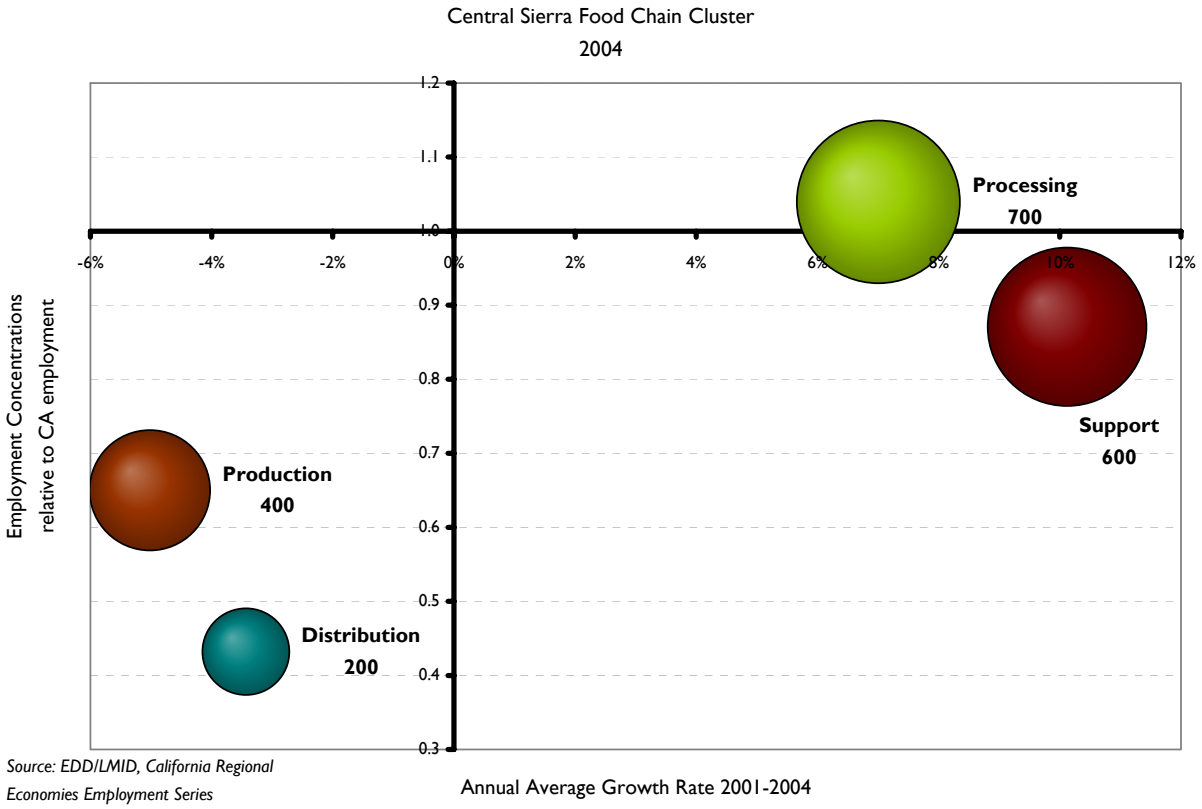
Figure 51 Central Sierra Food Chain Segments



Source: EDD/LMID, California Regional Economies Employment Series

Central Sierra's Food Chain employment is primarily in Processing and Support **(Figure 51)**. The region's Processing activities reflect its top commodities: Wineries account for 17 percent of employment and Animal Slaughtering & Processing accounts for eight percent. Employment in Support is concentrated in Veterinary Services, Support Activities for Crop Production, Water and Sewer Line and Related Structures Construction.

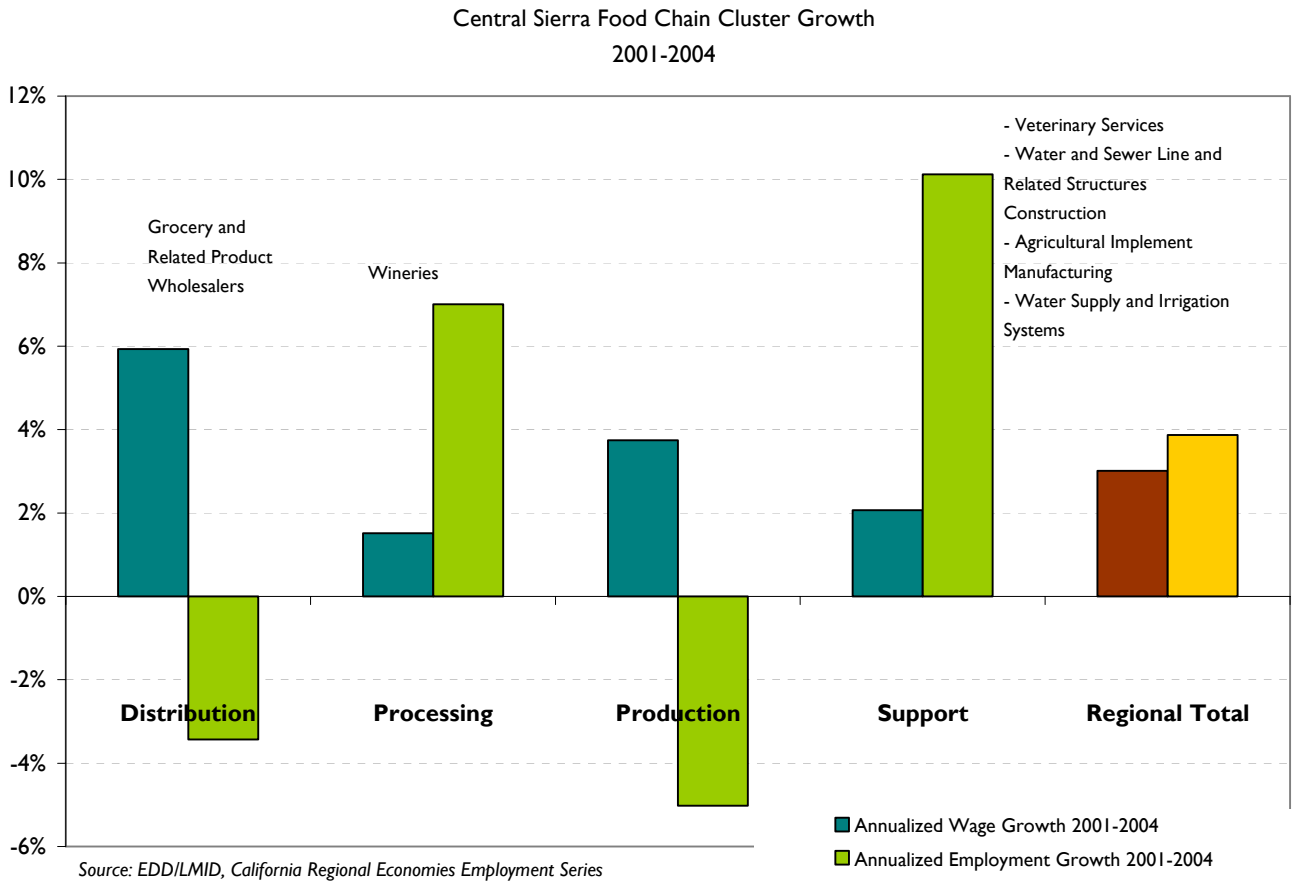
Figure 52 Central Sierra Food Chain Cluster



Source: EDD/LMID, California Regional Economies Employment Series

Compared to statewide employment patterns, Central Sierra's employment is not heavily concentrated in Food Chain industries; however, its average annual employment growth rate is matched only by Central Coast **(Figure 52** and **Figure 17)**. Average annual employment gains were seven percent in Processing and ten percent in Support. Earnings increased in all four Food Chain segments **(Figure 53)**. In Processing, Wineries produced wage and job gains. In Support, wage and job gains were driven by Veterinary Services, Water & Sewer Line & Related Structures Construction, Agricultural Implement Manufacturing, and Water Supply & Irrigation Systems. Grocery and Related Product Wholesalers contributed wage and job growth in Distribution.

Figure 53 Central Sierra Food Chain Employment and Wage Growth



Source: EDD/LMID, California Regional Economies Employment Series

III. Challenges for the Future

The many opportunities, strengths and diversity of California's Food Chain bring challenges for the future. Some key challenges that require further analyses and discourse include the following:

Land Use - Suburbanization vs. Fields of Commodities

As California's population continues to grow, there will be a continued need for more housing and growing suburbs. Future suburbanization may encroach upon California's most fertile soils and fields for development. Future suburbanization may impact California's ability to meet the growing global market demand for its commodities.

In addition to suburbanization and growth, there are some communities that are establishing local government policies on limiting land use for genetically modified organisms. The long-term impact of local land use policies requires research and environmental studies to identify the costs/benefits to the communities.

Water Quality & Availability

Along with California's growing housing demand, there is a greater residential demand for water. This demand will place a greater pressure on the state's management of water resources and its ability to maintain the level of quality and safety of this resource for both residential and business communities.

Food Security

After September 11, 2001, public safety is at the forefront of every community. California Department of Food & Agriculture works vigilantly to protect our food safety from biological and human threats. As the Food Chain system becomes more sophisticated and cutting-edge, the threats to our food safety become more complicated and complex.

Facilitating the Transfer of Innovations & Technology

Many of California's universities and colleges are investing in R&D programs to enhance and sustain California's Food Chain. These programs not only research and test technological production and distribution advances but help to develop environmentally friendly pesticides, agroecology, agriculture economics, plant production yield, plant improvement and alternative energy. Some of the campuses include:

University of California, Davis
University of California, Riverside
University of California, Santa Cruz

CA Polytechnic University, San Luis Obispo
CA State University, Fresno
Humboldt State University
Sonoma State University

As California universities and colleges invest millions of dollars into these programs, we are faced with issues centering on intellectual property and availability of venture capital. Venture capital targeted to transfer the innovations and technology to the private sector will serve to further develop the economy and the communities in which they will prosper.

General Public Perception of the Food Chain Cluster

As media continues to portray the agricultural industry cluster as a system of archaic processes using manual labor, this perpetuates the general public's misperception of California's Food Chain as a sunset industry with low-paying, low-skilled jobs. On the contrary, today's California farmers' and ranchers' use of innovations and technologies establishes the state as one of the most sophisticated Food Chain production and distribution systems in the world. To support this system, California's Food Chain has a great demand for workers to fill medium to high income level jobs requiring technological and management skills and education.

How these challenges are met will have a significant impact on the future of California's Food Chain and its ability to meet growing and changing global demands. State and local government, industry, academia, and regional partnerships all have critical, interconnected roles in meeting these challenges in ways that encourage innovation and ensure the stability and security of California's Food Chain.

IV. Policies & Recommendations

California's Food Chain is a global pacesetter driven by innovation and a growing source of economic value and jobs. The state is a leader in agricultural exports in volume, export value and the diversity of products. Innovative producers in the state are creating their competitive edge by carving out market niches with specialized products and processes. Every region has a unique Food Chain profile which cultivates further statewide product diversity. In terms of research and development in agricultural, materials, and process innovations, California is a global leader. Central to all segments of California's Food Chain, innovation is increasing efficiencies all along the Food Chain in the form of improved allocation of natural resources in production, novel plant varieties, advanced materials for retaining freshness in packaging, and tighter communications throughout the stages from field to market.

SUPPORT	Veterinary services Pesticide, Fertilizer & Other Agricultural Chemical Manufacturing Water and Sewer Line and Related Structures Construction Support Activities for Crop Production Support Activities for Animal Production
DISTRIBUTION	Grocery and Related Product Wholesalers Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers
PROCESSING	Wineries Dairy Product Manufacturing Animal Slaughtering and Processing Plastics Bottle Manufacturing
PRODUCTION	Vegetable and Melon Farming Cattle Ranching and Farming Hay Farming Oilseed and Grain Farming

California's Food Chain is multifaceted and growing. Most jobs, and virtually all job growth, are outside of agricultural production. Wages are growing in all regions; and in most regions, jobs are growing in some segment in the Food Chain. Although California's Food Chain cluster shed jobs during the economic slump between 2001 and 2004, many key cluster industries continued to grow. In employment gains, Grocery and Related Product Wholesalers and Wineries topped the list with 4,740 and 4,170 net new jobs respectively. Wineries reported the highest annual percentage gains in earnings of 3.9 percent. Hay Farming led the cluster in average annual job growth with a rate of 14.2 percent. Of these growth industries, Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers reported the highest average annual wages of $55,813; and six of the fourteen growth industries reported annual earnings above the statewide cluster total of $30,469. Representing all four segments of the Food Chain, these

growth industries reported net employment gains and positive rates of average annual growth in jobs and wages between 2001 and 2004. In terms of Food Chain cluster occupations, more jobs are mid-level or higher than entry-level, and jobs in which there is growing demand offer career progression and good wages.

California's Food Chain cluster is a global leader as a result of its natural resources, its human resources, and its innovation capacities. In order to maintain its competitive edge, the state's Food Chain needs a continual flow of innovation. This requires a strong commitment to ensuring opportunity for workforce development, continuing support for R&D and enabling commercialization of innovations.

EMBRACING INNOVATION

RUIZ FOODS, INC.
Dinuba, CA

To meet the growing demand for their products, while not raising costs, Ruiz Foods has turned to new technology to control processing and remain competitive.

"You can't manage what you can't measure," said Steve Windh, Vice President of Purchasing, "and that means statistical controls in order to control processes."

From their flour silos to outbound packaging, every piece of equipment incorporates some microchip technology. This technology requires specialized vocational training to operate and offers opportunity for career advancement.

"Education is so critical," stated Windh. "Machine operators and mechanics can do very well. This work is very specialized."

Ruiz Foods, Inc. has grown from a small family business to be the leading Mexican food manufacturer in the United States.

Faced with cost pressures from superstore buyers and environmental pressures related to encroaching population growth, the state's producers could benefit significantly from government-sponsored advances in resource conservation, organic production, and other environmentally sustainable practices. Besides consumer-driven demand for organic food, superstores (e.g., Wal-Mart, Costco, Safeway) are aiming to offer organics at prices little higher than conventionally grown products.[37] While this sudden strong demand for organics bodes well for the environment (e.g. clean air and water for human consumption) and for people who otherwise have no physical or financial access to organics, the cost pressures these mega-buyers are placing on producers does raise questions concerning the integrity of the classification.

California's Food Chain needs skilled people for middle and higher level occupations, so targeted education and training is critical. As the Food Chain industries increasingly incorporate more technologically advanced practices into their production processes, they require an increasingly skilled workforce. Employees with computer skills, mechanics and fine mechanics, forklift operators, and team leaders capable of managing multigenerational workers are all in demand in the Food Chain.

OVERCOMING CHALLENGES FOR A HIGHLY SKILLED WORKFORCE

DOLE FRESH VEGETABLES, INC.
Soledad, CA

In the heart of the "salad bowl of the world", Dole Fresh Vegetables, Inc. has a highly automated, 250,000 square-foot facility on the Central Coast that produces bagged salads. New technological processes bring new challenges for the workforce.

"We have a difficult time hiring mechanics and fork lift operators, positions that require more technical skills", points out Lourdes Uranday, Human Resources Manager. She continues, "We are using our Employment Training Panel grant to train our workforce with computer-based, technical, and mechanical skills to run our production machinery."

Some of the Food Chain employers are identifying a much greater need for vocational programs in their local areas to meet their workforce needs. As Dole Fresh Vegetables, Inc. has done, some employers independently work with community colleges to develop a curriculum to meet their training needs.

Dole Fresh Vegetables, Inc. is a wholly owned subsidiary of Dole Foods, Inc. and is the world's largest producer of pre-cut, packaged vegetables and salads.

CALIFORNIA'S CHANGING AGRICULTURAL WORKFORCE

TEJON RANCH COMPANY
Lebec, CA

Today's agricultural workforce in California is multigenerational, multilingual, and multicultural. However, a majority of this workforce has been in the fields for 12 to 15 years. Though there are younger workers now entering this workforce, this presents new challenges to Food Chain employers.

Barry Hibbard, Vice President for Commercial & Industrial Marketing points out, "In the Central Valley,…..their biggest challenge is in leadership. There are no problems finding workers, but getting them to understand how to lead or supervise a shift. How does a 30-year old manage or supervise his parents or friend's parents?"

Local education and training programs must go beyond fork lift operation and other mechanical skills but also needs to begin addressing leadership skills as well.

Tejon Ranch Company operations include farming, ranching, housing development, hunting, mining, oil production, etc. Barry Hibbard is also a member of the California Economic Strategy Panel.

The quantitative and qualitative data and information gathered for this study identifies significant policy needs and recommendations. Most importantly, industry feedback received at a forum held on June 1, 2006 in Sacramento, California, identifies a number of policy areas where the California Economic Strategy Panel and state government may take a leadership role. Working in partnership, state government, industry, academia, and regional partnerships may serve to help mitigate some of the potential threats to the continued growth and success of California's Food Chain outlined above. The California Economic Strategy Panel recommends the following policies and recommendations for consideration.

On a state level, California must:

- Invest in university R&D to support food production and processing innovation as well as efficient use of natural resources.
- Identify policy solutions for public universities and colleges to expand their training capacity for growing occupations/career pathways important to regional Food Chains across California.
- Establish venture capital assistance programs to facilitate the transfer of innovation and technologies to the Food Chain companies or collaboratives.

Regionally, partnerships need to be established in order to:

- Facilitate collaborative efforts between universities and private companies to commercialize product and process innovations.
- Facilitate collaborative efforts between the private sector and public universities and colleges to develop curriculum to address the growing occupations/career pathways important to regional Food Chains across California.
- Target public education and training funds to high-need occupational/career pathways for the regional Food Chain.
- Work with state government to promote innovations and invest in export infrastructure.
- Establish balanced land use policies in local communities for economic development with sustainable Food Chain markets.

California's competitive edge is partially in the size and diversity of its food products, but it is the state's capacity to adapt to global market changes and drive change that is core to its competitive edge. The implication of this is that in order for the state to maintain its global competitiveness, it must ensure that its innovative capacities continue to thrive. While this does include continued research and development efforts, on a larger scale, ensuring California's competitiveness means ensuring that the state's workforce has the technical skills required to drive continued technological advancement in California's Food Chain.

STATE GOVERNMENT'S ROLE IN THE FUTURE OF AGRICULTURE

PACIFIC COAST PRODUCERS
Woodland, CA

Many firms report that tremendous margin pressure is driving their firms to innovate processing line for the greatest yields and worker productivity. Pacific Coast Producers believes state government would be helpful in stimulating collaborative projects in non-processing areas.

"There is an opportunity for state government leaders to facilitate and stimulate industry collaboration to address issues in waste management, energy management, and sustainability. These are areas that the growers may benefit from innovative collaboration and gain a competitive edge globally." recommends Craig Powell, Woodland Plant Manager.

Pacific Coast Producers began as a grower-owned fruit and vegetable co-operative in 1971. The Woodland facility employs a season high 1,100 workers during the tomato growing and processing season.

APPENDIX A.
REGIONAL LEADING AGRICULTURAL FOOD COMMODITIES

San Joaquin Valley Top Ten Commodities 2004 Share of state Food Chain 57.5% Total value of production $million $ 14,954.0			Southern California Top Ten Commodities 2004 Share of state Food Chain 9.0% Total value of production $million $ 2,338.5			Bay Area Top Ten Commodities 2004 Share of state Food Chain 6.6% Total value of production $million $ 1,721.6			Central Coast Top Ten Commodities 2004 Share of state Food Chain 12.3% Total value of production $million $ 3,197.8			Southern Border Region Top Ten Commodities 2004 Share of state Food Chain 4.4% Total value of production $million $ 1,138.2		
	$million	Regional share		$million	Regional share		$million	Regional share		$million	Regional share		$million	Regional share
Milk, All	$ 4,342.9	29.0%	Milk	$ 621.1	26.6%	Grapes, Wine	$ 704.0	53%	Lettuce, all	$ 1,049.0	32.8%	Cattle	$ 259.1	22.8%
Almonds, All	$ 2,084.6	13.9%	Strawberries	$ 416.9	17.8%	Strawberries	$ 194.9	9%	Strawberries	$ 526.8	16.5%	Avocados	$ 175.0	15.4%
Grapes, All	$ 1,902.1	12.7%	Lemons	$ 211.1	9.0%	Milk, Market	$ 144.8	8%	Broccoli	$ 440.8	13.8%	Lettuce, All	$ 166.7	14.6%
Cattle, All	$ 1,507.2	10.1%	Avocados	$ 190.4	8.1%	Raspberries	$ 101.4	4%	Grapes, all	$ 385.2	12.0%	Alfalfa	$ 99.1	8.7%
Citrus, All	$ 984.2	6.6%	Celery	$ 122.8	5.3%	Lettuce, all	$ 97.9	4%	Spinach	$ 187.9	5.9%	Tomatoes, Fresh	$ 68.0	6.0%
Poultry, All	$ 783.0	5.2%	Grapes, Table	$ 112.4	4.8%	Cattle	$ 78.8	4%	Cauliflower	$ 141.0	4.4%	Carrots	$ 58.3	5.1%
Tomatoes, All	$ 726.7	4.9%	Eggs	$ 108.8	4.7%	Mushrooms	$ 71.0	4%	Spring Mix	$ 141.0	4.4%	Livestock	$ 48.2	4.2%
Hay, All	$ 560.9	3.8%	Peppers	$ 83.7	3.6%	Livestock & Poultry	$ 56.7	3%	Celery	$ 140.0	4.4%	Eggs, Chicken	$ 47.0	4.1%
Pistachios	$ 368.0	2.5%	Tomatoes	$ 71.7	3.1%	Vegetable crops	$ 55.1	2%	Cattle and Calves	$ 83.0	2.6%	Sugar Beets	$ 44.9	3.9%
Peaches, All	$ 242.9	1.6%	Cattle, All	$ 71.0	3.0%	Hay & alfalfa	$ 26.4	2%	Avocados	$ 55.4	1.7%	Vegetables Crops	$ 40.6	3.6%

Greater Sacramento Top Ten Commodities 2004 Share of state Food Chain 3.6% Total value of production $million $ 928.9			Northern Sacramento Valley Top Ten Commodities 2004 Share of state Food Chain 4.1% Total value of production $million $ 1,064.0			Northern California Top Ten Commodities 2004 Share of state Food Chain 2.0% Total value of production $million $ 511.1			Central Sierra Top Ten Commodities 2004 Share of state Food Chain 0.5% Total value of production $million $ 130.4		
	$million	Regional share		$million	Regional share		$million	Regional share		$million	Regional share
Rice, all	$ 203.5	21.9%	Rice, All	$ 325.0	30.5%	Cattle, all	$ 110.0	21.5%	Cattle, all	$ 59.5	45.6%
Grapes, Wine	$ 112.4	12.1%	Almonds, All	$ 281.5	26.5%	Grapes, Wine	$ 94.3	18.5%	Livestock and Poultry Products	$ 18.4	14.1%
Tomatoes	$ 98.6	10.6%	Walnuts, All	$ 109.8	10.3%	Hay, all	$ 74.6	14.6%	Pasture, all	$ 17.1	13.1%
Stone fruit	$ 98.1	10.6%	Cattle, All	$ 73.8	6.9%	Milk, all	$ 62.4	12.2%	Grapes, Wine	$ 14.7	11.3%
Field Crops	$ 85.9	9.2%	Milk & Dairy	$ 70.9	6.7%	Pasture, all	$ 36.9	7.2%	Carrots	$ 7.8	6.0%
Walnuts, all	$ 77.1	8.3%	Tomatoes, Processing	$ 44.3	4.2%	Pears, all	$ 33.7	6.6%	Hay, all	$ 7.7	5.9%
Cattle and Calves	$ 67.9	7.3%	Plums, Dried	$ 27.4	2.6%	Plants, Strawberry	$ 25.9	5.1%	Sheep and Lambs	$ 1.9	1.4%
Almonds, All	$ 36.6	3.9%	Olives	$ 25.7	2.4%	Livestock	$ 21.1	4.1%	Fruit & nut crops	$ 1.2	0.9%
Livestock & Poultry	$ 27.6	3.0%	Hay, All	$ 21.3	2.0%	Potatoes, Irish	$ 17.9	3.5%	Garlic, All	$ 0.9	0.7%
Pasture, All	$ 10.8	1.2%	Pasture, All	$ 15.1	1.4%	Other field crops	$ 17.7	3.5%	Vegetable Crops	$ 0.4	0.3%

Source: California Department of Food and Agriculture, County/State Liason Office, Annual County Crop Reports

List of Figures

Industry Code Cluster Definition

Sub-Group	NAICS	Industry
Distribution		
	4244	Grocery and Related Product Wholesalers
	4245	Farm Product Raw Material Merchant Wholesalers
	4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers
	42491	Farm Supplies Merchant Wholesalers
	4452	Specialty Food Stores
	49313	Farm Product Warehousing and Storage
Processing		
	3111	Animal Food Manufacturing
	3112	Grain and Oilseed Milling
	3113	Sugar and Confectionery Product Manufacturing
	3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing
	3115	Dairy Product Manufacturing
	3116	Animal Slaughtering and Processing
	3117	Seafood Product Preparation and Packaging
	3118	Bakeries and Tortilla Manufacturing
	3119	Other Food Manufacturing
	322215	Nonfolding Sanitary Food Container Manufacturing
	32616	Plastics Bottle Manufacturing
	327213	Glass Container Manufacturing
	332115	Crown and Closure Manufacturing
	332431	Metal Can Manufacturing
	31211	Soft Drink and Ice Manufacturing
	31212	Breweries
	31213	Wineries
	31214	Distilleries
Production		
	1111	Oilseed and Grain Farming
	1113	Fruit and Tree Nut Farming
	11141	Food Crops Grown Under Cover
	11193	Sugarcane Farming
	11194	Hay Farming
	111991	Sugar Beet Farming
	111992	Peanut Farming
	1112	Vegetable and Melon Farming
	111998	All Other Misc. Crop Farming
	1121	Cattle Ranching and Farming
	1122	Hog and Pig Farming
	1123	Poultry and Egg Production
	1124	Sheep and Goat Farming
	1125	Animal Aquaculture
	1129	Other Animal Production
	1141	Fishing
	1142	Hunting and Trapping
Support		
	1151	Support Activities for Crop Production
	1152	Support Activities for Animal Production
	22131	Water Supply and Irrigation Systems
	23711	Water and Sewer Line and Related Structures Construction
	32192	Wood Container and Pallet Manufacturing
	3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing
	33311	Agricultural Implement Manufacturing
	333294	Food Product Machinery Manufacturing
	42382	Farm and Garden Machinery and Equipment Merchant Wholesalers
	54194	Veterinary Services

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