Colorado's Agribusiness System: Its Contribution to the State Economy in 1997

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Copies are also available on the Department of Agricultural and Resource Economics website at: http://dare.agsci.colostate.edu/questions.html or Colorado Department of Agriculture at: http://www.ag.state.co.us/resourceanalysis.

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The Contribution of Colorado's Agribusiness System to the State's Economy in 1997

July 2000
Department of Agricultural and Resource Economics

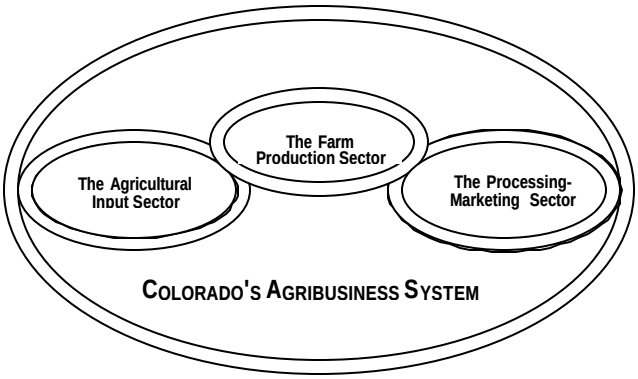
Executive Summary *

What is the Agribusiness System?

The *Agribusiness System* is composed of three distinct economic sectors: Farm Production, Agricultural Inputs, and Agricultural Processing and Marketing.

Agribusiness encompasses the traditional farm production of commodities such as wheat, corn, and livestock, green industry, and horse industry with linkages to the agricultural inputs necessary for their growth. Agribusiness also includes the first order processing and marketing necessary to bring the final goods to the consumer. Agribusiness does not include economic contributions from restaurants and supermarkets.

The Agribusiness System



What is Economic Contribution?

This paper describes *economic contribution* in four ways: employment, income, value added, and gross sales.

Employment shows the number of jobs that are located in the different industries. Farm employment production numbers reflect FTE labor and include farmer owner/operator's labor only if (1) the farmer owner/operator reported agriculture as the primary source of income and (2) the farmer owner/operator employed additional laborers as reported by the Colorado Department of Labor and Employment.

Proprietor and Labor Income includes net income from employees and business but does not include corporate farm income, which is provided in the full report. This section does not suffer from the double counting problem associated with gross sales.

Economic Sector	Employment	% of State	Income ($Million)	% of State	Value Added ($Million)	Gross Sales ($Million)
Farm Production	38,508	1.63	$733	0.65	$816	$4,534
Inputs	36,364	1.54	685	0.61	872	1,531
Processing/Marketing	30,267	1.28	1,046	0.93	1,611	9,803
Total Agribusiness	**105,140**	**4.44**	**$2,464**	**2.19**	**$3,299**	**$15,868**
State Totals:	2,365,508		$112,699		N/A	N/A

Value added is often cited as the most accurate measure of economic contribution. It is net income plus indirect business taxes paid to government entities.

Gross Sales is a common measure of economic performance. However, double counting as each product moves from one sector to the next in the agribusiness system limits its validity.

* This is the executive summary of the full report that can be obtained from the Colorado State University Cooperative Extension Resource Center, General Services Building, Fort Collins, Colorado, 80523-1172 (970-491-6198), or the Department of Agricultural and Resource Economics website: http://dare.agsci.colostate.edu/questions.html

Colorado Farm Gate and Agribusiness Employment, Income, and Sales by County in 1997

County	Employment			Personal Income ($1,000)			Sales ($1,000)	
	Farm Gate	Agribusiness	% Total County	Farm Gate	Agribusiness	% Total County	Farm Gate+	Agribusiness*
Adams	1,491	5,951	4.3%	$28,590	$145,176	2.1%	$87,739	$941,927
Alamosa	468	677	7.2%	17,333	21,523	7.9%	57,195	68,323
Arapahoe	411	5,279	1.8%	-1,487	114,278	0.7%	23,612	487,242
Archuleta	180	239	5.3%	-60	698	0.7%	6,149	8,256
Baca	869	1,034	27.6%	26,058	28,417	36.5%	77,369	93,978
Bent	493	589	19.4%	15,969	17,445	16.8%	50,975	56,269
Boulder	1,055	5,069	3.1%	14,308	107,094	1.1%	43,671	624,242
Chaffee	177	269	3.2%	-682	747	0.4%	5,161	9,563
Cheyenne	278	384	24.0%	7,311	9,586	23.7%	33,645	40,507
Clear Creek	0	36	0.8%	0	404	0.3%	30	1,799
Conejos	610	810	23.7%	5,849	8,847	12.9%	25,488	34,635
Costilla	279	421	28.6%	6,355	7,332	20.7%	15,978	20,056
Crowley	291	327	20.7%	10,518	11,185	22.0%	73,487	74,990
Custer	138	163	11.4%	-559	-324	-1.2%	4,816	5,600
Delta	1,301	1,968	15.9%	4,878	18,087	6.3%	39,083	106,484
Denver	29	9,604	1.9%	942	316,500	1.1%	2,174	2,328,405
Dolores	144	181	24.0%	-290	583	3.3%	8,601	14,552
Douglas	694	2,378	5.3%	-624	29,741	1.7%	17,119	87,657
Eagle	132	730	2.4%	-985	9,157	0.8%	7,413	36,037
Elbert	629	978	19.9%	-2,751	2,402	2.1%	31,249	47,754
El Paso	870	4,074	1.6%	566	56,323	0.5%	30,330	306,344
Fremont	437	636	3.7%	1,186	3,862	0.6%	12,126	28,971
Garfield	578	1,069	4.5%	-1,113	9,006	1.2%	22,817	68,748
Gilpin	0	0	0.0%	0	20	0.0%	D	0
Grand	184	257	3.4%	-817	37	0.0%	8,833	11,308
Gunnison	261	333	3.2%	-238	916	0.3%	8,436	11,489
Hinsdale	0	3	0.6%	111	126	1.2%	377	453
Huerfano	281	315	9.0%	-1,771	-1,455	-2.2%	9,681	10,743
Jackson	290	314	25.2%	4,112	4,397	17.4%	15,593	16,401
Jefferson	711	8,886	4.0%	5,670	300,659	2.4%	19,474	2,014,734
Kiowa	250	314	26.1%	7,403	8,122	27.2%	61,724	66,954
Kit Carson	1,083	1,598	26.2%	43,855	53,752	34.5%	177,051	243,906
Lake	0	11	0.4%	0	116	0.1%	513	879
La Plata	805	1,494	5.1%	-2,801	9,782	1.1%	15,797	93,977
Larimer	1,568	5,337	4.5%	18,186	121,004	2.1%	100,483	671,103
Las Animas	646	715	9.5%	322	961	0.5%	20,336	24,420
Lincoln	601	736	18.7%	7,359	8,876	9.7%	44,773	55,040
Logan	1,203	2,283	18.2%	44,724	77,346	19.4%	292,740	509,264
Mesa	1,458	2,717	4.3%	0	27,024	1.4%	50,450	233,861
Mineral	44	67	10.4%	70	115	0.8%	146	674
Moffat	590	764	9.3%	-370	2,640	1.0%	18,938	38,996
Montezuma	1,351	1,647	11.4%	-2,197	2,950	0.9%	21,874	48,080
Montrose	1,172	2,548	12.9%	9,038	31,065	5.8%	88,274	299,954
Morgan	1,499	4,658	27.7%	49,988	129,696	23.9%	405,945	1,159,574
Otero	577	1,395	12.5%	15,295	30,925	10.0%	100,214	244,527
Ouray	103	136	6.7%	-1,296	-968	-2.1%	3,237	4,295
Park	172	235	7.1%	633	1,737	1.9%	3,622	6,958
Phillips	687	940	28.2%	29,379	35,198	39.9%	117,064	151,880
Pitkin	79	418	2.2%	0	7,770	1.0%	1,527	22,937
Prowers	799	1,212	13.7%	43,618	51,078	18.9%	150,677	187,900
Pueblo	666	1,982	3.3%	3,681	33,215	1.4%	33,642	286,423
Rio Blanco	355	466	10.9%	-4,002	-2,379	-1.7%	14,086	18,230
Rio Grande	479	1,344	20.5%	16,413	35,470	17.4%	72,818	129,576
Routt	431	607	3.7%	531	3,940	0.8%	22,858	30,492
Saguache	470	781	27.3%	9,894	15,713	25.6%	50,305	72,723
San Juan	0	0	0.0%	0	7	0.1%	D	0
San Miguel	0	92	1.6%	-443	1,758	1.0%	2,897	7,286
Sedgwick	339	615	31.2%	9,632	11,877	28.6%	54,751	73,490
Summit	0	173	0.9%	-744	2,689	0.4%	1,511	9,011
Teller	0	96	1.1%	-753	24	0.0%	1,277	4,164
Washington	1,024	1,365	34.3%	33,355	39,105	41.5%	97,898	152,806
Weld	5,384	13,306	17.0%	170,053	390,528	11.6%	1,286,636	2,874,124
Yuma	1,393	2,019	28.9%	93,939	106,200	48.8%	481,374	562,631
Colorado	**38,508**	**105,140**	**4.4%**	**$733,144**	**$2,463,988**	**2.2%**	**$4,534,213**	**$15,868,129+**

Source: See Appendix 2. Note: Counties do not sum to state total due to estimations and non-disclosed data (D) at the county level.
* Procedures for estimating county-level sales provided by Colorado Department of Agriculture. For complete procedures see full report.
+Sales at the Farm Gate and Colorado Total Gross Sales use Colorado Agricultural Census data. See Appendix 2 in full report.

COUNTY AGRIBUSINESS DEPENDENCY

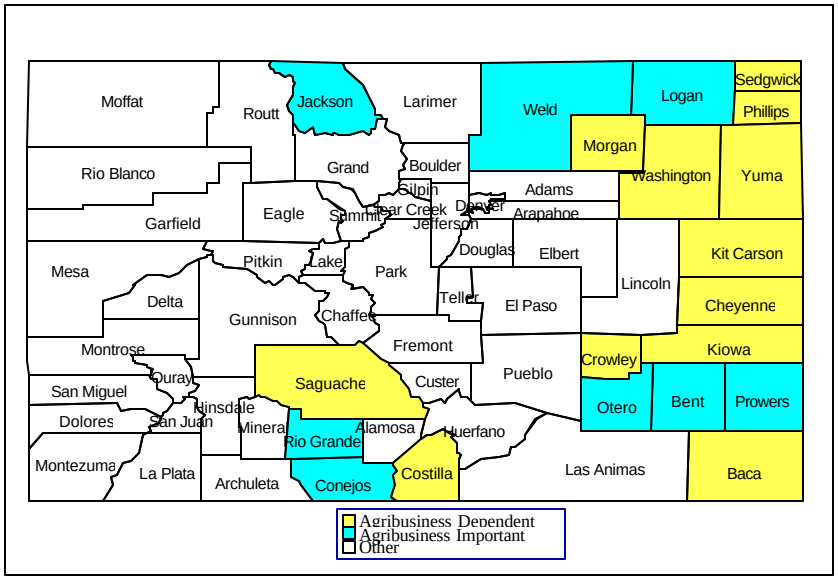
Colorado Rankings by Agribusiness Income and Percent of Total County Income in 1997

Agribusiness Income ($1,000)		Agribusiness % of County Total	
Weld	390,528	Yuma	48.8%
Denver	316,500	Washington	41.5%
Jefferson	300,659	Phillips	39.9%
Adams	145,176	Baca	36.5%
Morgan	129,696	Kit Carson	34.5%
Larimer	121,004	Sedgwick	28.6%
Arapahoe	114,278	Kiowa	27.2%
Boulder	107,094	Saguache	25.6%
Yuma	106,200	Morgan	23.9%
Logan	77,346	Cheyenne	23.7%
El Paso	56,323	Crowley	22.0%
Kit Carson	53,752	Costilla	20.7%
Prowers	51,078	Logan	19.4%
Washington	39,105	Prowers	18.9%
Rio Grande	35,470	Rio Grande	17.4%
Phillips	35,198	Jackson	17.4%
Pueblo	33,215	Bent	16.8%
Montrose	31,065	Conejos	12.9%
Otero	30,925	Weld	11.6%
Douglas	29,741	Otero	10.0%
Baca	28,417	Lincoln	9.7%
Mesa	27,024	Alamosa	7.9%
Alamosa	21,523	Delta	6.3%
Delta	18,087	Montrose	5.8%
Bent	17,445	Dolores	3.3%
Saguache	15,713	Jefferson	2.4%
Sedgwick	11,877	Adams	2.1%
Crowley	11,185	Elbert	2.1%
La Plata	9,782	Larimer	2.1%
Cheyenne	9,586	Park	1.9%
Eagle	9,157	Douglas	1.7%
Garfield	9,006	Pueblo	1.4%
Lincoln	8,876	Mesa	1.4%
Conejos	8,847	Hinsdale	1.2%
Kiowa	8,122	Garfield	1.2%
Pitkin	7,770	Denver	1.1%
Costilla	7,332	La Plata	1.1%
Jackson	4,397	Boulder	1.1%
Routt	3,940	San Miguel	1.0%
Fremont	3,862	Pitkin	1.0%
Montezuma	2,950	Moffat	1.0%
Summit	2,689	Montezuma	0.9%
Moffat	2,640	Mineral	0.8%
Elbert	2,402	Eagle	0.8%
San Miguel	1,758	Routt	0.8%
Park	1,737	Archuleta	0.7%
Las Animas	961	Arapahoe	0.7%
Gunnison	916	Fremont	0.6%
Chaffee	747	Las Animas	0.5%
Archuleta	698	El Paso	0.5%
Dolores	583	Summit	0.4%
Clear Creek	404	Chaffee	0.4%
Hinsdale	126	Gunnison	0.3%
Lake	116	Clear Creek	0.3%
Mineral	115	Lake	0.1%
Grand	37	San Juan	0.1%
Teller	24	Grand	0.0%
Gilpin	20	Teller	0.0%
San Juan	7	Gilpin	0.0%
Custer	-324	Custer	-1.2%
Ouray	-968	Rio Blanco	-1.7%
Huerfano	-1,455	Ouray	-2.1%
Rio Blanco	-2,379	Huerfano	-2.2%

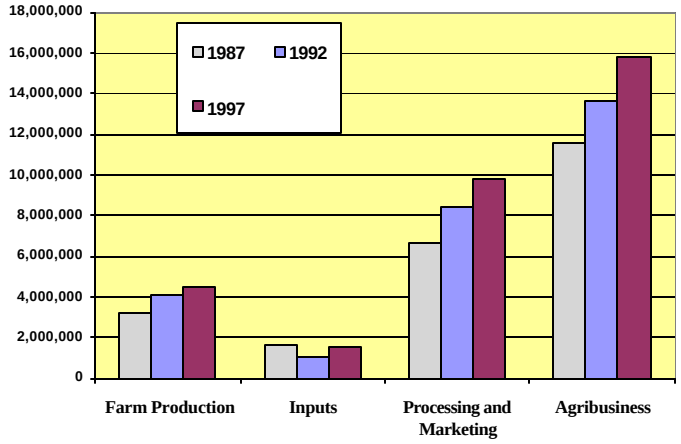
The figure below shows the location of Colorado's 63 counties and their degree of dependency on agribusiness. Production agriculture alone does not fully represent the economic importance of farming and ranching to an economy. As discussed throughout the full report, other industries depend on production agriculture such as fertilizer sale, food processing, and farm machinery production.

In order to recognize the degree of contribution of agribusiness to a county, two categories have been developed. *Agribusiness Dependent* counties receive over 20% of total county income from agribusiness industries. *Agribusiness Important* counties receive between 10% and 20% of total county income from agribusiness industries. The Other category represents those counties that receive less than 10% of their total county income from agribusiness. Agribusiness dependent counties are not the only counties with large agribusiness sectors. Some counties are not classified as agribusiness important or dependent because they have relatively large non-agricultural sectors. Eight of the 63 counties are *agribusiness important* and twelve are *agribusiness dependent*. Therefore, over 31% of Colorado counties continue to be either *agribusiness dependent* or *agribusiness important* in 1997, which does not represent a significant change from 1992. However, there have been some individual changes within the categories. Of particular note is Lincoln County, which had been ranked in 1992 as agricultural dependent but is now at less than 10%. Dolores County, which had been ranked as agricultural important is now less than 5%. Costilla County is now ranked as agricultural dependent at over 20% and Conejos County has increased to agricultural important with over 12%.

The county rankings of agribusiness importance and dependency are shown in the table on the left. In the first two columns, the counties are ranked according to the total size of agribusiness. The last two columns show the ranking by the percentage of total county income that agribusiness provides in each county. Metro counties rank highest in size while rural sectors rank highest in importance.



Agribusiness Sales (in $1,000s)



Colorado Agriculture in 1997

- 28,268 farms and ranches
  Increase of 11% from 1992
- Average farm size of 1,154 acres
  Decreased by 10% from 1992
- Farm sales total $4.53 billion
  Increased by 13% from 1992
  Crop sales are 29%; Livestock sales are 71%
- Land in Farms: 32.6 million acres
  Decreased by 4% from 1992
- Farm Assets equal $22.8 billion
  Increase of 33% from 1992
- Farm debt is $3.6 billion
  Increase of 27% from 1992
- 1/3 of operators worked 200 days or more off farm
  up 22% from 25 years ago

Complete Citations and references are disclosed in full report.
Partial funding provi ded by the Colorado Department of Agriculture

INTRODUCTION

This report is one of a series of reports that appears approximately every five years to describe the contribution of agribusiness to the state's economy. Colorado's economy has continued to boom in the decade of the nineties and personal wealth is among the highest in the Rocky Mountain Region. In some areas, agriculture has grown while in the more traditional areas, we've seen continual declines. In spite of difficult times for agricultural producers in the U.S., Colorado continues to do well in several areas. The state still ranks 17th (as it did in our last report) in total value of agricultural products sold. We rank fourth in value of cattle and calf sales. This report will document and discuss these as well as other contributions of the agribusiness system to Colorado's economy.

Agribusiness encompasses the **traditional farm production** of commodities such as wheat, corn, and livestock, green and horse industries with linkages to the **agricultural inputs** necessary for their growth. Agribusiness also includes the **processing and marketing** necessary to bring the final goods to the consumer.

Colorado Agriculture in 1997

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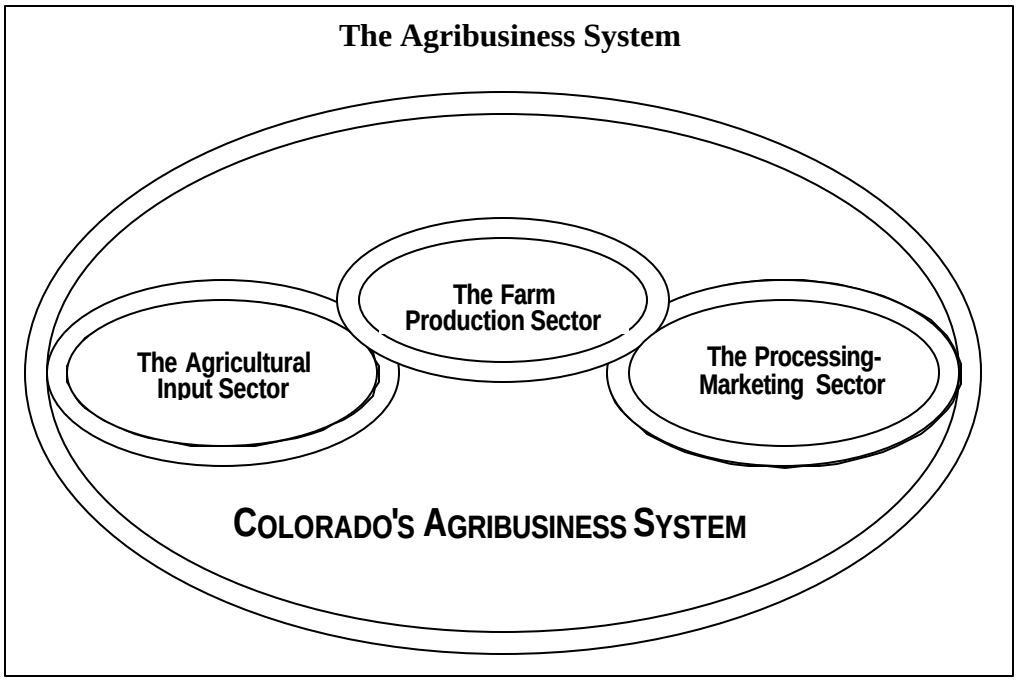
Unlike past editions of this report, this study is changing how the wholesale and retail sector is analyzed. This sector will not be included as part of the agribusiness system because it is made up of such things as beer, wine, liquor, groceries, and retail foods. Their importance to the Colorado economy is obviously extremely important, but we have tried to keep the measurement of economic factors as closely tied to the actual agribusiness system as possible and many of these items are in reality outside of this system. Thus changes in this sector are reported in Appendix 3 at the end of this report.

This study, as done in the past, will measure the importance of Colorado's agribusiness system in several ways including analysis of agricultural production value, crop and livestock concentration, farm financials, and export data. It will also provide data on agribusiness employment, income, and sales breaking out this information into the three primary sectors where possible. In order to make comparisons to past census data, this report will provide economic measurements in the same format as the past two reports published in 1991 and 1995 where possible. In some instances, comparisons are made more difficult by the fact that SIC codes and some data sources have changed since 1992. These changes are noted, however, and no trend analysis is made in such cases.

The face of agriculture continues to change and grow and by the next census report, we will be facing the challenge of incorporating the internet sales, employment, and income into our agribusiness numbers. If agriculture is to continue to be a force in the Colorado economy, however, this is a challenge that we cannot ignore and should embrace beginning now.

HOW TO DEFINE THE AGRIBUSINESS SYSTEM

The agribusiness system is made up of three sectors: farm production, agricultural inputs, and processing/marketing.[1] Each sector provides a different view of how agriculture and related industries impact the state. Values are reported for all three sectors throughout this report.



Farm Production:

Farm production has changed dramatically over the past 150 years in America. Up until the Civil War, 90 percent of American families made their living and were entirely self sufficient from the products produced on the farm. Today, however, all farm employees (proprietors and laborers) total only one percent of the population. The economic contribution of Colorado's farms and ranches is called the **"Farm Production"** sector in this report.

Agricultural Inputs:

As farmers moved to industrial jobs over the past decades, there was an increased trend towards the growth of businesses that began to specialize in the inputs that farmers used in production agriculture. The **Ag Input** sector of this report includes such items as chemicals, seed, fertilizer, feed, fuel, and machinery. There has also been tremendous growth in the service component of this sector where we have seen explosive growth in the areas of horticulture and landscape architecture.

Processing and Marketing:

Just as the agricultural input sector was growing in response to the change in production agriculture, the need for commodity processing and marketing was also moving off of the farm. The individual farmer found that it was no longer efficient to do his/her own processing of commodities grown on the farm. Technological changes that are still continuing today have instead allowed for the evolution and growth of processing and marketing firms, the value of which is included in the **Processing/Marketing** sector of this report.

Many economic activities have important ties to agriculture. The green industry (turf grass produc-

[1] A complete description of all sectors and subsectors is given in Appendix 1. Information for Food wholesaling and retailing is included in Appendix 3. Figure source: *Principles of Agribusiness Management*, p.7, 1995.

MEASURING ECONOMIC CONTRIBUTION

tion and landscaping) and the horse industry are two examples. In this report, we have tried to include all activities closely tied to agriculture such as turf production on agricultural land, breeding, feeding, and health care of horses. However, it is beyond the scope of this study to report the complete impact of these industries.

MEASURING ECONOMIC CONTRIBUTION

There are at least seven ways to measure economic contribution. We will look at all of these in various combinations for the three agribusiness sectors.

1) Production information **-** This measure delineates the products being produced, how much is being produced, who is producing the products and where the products are being used. The two most common ways to measure production information are sales, also called cash receipts, and the total value of production. Value differs from sales since many products are consumed on the farm or ranch.

2) Sales **-** Sales, also called cash receipts, include the sum of all sales transactions in each of the economic sectors. This measure is what people think of most often when they look at economic activity. Unfortunately, sales can be a misleading measure of economic contribution. The problem with sales measures is multiple counting that works in the following way: A product is sold to a processor for $1.00. The processor adds value to the product and sells it for $1.50. While only $1.50 of value has been created, the sales measure reports a value of $2.50.

3) Value added **-** Value added is considered the most accurate and appropriate measure of economic contribution, but it can be difficult to measure. Value added sums income with indirect taxes.

4) Income (Proprietor and Labor Income) – Income subtracts out all multiple counting from sales. In the example above, income would be reported as $1.50. Income can be thought of as *Sales* minus costs. It includes labor and proprietor's income from the market and government payments. It does not include corporate farm income, which is provided in Appendix 4.

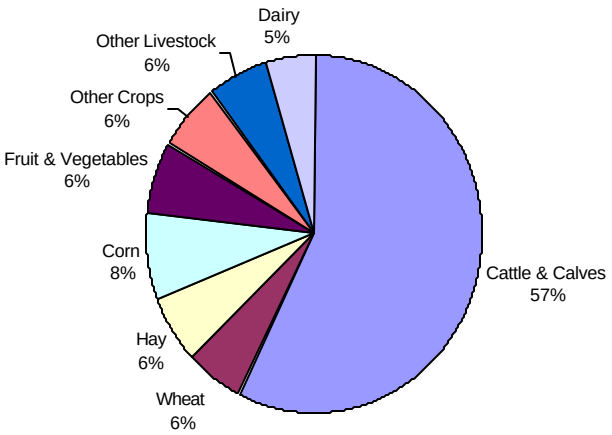
5*) Employment* **-** shows the number of jobs that are located in the different industries. Farm employment production numbers reflect FTE labor and include farmer owner/operator's labor only if (1) the farmer owner/operator reported agriculture as the primary source of income and (2) the farmer owner/operator employed additional laborers as reported by the Colorado Department of Labor and Employment. Employment is a useful and easily understood measure, but it may short change agriculture's economic contribution. The capital intensive nature of agriculture means that each agricultural worker is considerably more productive than workers in labor intensive sectors.

6) Capital investment **-** The measure of capital investment from the balance sheet of agriculture is a useful indicator of economic contribution since investments generate opportunities for earnings.

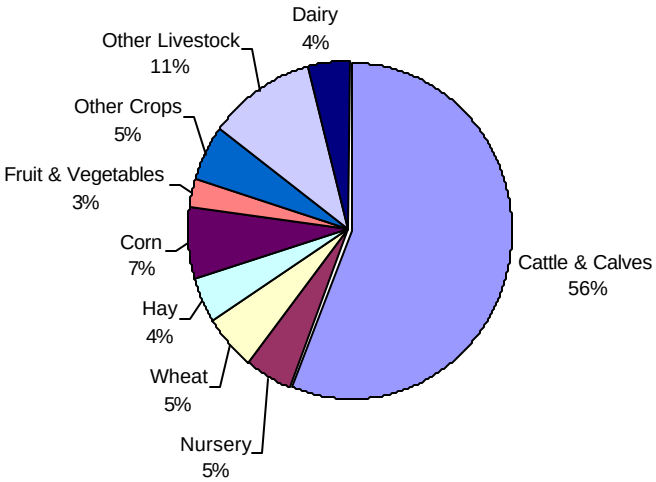
7) Multiplier effects **-** The multiplier effects show the impact of every dollar generated by agriculture creating new sales, more income, and more jobs.

AGRICULTURAL PRODUCTION VALUE IN 1992 AND 1997

Agricultural Production Value in 1992



Agricultural Production Value in 1997



The distribution of agriculture production value in 1997 is fairly consistent with the values recorded in 1992 as shown by the two graphs on this page. Value is considered to be slightly different from sales since some products are consumed on the farm or ranch. About two-thirds of the value from farm sales in Colorado continues to be from cattle and calves and livestock. This can be attributed to the large expanses of public and private rangeland, irrigated hay land, and Colorado's large feedlots. We have included a new category in the 1997 chart entitled "nursery" to reflect the dramatic growth in Colorado's green industry. Major commodity crops for the state are wheat, corn, hay, sorghum, and proso millet. Colorado continues to rank high nationally for value of sales in some crops such as hay, silage, field seeds, grass seeds, and millet and the state also continues to rank 17th overall in livestock and crops for the US.

	Rank in the US in 1997	Value (Million $)
Total	17	4,534
Livestock	11	3,207
Crops	24	1,327
Leading Commodities		
Cattle/Calves	4	2,538
Corn	10	240

Source: Colorado Agricultural Statistics, 1997 and USDA-ERS State Financial Summary, 1996.

FARM INVESTMENT AND FINANCIAL HEALTH

This section refers only to **farm production** and does not include financial statements for the agribusiness system in total. It is important to remember that profitability is only one measure of business success and the wealth of Colorado's farms also reflects the economic well being of farmers and their contribution to the economy. Wealth, or net worth, equals the assets a farmer holds minus liabilities. In 1997, assets increased by over 33% from 1992, a fact that can be attributed in large part to the improved value of real estate holdings, which increased by 41%. This compares with an increased U.S. real estate value of 24.6%. Land values in the state have increased anywhere from 40-100% along the front range during the past decade to virtually no (or negative) growth along the eastern plains.

Colorado Farm Balance Sheet
(Millions of Dollars)

		1992*	1997
Farm assets	**Total**	$17,109	$22,778
	Real estate	$12, 584	$17,793
	Livestock and poultry	$2,056	$2,124
	Machinery/motor vehicle	$1,169	$1,190
	Crops	$359	$428
	Purchased inputs	$113	$92
	Financial	$828	$1,151
Farm debt	**Total**	$2,792	$3,555
	Real estate	$1,487	$1,692
	Non-Real estate	$1,305	$1,862
Equity	**Total**	$14,317	$19,223

*1992 Data Revised from Last Report.
Source: Colorado Agricultural Statistics 1999

Financial Indicators

	1992*	1997
Solvency		
Debt/Equity	19.46	18.50
Debt/Assets	16.29	15.60

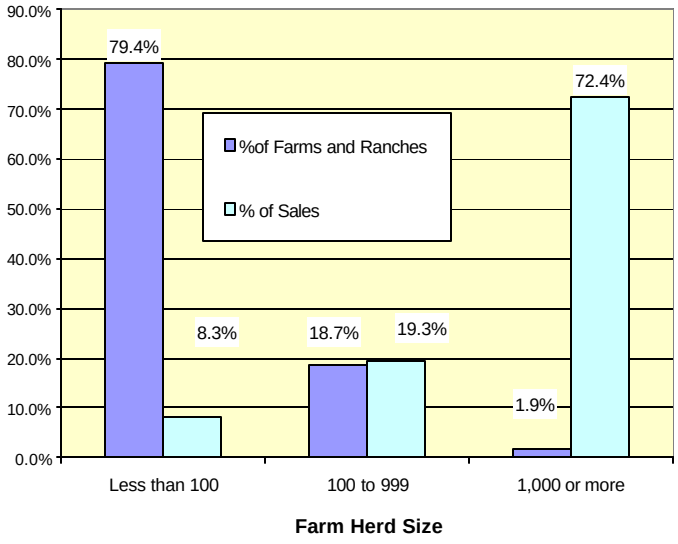
∗ 1992 Data Revised from Last Report.
Source: U.S. Dept. of Agriculture, ERS, State Financial Summary

Farm debt has increased by 27% since 1992, a fact which is due in some measure to the volatility of the cattle and hog businesses over the past several years. In addition, we are finding an increase in the leveraging of the dairy business given the improvement that the industry has been enjoying of late. This debt figure compares with only a 12.1% increase nationally. It is important, however, to look at these levels on a relative basis as well and for the Colorado producer, debt ratios have remained relatively stable over the past five years as shown in the Financial Indicators Table to the left. Unfortunately this continued strong balance sheet has *not* translated into very substantial income increases over the past ten years. This is discussed in more detail in the Economic Impact Section.

CROP AND LIVESTOCK CONCENTRATION

Concentration in the production of grains and livestock is shown here by comparing the percentage of farms that are a given size (number of animals or acres) to the percentage of sales produced in that size category.

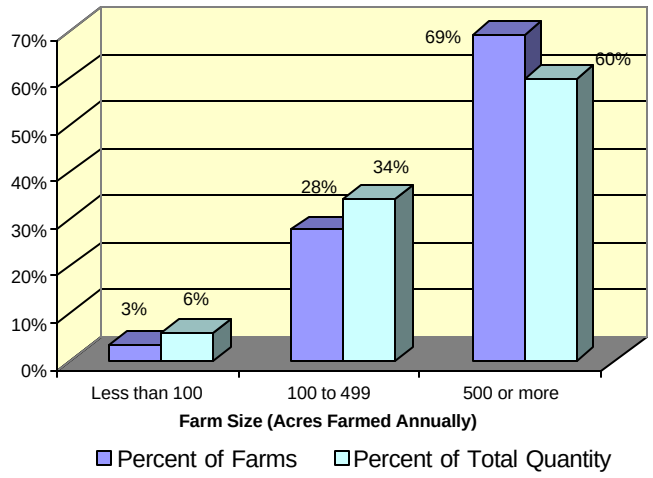
Concentration in Cattle and Calf Production 1997



The graph on the left illustrates concentration with respect to sales of cattle and calves. The dark bars are the percentage of farms in each size category and the light bars are the percentage of sales in each size category. Colorado is continuing to experience concentration in the cattle industry with little change occurring over the past 10 years. Producers that sell under 100 animals each year make up almost 80% of the farms (compared with 76% in 1987) while only accounting for approximately 8% and 9% of sales respectively. In contrast, those farms and ranches with more than 1,000 animals sold annually account for over 72% of sales but represent only 2% of the producers. This compares with 67% and 2% respectively in 1987. Most of the concentration continues to occur in feedlots.

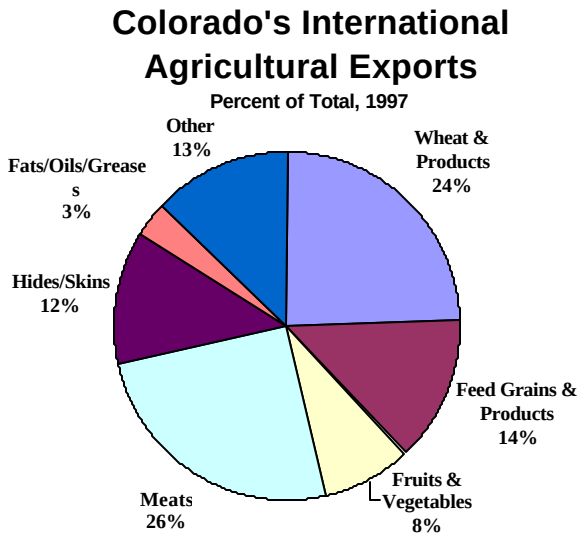
As shown to the right, the extent of concentration in the production of grain is much less than concentration in cattle, however, concentration has increased somewhat over the past decade. In 1987 large farms with over 500 acres accounted for 46% of sales with farms holding less than 100 acres accounting for 11% of the sales. In 1997, the large farms now account for 60% of the sales with the smaller farms down to 6% of sales.

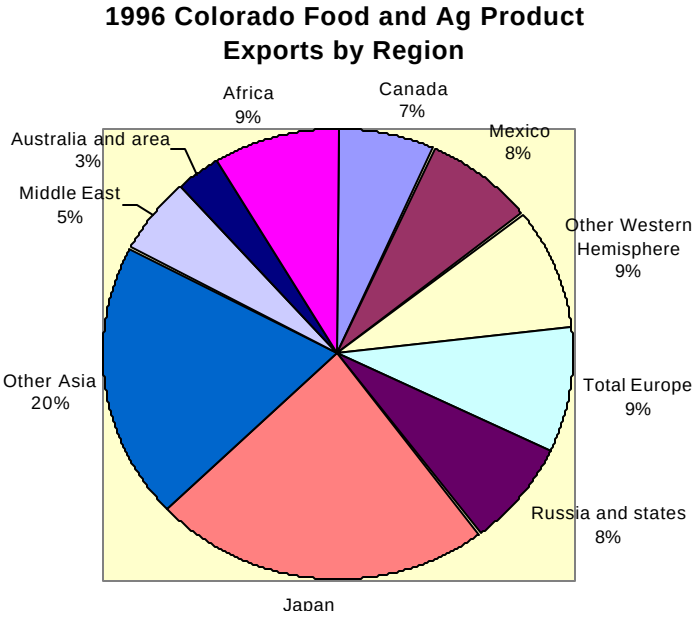
Concentration in Grain Production Includes Corn, Wheat, Sorghum, and Barley 1997



EXPORTS

Agricultural exports increased by almost 18% from 1992 and totaled $985 million. Although wheat continues to be a main exported crop, it has fallen over the past decade and has now been replaced by meats. This can best be explained by the increased processed meat products which are finding their way overseas where Japan and Asia remain the primary importers of Colorado exported agricultural products. Asia accounts for over 36% of US wheat exports and Japan accounts for 16% of all US soybean exports and Asia, as a whole, accounts for 1/3 of US corn exports. Thus the health of these Asian economies, and most especially Japan, has an important and direct impact on producers in the US and Colorado in particular.





With respect to our two border neighbors, the following has occurred. Exports to Canada have continued to increase, growing by 26% from 1994 to 1998 but imports, on the other hand, have been increasing at an even faster rate giving the US a negative trade balance with Canada since 1995. Agricultural exports to Mexico have also been increasing (12% since 1995), however, the US currently has a positive balance of trade balance with Mexico.

Sources: University of Colorado at Boulder, Business Research Division. *1996 Colorado Business Economic Outlook*. Boulder, CO 1996 and 1999. U.S. Dept. of Agriculture, ERS, *Agricultural Exports: Estimated Value by Commodity Group and State*, 1998.

ECONOMIC IMPACTS OF AGRIBUSINESS ON COLORADO

In the following economic impact sections, we have had to be careful with any trend analysis and comparisons due to the fact that both methodology and industrial classifications have changed between 1992 and 1997. Thus **direct** comparisons of **absolute** values between the 1992 and this publications are done only with sales data. (Relative comparisons are done using same data sources to allow for trend analysis.)

The total contribution of each sector to Colorado employment, income, value added and sales for the current census is shown in Table 1 below. Income includes labor wages and proprietor income only. Value added sums indirect business taxes and income and as already discussed, it is regarded as a better indicator of agriculture's contribution to the state's economy because gross sales include multiple counting since most items exchange hands several times.

The first row of Table 1 is farm production, which is the most basic agricultural sector. Agricultural inputs and processing/marketing are then added to farm production to give a total for agribusiness numbers for the state.

Gross sales in the agribusiness system totaled $15,868 million. This is a 16% increase over 1992 and a 37% increase over 1987. [2] The total agribusiness income is up by over 17.5%. (More details are in the following pages.) As a *percent of the state's total income*, agribusiness' contribution is down by less than ½ of one percent. Colorado's overall economy is simply exceptionally strong and has been growing faster than the agribusiness sector. Agribusiness employment is up by 9.5% and again as a *percent of the state's overall employment*, agribusiness is down about ½ of one percent.

Table 1. The Agribusiness System Contribution to Colorado's Economy in 1997.

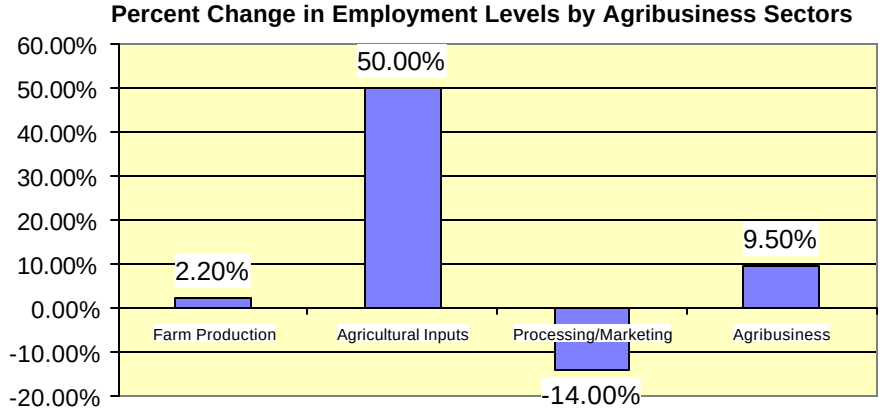
Economic Sector	Employment		Income		Value Added	Gross Sales
		% of State	($Million)	% of State	($Million)	($Million)
Farm Production	38,508	1.63	$733	0.65	$816	$4,534
Inputs	36,364	1.54	685	0.61	872	1,531
Processing and Marketing	30,267	1.28	1,046	0.93	1,611	9,803
Total Agribusiness	**105,140**	**4.44**	**$2,464**	**2.19**	**$3,299**	**$15,868**
State Totals:	2,365,508		$112,699		N/A	N/A

[2] Value added shows a 10% decline between 1992 and 1997 but this is due to a change in the SIC codes and no value added was reported in 1987 so no trend comparison could be provided at this time.

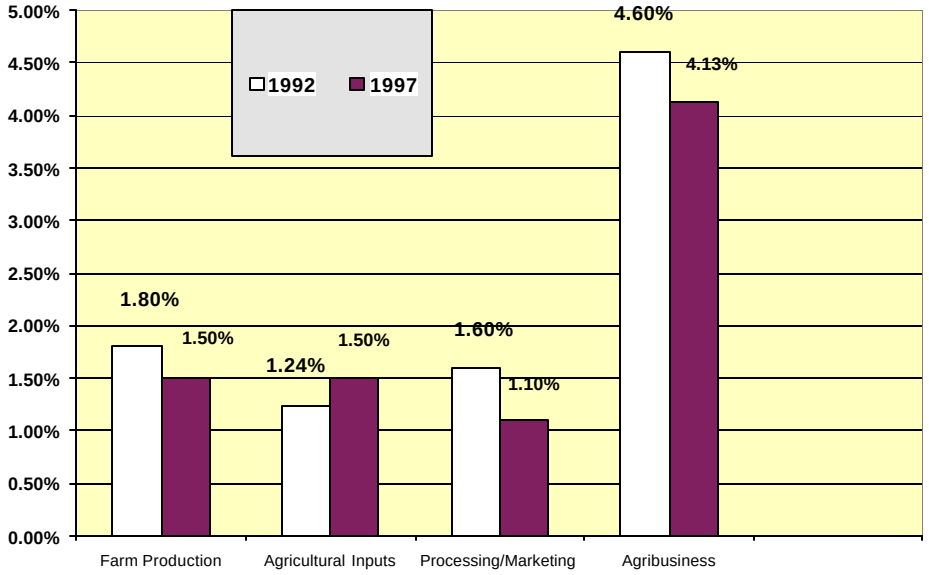
ECONOMIC IMPACTS OF AGRIBUSINESS ON COLORADO

COLORADO AGRIBUSINESS EMPLOYMENT

As shown in the graphs below, overall agribusiness employment has grown 9.5% since 1992. As a percent of the state's total employment, labor numbers at the farm gate have been dropping over the past decade from 3.5% down to the current level of 1.63%. With a decrease in the average size of farms coupled with the overall tight labor market in the state, this is not a surprising fact. Much of the growth in employment numbers in the input sector (50% since 1992) can be tied to the increased service component that includes horticulture, landscape architecture and even construction. Both Gilpin and Summit Counties have experienced an increase of employment, which can be tied to the growth in this sector. Employment numbers are down in the food manufacturing/processing sector, which accounts for much of the 14% drop in agribusiness marketing/ processing employment numbers since 1992. (The majority of this decrease occurred in Jefferson County.)
NOTE: As previously discussed, **direct** comparison of absolute numbers between years is not possible with income and employment figures.



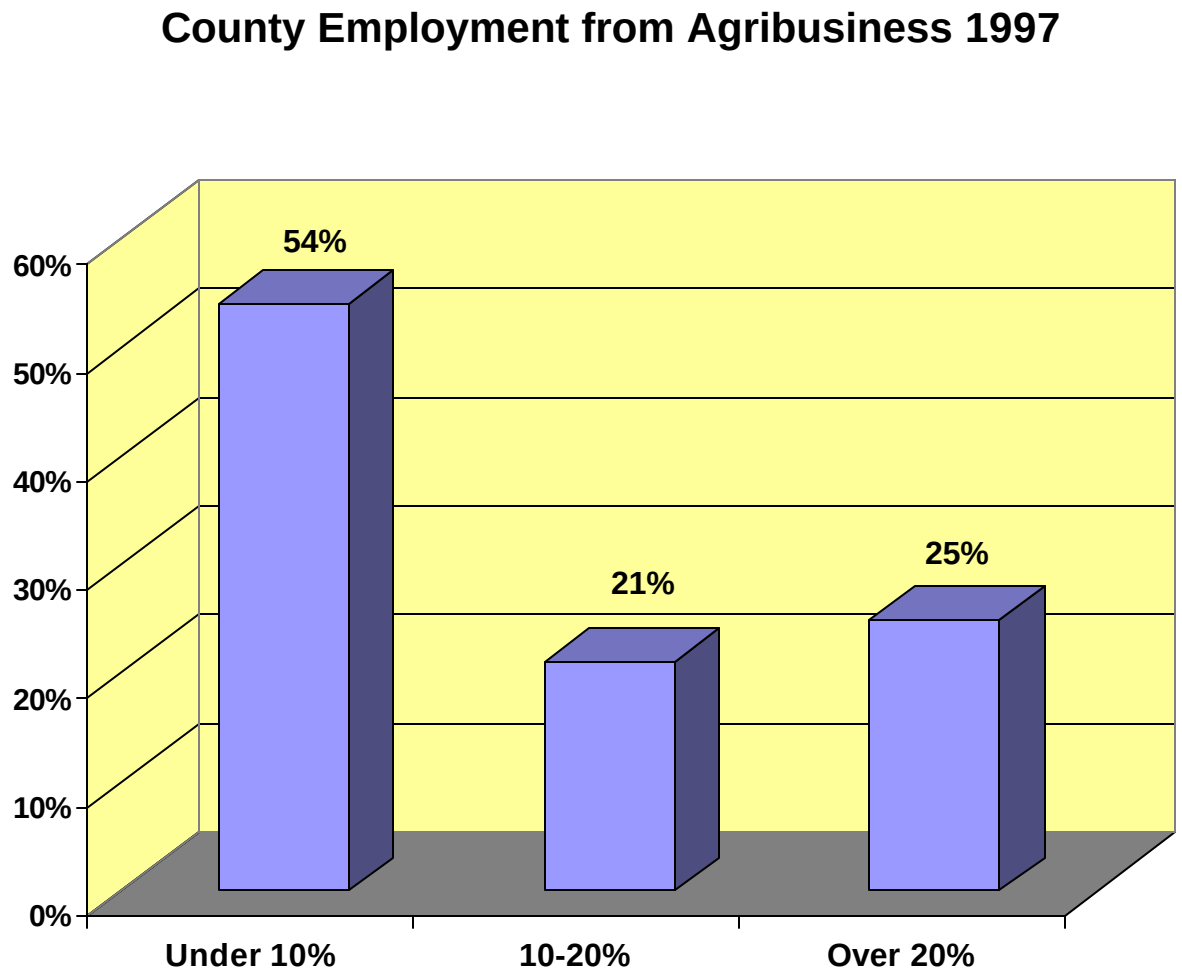
Colorado Agribusiness Employment as a Percent of State Employment Totals



COUNTY EMPLOYMENT IN THE AGRIBUSINESS SYSTEM

Employment from agribusiness is given by county on the next page in Table 2. Total employment in the agribusiness system has grown by 9.5%. As a percent of the total state employment numbers, agribusiness employment has remained relatively stable and has decreased by only ⅙ of 1% since 1992. It is also important to note that the overall size of counties with a high proportion of agricultural jobs tends to be small.

Washington County has the highest percentage of jobs owed to agribusiness at 34%. As shown in the graph below, 54% of the counties have less than 10% of their employment in agribusiness, and about 25% owe more than 20% to agribusiness.



Percent of County Employment from Agribusiness

Table 2: Colorado Employment in Agribusiness by County (1997)

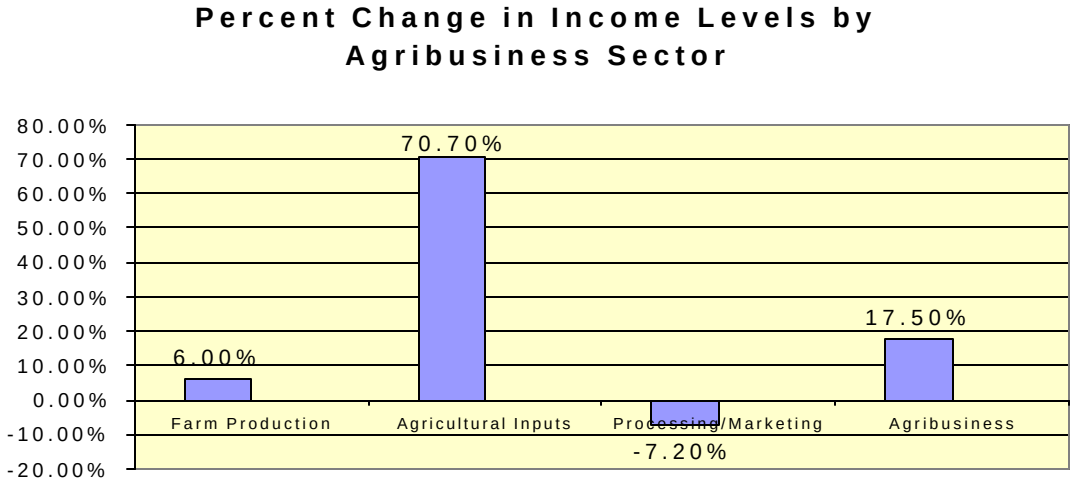
County	Farm Production	Ag. Inputs	Processing/ Marketing	Agribusiness Employment	Total County Employment	% of County Employment
Adams	1,491	1,968	2,492	5,951	139,172	4.3%
Alamosa	468	199	10	677	9,385	7.2%
Arapahoe	411	3,965	903	5,279	293,856	1.8%
Archuleta	180	60	0	239	4,511	5.3%
Baca	869	112	52	1,034	3,744	27.6%
Bent	493	88	8	589	3,032	19.4%
Boulder	1,055	2,332	1,682	5,069	163,676	3.1%
Chaffee	177	86	6	269	8,469	3.2%
Cheyenne	278	95	11	384	1,603	24.0%
Clear Creek	0	35	2	36	4,376	0.8%
Conejos	610	191	10	810	3,420	23.7%
Costilla	279	142	0	421	1,470	28.6%
Crowley	291	36	0	327	1,582	20.7%
Custer	138	25	0	163	1,437	11.4%
Delta	1,301	485	183	1,968	12,379	15.9%
Denver	29	3,156	6,418	9,604	507,319	1.9%
Dolores	144	19	18	181	752	24.0%
Douglas	694	1,679	5	2,378	44,913	5.3%
Eagle	132	593	5	730	30,315	2.4%
Elbert	629	337	13	978	4,906	19.9%
El Paso	870	2,629	575	4,074	262,798	1.6%
Fremont	437	154	44	636	17,092	3.7%
Garfield	578	378	113	1,069	23,735	4.5%
Gilpin	0	0	0	0	5,000	0.0%
Grand	184	72	0	257	7,494	3.4%
Gunnison	261	71	1	333	10,394	3.2%
Hinsdale	0	3	0	3	479	0.6%
Huerfano	281	34	0	315	3,484	9.0%
Jackson	290	23	0	314	1,243	25.2%
Jefferson	711	3,524	4,651	8,886	224,504	4.0%
Kiowa	250	47	16	314	1,200	26.1%
Kit Carson	1,083	300	215	1,598	6,097	26.2%
Lake	0	11	0	11	2,899	0.4%
La Plata	805	463	226	1,494	29,343	5.1%
Larimer	1,568	2,650	1,119	5,337	118,495	4.5%
Las Animas	646	59	10	715	7,487	9.5%
Lincoln	601	105	31	736	3,932	18.7%
Logan	1,203	468	612	2,283	12,565	18.2%
Mesa	1,458	750	509	2,717	63,887	4.3%
Mineral	44	23	0	67	640	10.4%
Moffat	590	114	60	764	8,229	9.3%
Montezuma	1,351	236	60	1,647	14,457	11.4%
Montrose	1,172	558	818	2,548	19,753	12.9%
Morgan	1,499	609	2,550	4,658	16,819	27.7%
Otero	577	301	517	1,395	11,172	12.5%
Ouray	103	33	0	136	2,032	6.7%
Park	172	58	5	235	3,291	7.1%
Phillips	687	157	95	940	3,333	28.2%
Pitkin	79	316	23	418	18,740	2.2%
Prowers	799	329	83	1,212	8,817	13.7%
Pueblo	666	530	787	1,982	59,632	3.3%
Rio Blanco	355	111	0	466	4,266	10.9%
Rio Grande	479	782	83	1,344	6,544	20.5%
Routt	431	175	1	607	16,435	3.7%
Saguache	470	248	63	781	2,856	27.3%
San Juan	0	0	0	0	352	0.0%
San Miguel	0	92	0	92	5,812	1.6%
Sedgwick	339	226	51	615	1,970	31.2%
Summit	0	173	0	173	19,901	0.9%
Teller	0	96	0	96	8,926	1.1%
Washington	1,024	148	193	1,365	3,979	34.3%
Weld	5,384	3,247	4,675	13,306	78,133	17.0%
Yuma	1,393	364	263	2,019	6,977	28.9%
Colorado	**38,508**	**36,364**	**30,267**	**105,140**	**2,365,508**	**4.4%**

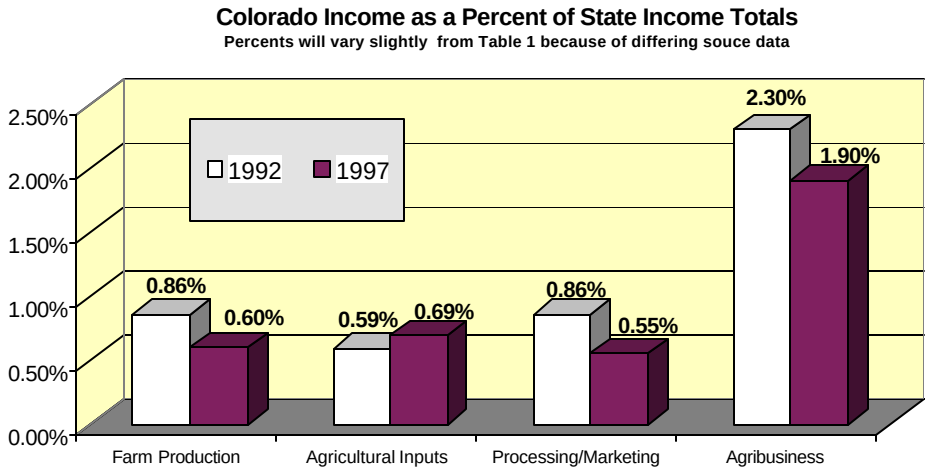
Source: See Appendix 2. % of County Employment = Agribusiness Employment/Total County Employment. Counties do not sum to state total due to estimations made at the county level.

COLORADO AGRIBUSINESS INCOME (PROPRIETOR AND LABOR INCOME)

As shown in the graphs below, overall agribusiness income is up by 17.5% since 1992. This increase, however, is not evenly distributed over the three sectors. Farm income generated from production is $733 million, which is up by 6% from 1992. Income as a percent of the state's total income has remained relatively constant only falling by 0.2% in 1997. The agricultural input sector has seen a dramatic increase in income of 70.7% since 1992. Input costs have been increasing faster than the growth in farm commodity prices and this is reflected in the higher values associated with agricultural input income levels. Coupled with this is the large increase in the service component of the input sector that includes horticulture and landscape architecture as already discussed in the employment section. Finally the processing/marketing sector has actually dropped by about 7% and this has to do with a decrease in the food manufacturing sector only (primarily in Jefferson County). Corporate Farm Income of $167 million is not included in these numbers and is provided in Table 8 in Appendix 4.

NOTE: As previously discussed, **direct** comparison of absolute numbers between years is not possible with income and employment figures.





Adjustments for inflation would reduce these 1997 nominal figures by 16.4%.

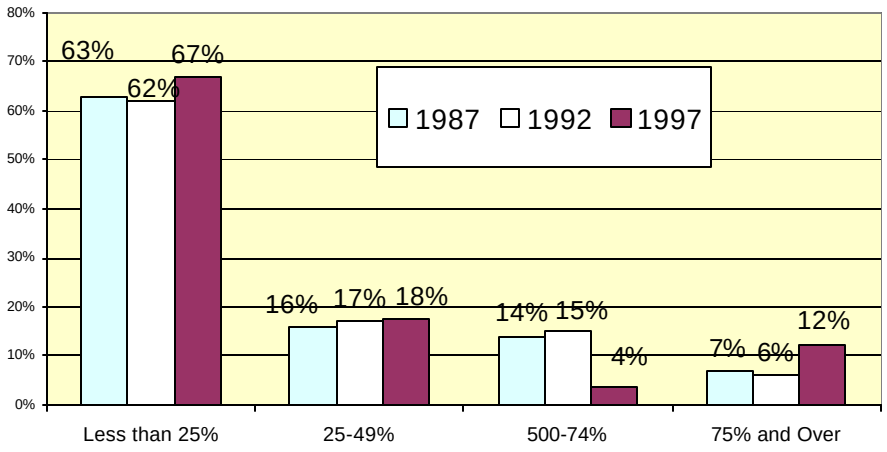
COUNTY LABOR AND PROPRIETOR INCOME FROM FARMING IN 1997

Overall, farm income was 0.7 percent of all net income in the state. Yuma county ranks number one in the state for receiving the largest share of its county income (43.2%) from farming. Farm income was up an average 6 percent for the state in 1997 compared to 1992 (Table 3) primarily due to rising crop and livestock prices. Crop prices in 1997 were about 25 percent higher compared to those of 1992 and livestock prices were up about 8 percent. However, 51% of the counties had decreases in farm incomes compared to 39% of the counties, which had increases (10% of the counties had no or non-disclosed farm incomes) between 1992 and 1997.

(The Bureau of Economic Analysis revised its income by industry data in 1995, which affected data sets from 1967 to 1995. Therefore, values reported in Table 3 cannot be directly compared to the 1992 edition of this study. However, a column has been included in this table that shows the corrected percentage change in income from 1992 to 1997 for comparative purposes.)

Nearly $118 million dollars of the total $733 million net farm income--about 16 percent--came from government sources such as flexibility payments and loan deficiency payments for wheat, corn and other supported crops. Several counties, such as Arapahoe Las Animas, Elbert, Rio Blanco and Routt, would have or did have negative net farm incomes without government payments. In the case of Las Animas and Routt, payments were enough to yield a positive net farm income. The other counties lost money even with the aid of such payments. Even counties with large incomes from the market, such as Chyenne, Dolores, Kiowa, and Moffat, received three-quarters of their income from the government. Some counties such as Weld and Yuma counties had relatively large farm incomes without very much help from the government.

Net Farm Income from Government 1987-1997



Percent of County Income from Government Sources

Government payments fell substantially from 1987 to 1992 and remained about the same from 1992 to 1997. However, as a percentage, government payments were slightly less important in 1997 due to relative increases in other sources of income. Farmers and ranchers received about 6 percent less of their income from the government in 1997 than in 1992. Starting in 1996 farm payments should have begun decreasing according to legislation in the 1996 Farm Bill, however, due to crop failures and low crop prices it is estimated that government payments with disaster relief for 1999 were twice as high as the 1992 payments.

Table 3 Government and Labor and Proprietor Income from Farming by County in 1997 ($1,000)

County	Govt Payments	% of Farm Income	Farm Income	% of Total County Income	Total County Income	% Change in farm Income 92-97
Adams	$3,746	13.1%	$28,590	0.4%	$6,929,977	45.5%
Alamosa	528	3.0%	17,333	6.4%	272,170	35.1%
Arapahoe	1,326	47.1%	-1,487	0.0%	16,678,306	-52.3%
Archuleta	44	42.4%	-60	-0.1%	98,377	-77.1%
Baca	9,661	37.1%	26,058	33.5%	77,884	-30.0%
Bent	1,218	7.6%	15,969	15.4%	103,711	-5.5%
Boulder	410	2.9%	14,308	0.1%	9,989,751	40.7%
Chaffee	30	4.2%	-682	-0.3%	210,374	140.3%
Cheyenne	5,438	74.4%	7,311	18.0%	40,517	14.3%
Clear Creek	0		0	0.0%	133,614	
Conejos	344	5.9%	5,849	8.6%	68,363	31.1%
Costilla	210	3.3%	6,355	17.9%	35,431	110.5%
Crowley	895	8.5%	10,518	20.7%	50,808	-0.2%
Custer	85	13.2%	-559	-2.0%	27,515	-224.5%
Delta	378	7.7%	4,878	1.7%	284,881	-42.2%
Denver			942	0.0%	27,673,277	113.7%
Dolores	998	77.5%	-290	-1.7%	17,520	-16.1%
Douglas	131	17.4%	-624	0.0%	1,739,692	-135.9%
Eagle	32	3.1%	-985	-0.1%	1,137,140	-366.7%
Elbert	2,317	45.7%	-2,751	-2.4%	115,488	-194.3%
El Paso	742	131.2%	566	0.0%	11,532,219	-79.6%
Fremont	135	11.4%	1,186	0.2%	611,892	-35.0%
Garfield	267	19.4%	-1,113	-0.1%	753,219	-463.3%
Gilpin	0		0	0.0%	259,087	
Grand	97	10.6%	-817	-0.4%	223,566	-176.4%
Gunnison	84	26.0%	-238	-0.1%	266,275	-124.4%
Hinsdale	0	0.0%	111	1.1%	10,295	-33.1%
Huerfano	195	9.9%	-1,771	-2.7%	65,896	-540.9%
Jackson	32	0.8%	4,112	16.2%	25,310	47.9%
Jefferson	105	1.9%	5,670	0.0%	12,288,417	306.4%
Kiowa	5,854	79.1%	7,403	24.8%	29,849	22.3%
Kit Carson	11,810	26.9%	43,855	28.2%	155,622	-6.5%
Lake			0	0.0%	90,119	
La Plata	564	16.8%	-2,801	-0.3%	870,633	277.7%
Larimer	791	4.3%	18,186	0.3%	5,842,865	23.4%
Las Animas	1,135	352.1%	322	0.2%	179,992	-96.3%
Lincoln	6,247	84.9%	7,359	8.1%	91,219	-84.0%
Logan	6,015	13.4%	44,724	11.2%	399,564	21.2%
Mesa	757		0	0.0%	1,998,510	-63.1%
Mineral			70	0.5%	14,171	
Moffat	1,138	75.4%	-370	-0.1%	264,575	-173.2%
Montezuma	827	27.3%	-2,197	-0.6%	341,508	-88.5%
Montrose	692	7.7%	9,038	1.7%	539,461	-6.9%
Morgan	4,583	9.2%	49,988	9.2%	541,781	-1.7%
Otero	849	5.6%	15,295	5.0%	308,288	-5.2%
Ouray	57	4.2%	-1,296	-2.8%	45,893	320.9%
Park			633	0.7%	91,310	-30.7%
Phillips	5,027	17.1%	29,379	33.3%	88,140	40.1%
Pitkin	35		0	0.0%	773,693	
Prowers	5,525	12.7%	43,618	16.2%	269,817	3.3%
Pueblo	1,917	52.1%	3,681	0.2%	2,317,128	-43.0%
Rio Blanco	284	6.6%	-4,002	-2.9%	137,809	-5666.7%
Rio Grande	941	5.7%	16,413	8.1%	203,669	54.3%
Routt	954	179.5%	531	0.1%	496,022	-48.8%
Saguache	709	7.2%	9,894	16.1%	61,407	27.9%
San Juan			0	0.0%	10,312	
San Miguel	235	34.7%	-443	-0.3%	172,104	-160.5%
Sedgwick	2,493	25.9%	9,632	23.2%	41,576	32.5%
Summit	0	0.0%	-744	-0.1%	629,135	80.3%
Teller			-753	-0.3%	283,189	90.0%
Washington	9,494	28.5%	33,355	35.4%	94,266	19.1%
Weld	10,441	6.1%	170,053	5.0%	3,372,902	30.0%
Yuma	8,876	9.4%	93,939	43.2%	217,503	-0.3%
Colorado	**$117,843**	**16.1%**	**$733,144**	**0.7%**	**$112,699,276**	**6.0%**

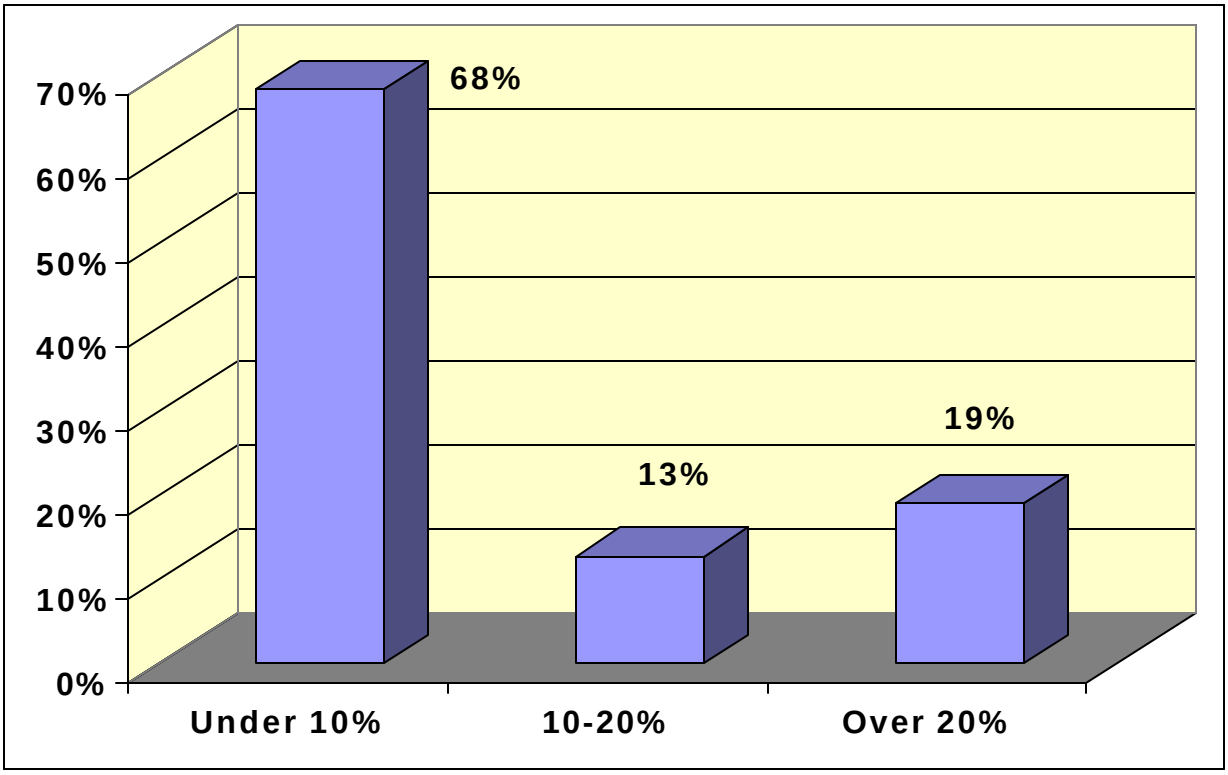
Source: See Appendix 2. % of Farm Income = Gov't Payments/Farm Income, % of Total County Income = Farm Income/Total County Income. Counties do not add o state total due to estimation at the county level.

INCOME DISTRIBUTION ACROSS COUNTIES

Income for agribusiness (agricultural inputs, farm production, and processing and marketing) is given for each county in Table 4 on the following page. Agribusiness income ranges from a high of 49% of county income in Yuma county to a low of 0% in Teller, Summit, San Juan, San Miguel, Lake, Hinsdale, Gilpin, Adams, Huerfano, Ouray, Rio Blanco, Custer, and Clear Creek Counties. For the state as a whole, agribusiness income is about 2.2% of total income. See Table 1.

(In some cases, the sum of county values does not match the total given for the state in Table 1. County data is less accurate than state data due to disclosure concerns that might reveal private information about businesses in individual counties.)

County Income From Agribusiness – 1997
Percent of CountyIncome from Agribusiness



As shown in the bar chart above, 19% of the counties get 20% or more of their income from agribusiness. A total of 68% of the counties get less than 10% of their income from agribusiness system. Since 1992 every county in the state has seen a reduction in the percentage of income earned from agribusiness. Some of the larger reductions have been seen in the following counties:

County	Decrease	County	Decrease
Kiowa	4.7%	Phillips	6.6%
Yuma	5.9%	Weld	5.4%
Cheyenne	5.4%		

Table 4 Colorado Labor and Proprietor Income from Agribusiness by County in 1997 ($1,000)

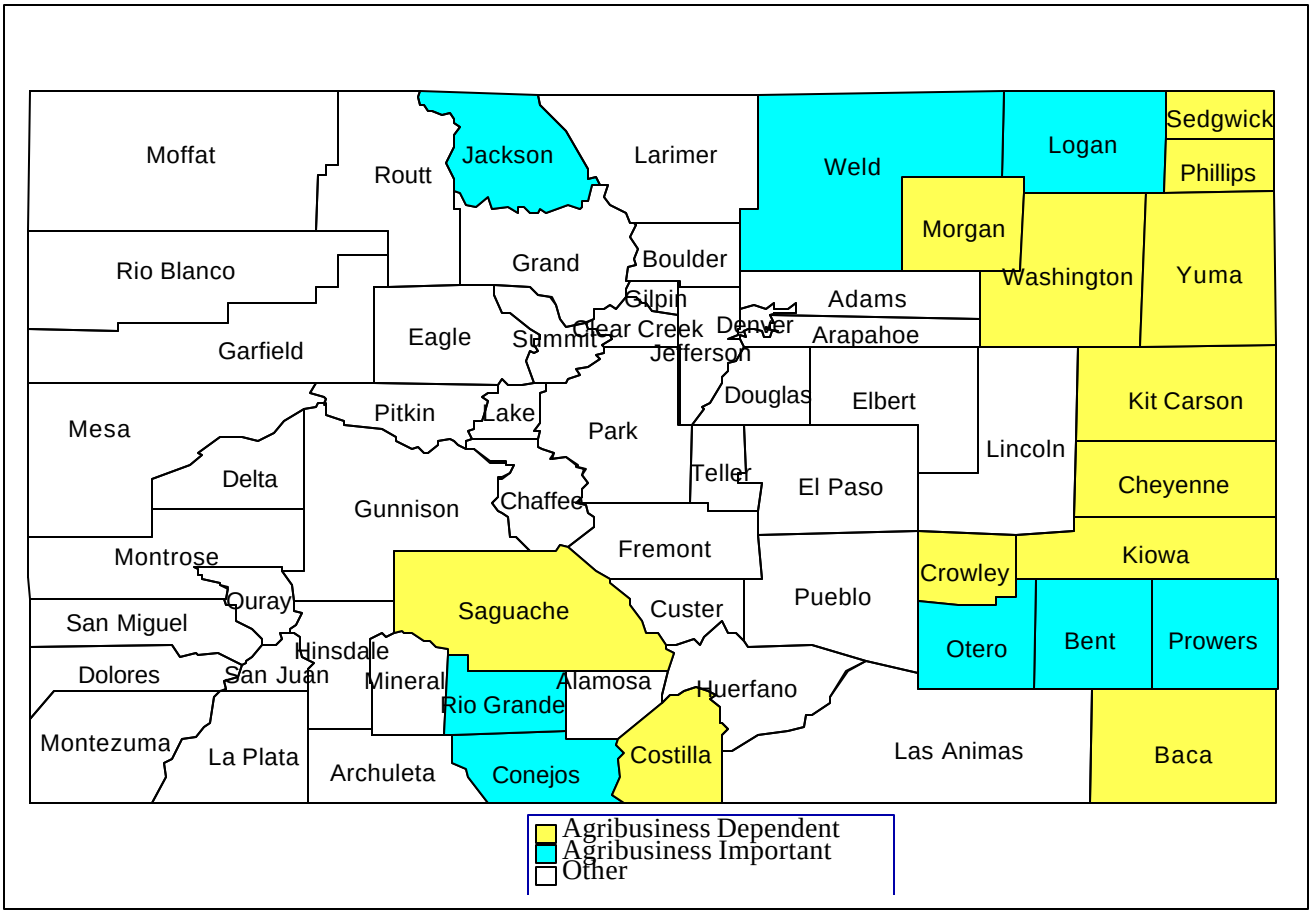
County	Ag. Inputs	Farm Production	Processing/ Marketing	Total Agribusiness	% of Total County Income	Total County Income
Adams	$38,444	$28,590	$78,142	$145,176	2.09%	$6,929,977
Alamosa	4,031	17,333	159	21,523	7.91%	272,170
Arapahoe	86,485	-1,487	29,280	114,278	0.69%	16,678,306
Archuleta	758	-60	0	698	0.71%	98,377
Baca	1,480	26,058	878	28,417	36.49%	77,884
Bent	1,345	15,969	131	17,445	16.82%	103,711
Boulder	44,204	14,308	48,582	107,094	1.07%	9,989,751
Chaffee	1,408	-682	20	747	0.35%	210,374
Cheyenne	2,108	7,311	166	9,586	23.66%	40,517
Clear Creek	307	0	97	404	0.30%	133,614
Conejos	2,938	5,849	59	8,847	12.94%	68,363
Costilla	976	6,355	0	7,332	20.69%	35,431
Crowley	668	10,518	0	11,185	22.01%	50,808
Custer	235	-559	0	-324	-1.18%	27,515
Delta	9,615	4,878	3,595	18,087	6.35%	284,881
Denver	72,423	942	243,135	316,500	1.14%	27,673,277
Dolores	412	-290	461	583	3.33%	17,520
Douglas	30,232	-624	133	29,741	1.71%	1,739,692
Eagle	9,022	-985	1,120	9,157	0.81%	1,137,140
Elbert	4,709	-2,751	444	2,402	2.08%	115,488
El Paso	37,466	566	18,291	56,323	0.49%	11,532,219
Fremont	1,711	1,186	965	3,862	0.63%	611,892
Garfield	7,777	-1,113	2,341	9,006	1.20%	753,219
Gilpin	20	0	0	20	0.01%	259,087
Grand	854	-817	0	37	0.02%	223,566
Gunnison	1,144	-238	10	916	0.34%	266,275
Hinsdale	15	111	0	126	1.22%	10,295
Huerfano	316	-1,771	0	-1,455	-2.21%	65,896
Jackson	284	4,112	0	4,397	17.37%	25,310
Jefferson	60,150	5,670	234,839	300,659	2.45%	12,288,417
Kiowa	505	7,403	214	8,122	27.21%	29,849
Kit Carson	5,794	43,855	4,102	53,752	34.54%	155,622
Lake	116	0	0	116	0.13%	90,119
La Plata	7,589	-2,801	4,994	9,782	1.12%	870,633
Larimer	41,525	18,186	61,292	121,004	2.07%	5,842,865
Las Animas	501	322	138	961	0.53%	179,992
Lincoln	1,124	7,359	392	8,876	9.73%	91,219
Logan	12,712	44,724	19,910	77,346	19.36%	399,564
Mesa	11,608	0	15,417	27,024	1.35%	1,998,510
Mineral	45	70	0	115	0.81%	14,171
Moffat	1,750	-370	1,260	2,640	1.00%	264,575
Montezuma	3,546	-2,197	1,601	2,950	0.86%	341,508
Montrose	10,017	9,038	12,010	31,065	5.76%	539,461
Morgan	12,813	49,988	66,895	129,696	23.94%	541,781
Otero	5,315	15,295	10,315	30,925	10.03%	308,288
Ouray	328	-1,296	0	-968	-2.11%	45,893
Park	1,092	633	11	1,737	1.90%	91,310
Phillips	3,136	29,379	2,684	35,198	39.93%	88,140
Pitkin	7,114	0	657	7,770	1.00%	773,693
Prowers	5,096	43,618	2,364	51,078	18.93%	269,817
Pueblo	6,784	3,681	22,750	33,215	1.43%	2,317,128
Rio Blanco	1,623	-4,002	0	-2,379	-1.73%	137,809
Rio Grande	17,497	16,413	1,560	35,470	17.42%	203,669
Routt	3,401	531	8	3,940	0.79%	496,022
Saguache	5,670	9,894	149	15,713	25.59%	61,407
San Juan	7	0	0	7	0.07%	10,312
San Miguel	2,201	-443	0	1,758	1.02%	172,104
Sedgwick	1,326	9,632	919	11,877	28.57%	41,576
Summit	3,433	-744	1	2,689	0.43%	629,135
Teller	777	-753	0	24	0.01%	283,189
Washington	1,802	33,355	3,948	39,105	41.48%	94,266
Weld	76,006	170,053	144,470	390,528	11.58%	3,372,902
Yuma	7,401	93,939	4,860	106,200	48.83%	217,503
Colorado	**$685,075**	**$733,144**	**$1,045,770**	**$2,463,988**	**2.19%**	**$112,699,276**

Source: See Appendix 2. % of Total County Income = Agribusiness Income/Total County Income. Counties do not add to state total due to estimation at county level.

COUNTY AGRIBUSINESS DEPENDENCY

The figure below shows the location of Colorado's 63 counties and their degree of dependency on agribusiness. Production agriculture alone does not fully represent the economic importance of farming and ranching to an economy. As is discussed throughout this report, other industries depend on production agriculture such as fertilizer sale, food processing, and farm machinery production.

In order to recognize the degree of contribution of agribusiness to a county, two categories have been developed. *Agribusiness Dependent* counties receive over 20% of total county income from agribusiness industries. *Agribusiness Important* counties receive between 10% and 20% of total county income from agribusiness industries. The Other category represents those counties that receive less than 10% of their total county income from agribusiness. Agribusiness dependent counties are not the only counties with large agribusiness sectors. Some counties are not classified as agribusiness important or dependent because they have relatively large non-agricultural sectors.[4] (See Table 5) Eight of the 63 counties are *agribusiness important* and twelve are *agribusiness dependent*. Therefore, over 31% of Colorado counties continue to be either *agribusiness dependent* or *agribusiness important* in 1997, which does not represent a significant change from 1992. However, there have been some individual changes within the categories. Of particular note is



COUNTY AGRIBUSINESS DEPENDENCY

Table 5. Colorado Rankings by Agribusiness Income and Percent of Total County Income

Agribusiness Income ($000)		Agribusiness % of County Total	
Weld	$390,528	Yuma	48.8%
Denver	316,500	Washington	41.5%
Jefferson	300,659	Phillips	39.9%
Adams	145,176	Baca	36.5%
Morgan	129,696	Kit Carson	34.5%
Larimer	121,004	Sedgwick	28.6%
Arapahoe	114,278	Kiowa	27.2%
Boulder	107,094	Saguache	25.6%
Yuma	106,200	Morgan	23.9%
Logan	77,346	Cheyenne	23.7%
El Paso	56,323	Crowley	22.0%
Kit Carson	53,752	Costilla	20.7%
Prowers	51,078	Logan	19.4%
Washington	39,105	Prowers	18.9%
Rio Grande	35,470	Rio Grande	17.4%
Phillips	35,198	Jackson	17.4%
Pueblo	33,215	Bent	16.8%
Montrose	31,065	Conejos	12.9%
Otero	30,925	Weld	11.6%
Douglas	29,741	Otero	10.0%
Baca	28,417	Lincoln	9.7%
Mesa	27,024	Alamosa	7.9%
Alamosa	21,523	Delta	6.3%
Delta	18,087	Montrose	5.8%
Bent	17,445	Dolores	3.3%
Saguache	15,713	Jefferson	2.4%
Sedgwick	11,877	Adams	2.1%
Crowley	11,185	Elbert	2.1%
La Plata	9,782	Larimer	2.1%
Cheyenne	9,586	Park	1.9%
Eagle	9,157	Douglas	1.7%
Garfield	9,006	Pueblo	1.4%

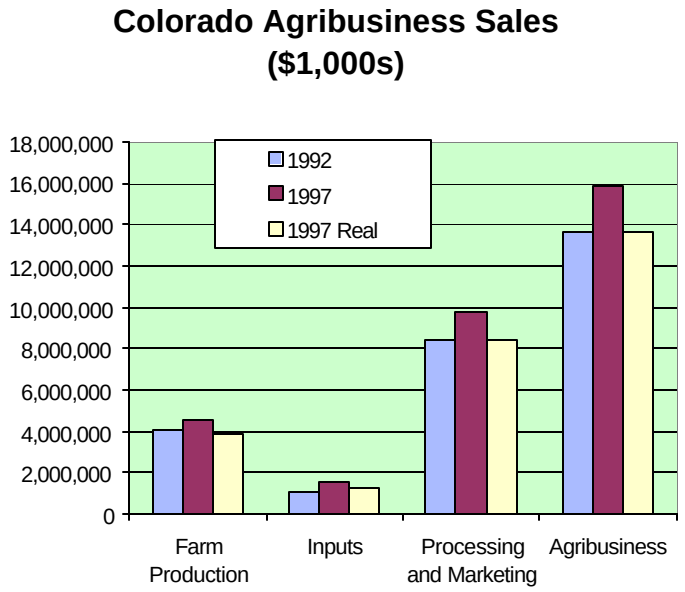
Agribusiness Income ($000)		Agribusiness % of County Total	
Lincoln	$8,876	Mesa	1.4%
Conejos	8,847	Hinsdale	1.2%
Kiowa	8,122	Garfield	1.2%
Pitkin	7,770	Denver	1.1%
Costilla	7,332	La Plata	1.1%
Jackson	4,397	Boulder	1.1%
Routt	3,940	San Miguel	1.0%
Fremont	3,862	Pitkin	1.0%
Montezuma	2,950	Moffat	1.0%
Summit	2,689	Montezuma	0.9%
Moffat	2,640	Mineral	0.8%
Elbert	2,402	Eagle	0.8%
San Miguel	1,758	Routt	0.8%
Park	1,737	Archuleta	0.7%
Las Animas	961	Arapahoe	0.7%
Gunnison	916	Fremont	0.6%
Chaffee	747	Las Animas	0.5%
Archuleta	698	El Paso	0.5%
Dolores	583	Summit	0.4%
Clear Creek	404	Chaffee	0.4%
Hinsdale	126	Gunnison	0.3%
Lake	116	Clear Creek	0.3%
Mineral	115	Lake	0.1%
Grand	37	San Juan	0.1%
Teller	24	Grand	0.0%
Gilpin	20	Teller	0.0%
San Juan	7	Gilpin	0.0%
Custer	-324	Custer	-1.2%
Ouray	-968	Rio Blanco	-1.7%
Huerfano	-1,455	Ouray	-2.1%
Rio Blanco	-2,379	Huerfano	-2.2%

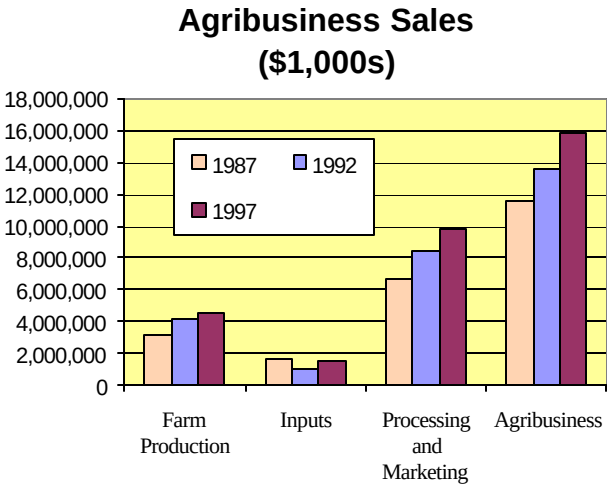
Lincoln County, which had been ranked in 1992 as agricultural dependent but is now at less than 10%. Dolores County, which had been ranked as agricultural important is now less than 5%. Costilla County is now ranked as agricultural dependent at over 20% and Conejos County has increased to agricultural important with over 12%.

The county rankings of agribusiness importance and dependency are shown in the table on the left. In the first two columns, the counties are ranked according to the total size of agribusiness. The last two columns show the ranking by the percentage of total county income that agribusiness provides in each county. Metro counties rank highest in size while rural sectors rank highest in importance. agricultural acres over the past ten years.

COLORADO SALES

With the exception of Agricultural inputs, all three sectors of the agribusiness system saw an increase in sales over the past ten years. Farm production saw a 41% increase in sales and the processing/marketing sector increased by 46%. The input sector saw a significant increase over the past five years of 46% but this seemed to offset the sharp decline in the first part of the nineties where input sales sharply dropped by 36% resulting in an overall decrease in sales of 7% for the ten-year period. This drop could in part be attributed to the recession of the early nineties where a decreased demand for agricultural services occurred. This demand picked up again, however, with the expansion in the mid and later nineties. The graph on the left-hand side of the page gives a comparison between nominal 1992 and 1997 dollars as well as 1997 "real" dollars which are adjusted downward for inflation by 16.4%. The CPI was used for this adjustment.





In Table 6 on the following page, county sales data are provided for the three sectors. County-level figures for total sales in agribusiness are not available from published sources, nor do standard methods exist for estimating such figures. The county-level figures for agricultural inputs and agricultural processing/marketing in Table 6 were developed by the Colorado Department of Agriculture and are based upon the following premise: Sales in agricultural inputs and agricultural processing and marketing are directly and strongly related to employment and income. No such premise for the sale of on-farm production is assumed or necessary because published data are available at the county level for on-farm production.

To estimate gross sales of agribusiness at the county level, we first estimate gross sales of agricultural inputs and agricultural marketing/processing as follows: each county's percent shares of the state's total employment and total income for agricultural inputs are first computed from Tables 2 and 4. For each county, these percents are averaged and then multiplied by the state's total sales of ag inputs to estimate each county's total sales for agricultural inputs. This same estimation procedure is used for the agricultural processing and marketing sector.

Table 6. Colorado Agribusiness Sales by County in 1997 ($1,000)

County	Farm Gate	Inputs *	Processing Marketing*	Agribusiness *	As % of Total Agribusiness Sales
Adams	$87,739	$84,394	$769,795	$941,927	5.94%
Alamosa	57,195	8,685	2,444	68,323	0.43%
Arapahoe	23,612	180,136	283,494	487,242	3.07%
Archuleta	6,149	2,107	0	8,256	0.05%
Baca	77,369	4,020	12,590	93,978	0.59%
Bent	50,975	3,366	1,929	56,269	0.35%
Boulder	43,671	98,496	500,075	642,242	4.05%
Chaffee	5,161	3,380	1,022	9,563	0.06%
Cheyenne	33,645	4,367	2,496	40,507	0.26%
Clear Creek	30	1,070	699	1,799	0.01%
Conejos	25,488	7,302	1,846	34,635	0.22%
Costilla	15,978	4,078	0	20,056	0.13%
Crowley	73,487	1,503	0	74,990	0.47%
Custer	4,816	784	0	5,600	0.04%
Delta	39,083	20,948	46,453	106,484	0.67%
Denver	2,174	147,393	2,178,838	2,328,405	14.68%
Dolores	8,601	850	5,100	14,552	0.09%
Douglas	17,119	69,141	1,398	87,657	0.55%
Eagle	7,413	22,574	6,050	36,037	0.23%
Elbert	31,249	12,354	4,152	47,754	0.30%
El Paso	30,330	97,223	178,791	306,344	1.93%
Fremont	12,126	5,162	11,683	28,971	0.18%
Garfield	22,817	16,650	29,281	68,748	0.43%
Gilpin		22	0		
Grand	8,833	2,475	0	11,308	0.07%
Gunnison	8,436	2,783	270	11,489	0.07%
Hinsdale	377	76	0	453	0.00%
Huerfano	9,681	1,062	0	10,743	0.07%
Jackson	15,593	808	0	16,401	0.10%
Jefferson	19,474	141,405	1,853,855	2,014,734	12.70%
Kiowa	61,724	1,565	3,665	66,954	0.42%
Kit Carson	177,051	12,789	54,066	243,906	1.54%
Lake	513	366	0	879	0.01%
La Plata	15,797	18,219	59,961	93,977	0.59%
Larimer	100,483	102,207	468,413	671,103	4.23%
Las Animas	20,336	1,806	2,278	24,420	0.15%
Lincoln	44,773	3,463	6,804	55,040	0.35%
Logan	292,740	24,050	192,473	509,264	3.21%
Mesa	50,450	28,772	154,639	233,861	1.47%
Mineral	146	528	0	674	0.00%
Moffat	18,938	4,358	15,700	38,996	0.25%
Montezuma	21,874	8,923	17,283	48,080	0.30%
Montrose	88,274	22,942	188,739	299,954	1.89%
Morgan	405,945	27,141	726,487	1,159,574	7.31%
Otero	100,214	12,283	132,031	244,527	1.54%
Ouray	3,237	1,058	0	4,295	0.03%
Park	3,622	2,439	898	6,958	0.04%
Phillips	117,064	6,814	28,002	151,880	0.96%
Pitkin	1,527	14,604	6,805	22,937	0.14%
Prowers	150,677	12,632	24,591	187,900	1.18%
Pueblo	33,642	18,736	234,045	286,423	1.81%
Rio Blanco	14,086	4,144	0	18,230	0.11%
Rio Grande	72,818	36,015	20,743	129,576	0.82%
Routt	22,858	7,483	151	30,492	0.19%
Saguache	50,305	11,563	10,855	72,723	0.46%
San Juan		8	0		
San Miguel	2,897	4,389	0	7,286	0.05%
Sedgwick	54,751	6,237	12,502	73,490	0.46%
Summit	1,511	7,484	17	9,011	0.06%
Teller	1,277	2,887	0	4,164	0.03%
Washington	97,898	5,137	49,771	152,806	0.96%
Weld	1,286,636	153,299	1,434,189	2,874,124	18.12%
Yuma	481,374	15,938	65,319	562,631	3.55%
Colorado	**$4,534,213**	**$1,531,229**	**$9,802,687**	**$15,868,129**	

Source: Procedures for estimating county-level sales for Agricultural Inputs and Agricultural Processing/Marketing provided by the Colorado Department of Agriculture. For complete procedures, see page 19 or Appendix 2.

ECONOMIC MULTIPLIER EFFECTS FROM AGRIBUSINESS

The impact of agriculture or any other economic sector is not limited to its own activities. Every dollar generated or person employed has the potential to stimulate more income and more jobs. This increased earnings or employment is referred to by economists as the "multiplier effect." For example if there is an investment project, workers are paid a salary which in turn they spend on food, living, or entertainment which in turn is spent by individuals in these areas and so on throughout the economy.

The multiplier is broken down into three components: **Direct Effects** are the changes in the industries to which a final demand change was made. The cattle brought to the packinghouse is a direct effect of the producer.

The job created at the packinghouse is an **Indirect Effect** as a result of the increased business activity. Indirect effects are created in the businesses that serve the producer, including those generated by the packinghouse or any other industry serving the producer. Finally, **Induced Effects** include the sales and jobs of unrelated items such as clothing, cars, and homes that increase as a result of the jobs and sales generated by the packinghouse activity or any other industry servicing the producer. This in turn was a result of the direct effects of the producer marketing his cattle.

Example: Combining a dairy processor (direct effect) and milk producer (indirect effect):

The combined *employment* multiplier is 2.43 which means:.

For every new direct job in dairy processing, an *additional* **1.43** (2.43-1 direct) jobs are indirectly created in the production industry.

Combining the induced effects with the direct and indirect effects:

The *inclusive employment* multiplier is 3.6 which means:

For every new direct job in dairy, the combined effects including indirect *and* induced impacts on the labor market are an additional **2.6** jobs.

It would be nice to be able to break down the multiplier effects within individual Colorado counties, but the state information is too generalized. It is safe to say, however, that the overall state employment and sales multipliers with respect to agribusiness range anywhere from 1.43 to 3.8 with an average somewhere around 2 depending upon the processing activity. [3] **Therefore, every new job in agribusiness generates about one more job and every dollar sold generates another dollar sold by some else.**

When applying multipliers, care needs to be used. It is *not* accurate to multiply the value of the agribusiness system by a multiplier to get the total impact on the economy since the multipliers only apply to adding or taking away from the current size. For example, value added in agribusiness for 1997 was $3.3 billion and employment was 105,140. A multiplier of two (for either employment or sales) does not imply that the impact of agribusiness is 2 times $3.3 or 2 times 105,140. Rather, it means that expanding agribusiness sales to final demand by $100,000 would expand the state's total economy $200,000 or the creation of 10 new jobs in an industry would result in an overall increase of 20 new jobs to the state's total economy.

[3] 1996 IMPLAN State Data Packages, Colorado.

ECONOMIC MULTIPLIER EFFECTS FROM AGRIBUSINESS

We can read the information from the chart on this page in a similar fashion as explained on the previous page. For example, the production of a dairy farm product has a combined direct and indirect (Type 1) output or sales multiplier of 1.43. This means that for every $1.00 of *direct* sale generated by the dairy, an *additional* 0.43 in indirect sales are created.

The inclusive multiplier (Type Sam) includes the entire state's economy—direct, indirect, and induced as explained in the previous page. In this case, the multipler is 1.73. Thus for every new dollar in *direct* sales generated, ultimately 0.73 in new sales are created for the entire state's economy.

We can read the employment multipliers in the same manner, but change sales for jobs as was done in the dairy example on the previous page.

Output Multipliers[4]

Employment Multipliers

	Type I Multiplier	Type SAM Multiplier	Type I Multiplier	Type SAM Multiplier
Dairy Farm Products	1.43	1.73	2.55	3.89
Poultry and Eggs	1.36	1.56	3.49	4.72
Ranch Fed Cattle	1.56	1.86	1.68	2.21
Range Fed Cattle	1.77	2.09	2.05	2.79
Cattle Feedlots	1.63	1.93	2.62	3.94
Sheep, Lambs and Goats	1.62	1.92	1.32	1.44
Hogs, Pigs and Swine	1.51	1.75	1.66	2.11
Other Meat Animal Product	1.67	1.94	1.99	2.63
Miscellaneous Livestock	1.40	1.63	1.35	1.65
Cotton	0.00	0.00	0.00	0.00
Food Grains	1.49	1.77	1.29	1.54
Feed Grains	1.44	1.72	1.45	1.80
Hay and Pasture	1.45	1.72	1.32	1.57
Grass Seeds	1.46	1.70	1.11	1.21
Tobacco	0.00	0.00	0.00	0.00
Fruits	1.57	1.84	4.65	6.38
Tree Nuts	0.00	0.00	0.00	0.00
Vegetables	1.47	1.82	2.35	3.21
Sugar Crops	1.46	1.71	1.51	1.85
Miscellaneous Crops	1.47	1.74	1.64	1.89
Oil Bearing Crops	1.43	1.75	1.30	1.60
Forest Products	1.45	1.66	3.02	4.19
Greenhouse and Nursery P	1.37	1.65	1.70	2.37
Forestry Products	1.35	1.61	1.96	2.37
Commercial Fishing	1.09	1.54	1.02	1.11

[4] 1996 IMPLAN State Data Packages, Colorado.

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Appendix 1: Agricultural Sectors and Subsectors

Economic Sector Explanation:

The agricultural economic sector is comprised of several smaller industrial classifications. The 1987 Standard Industrial Classifications (SIC) Codes were used in previous editions of this study to identify which industrial sectors made up the larger economic sectors used in this study. Beginning in 2000 the North American Industry Classification System (NAICS) is replacing the U.S. Standard Industrial Classification (SIC). To remain consistent, the same industrial sectors were used as in the 1987 and 1992 editions of this bulletin where ever possible. Below is a table showing correspondence between NAICS and SIC for the industries we use in this study.

Industry	SIC Code	NAICS
Ag. Production		
Crop production	01	111
Livestock production	02	112
Agriculture Inputs		
Ag. Services		
soil preparation	07	11511
Vet. Services	07	54194
Horticulture cons.	07	54169
Landscape Arch.	07	54132
Landscape services	07	56173
Man. Ag. Chemical	287	3253
Manufacturing of farm machinery	352	333111
		332323
		332212
		333922
		333112
Irrigation Systems	497	22131
Wholesale farm machinery	5083	42182
Wholesale farm supplies	5191	42291
Ag. Credit Institutions	6159	52222
Commodity Brokers	622	52314
Processing and Marketing		
Manufacturing food products	20	311
Beverage and tobacco Manufacturing	20	312
Manufacturing food products machinery	3556	333294
Wholesale raw farm products	515	4225
Food Wholesale and Retail		
Wholesale groceries and related products	514	4224
Wholesale beer, wine, distilled beverages	518	4228
Wholesale flowers and nursery stock	5193	42293
Retail food stores	54	445
Eating and drinking places	58	722

Appendix 2: Computation Procedures

Table 1. Agribusiness and the Food and Fiber System Contribution to Colorado's Economy in 1997.

The methodology and source of data for the 1997 study differ from the 1992 and 1987 studies. However, where ever possible, employment and income estimates were calculated for both 1992 and 1997 to provide a comparison. A detailed copy of methodologies used is available upon request from the authors.

Employment and Income Figures. The Demography Section of the Colorado Division of Local Government, *Estimates of Employment and Labor and Proprietor Income by Industry*, Unpublished, 1997, provided data for all of the sectors. Their data set is derived from ES202 data. Farm production employment was supplemented by the *Colorado Census of Agriculture 1997*.

Value Added. Value Added, as defined by U.S. Department of Agriculture, are "those costs which are added to the intermediate costs of producing goods and services". Those costs consist of labor wages, proprietor income, and indirect business taxes.

Therefore, to calculate the value added estimates for each sector, indirect business taxes were added to labor and proprietor income. IMPLAN data was used for the indirect business taxes. IMPLAN does not provide detailed wholesale trade sector data. Thus a ratio was calculated between sectors and subsectors (5083/5000) using Economic Census sales data. This number was then used to multiply with the wholesale trade IMPLAN value to estimate indirect business tax for SIC codes 5083, 5191, 515, 514, 518, and 5193.

Gross Sales. The Colorado Agriculture Census was used for farm production gross sales. The 1997 Economic Census Geographic Series by industrial sector were used for all other sales values.

Table 2: Colorado Employment in the Agribusiness System by Colorado County 1997. The data for this table used the same sources as in Table 1. Due to limitations of disclosure for some industries at the county level, county totals may not equal state totals.

Table 3: Government and Labor and Proprietor Income from Farming by Colorado County in 1997.
Government payments are from the Colorado Census of Agriculture. Farm income and total county income come from The Demography Section of the Colorado Division of Local Government as mentioned for Table 1. The change in farm income between 1992 and 1997 is estimated using 1992 and 1997 REIS data. Due to limitations of disclosure for some industries at the county level, county totals may not equal state totals.

Table 4: Labor and Proprietor Income from Agribusiness by Colorado County in 1997.
The data for this table used the same sources as in Table 1 and 2. Due to limitations of disclosure for some industries at the county level, county totals may not equal state totals.

Table 5: County Rankings by Agribusiness Income and Percent of Total county Income
Data from this table comes directly from Table 4.

Table 6: Colorado Agribusiness Sales by County in 1997.
The data for farm gate and all state totals came from U.S. Department of Agriculture, National Agricultural Statistics Service.1997 Census of Agriculture, Colorado State and County Data. AC97-A-6. Washington, D.C. March 1999.

The county-level figures for agricultural inputs and agricultural processing/marketing in Table 6 were developed by the Colorado Department of Agriculture and are based upon the following premise: Sales in agricultural inputs and agricultural processing and marketing are directly and strongly related to employment and income. No such premise for the sale of on-farm production is assumed or necessary because published data are available at the county level for on-farm production.

To estimate gross sales of agribusiness at the county level, we first estimate gross sales of agricultural inputs and agricultural marketing/processing as follows: each county's percent shares of the state's total employment and total income for agricultural inputs are first computed from Tables 2 and 4. For each county, these percents are averaged and then multiplied by the state's total sales of ag inputs to estimate each county's total sales for agricultural inputs. This same estimation procedure is used for the agricultural processing and marketing sector.

In the full report, county-level sales for agricultural inputs and agricultural marketing/processing are given separately. In the executive summary, these sales figures are combined with on-farm production sales figures from the 1997 census of agriculture to give county-level agribusiness sales figures.

Table 7: Colorado Employment and Labor/Proprietor Income From Food and Beverage Wholesaling and Retailing.
The data for this table used the same sources as in Table 1.

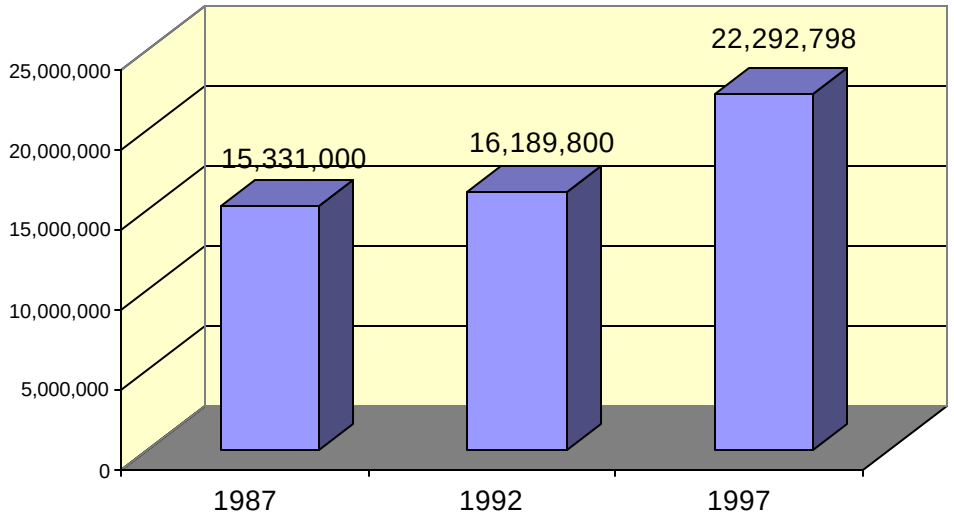
Changes in Employment or Income from 1992 to 1997 discussed in this bulletin come from the *U.S. Department of Commerce Regional Economic Information System (REIS)* and the *1992 and 1997 County Business Patterns.* REIS has data for labor and proprietor income but only to the two digit SIC code level. The CBP only has labor income, not proprietor income, but does have SIC codes to the third and fourth digit. A relationship was developed between the REIS and CBP data to estimate data that included both labor and proprietor income at the third and fourth SIC code level. (further explanation available from the authors). Again, it is important to note that values in the 1992 version of this bulletin cannot be compared to this 1997 version because the Regional Economic Information System revised their 1967 to 1995 data sets in 1995 after the 1992 version was published.

Appendix 3 Wholesale and Retail Sector

Table 7 Colorado County Employment and Labor/Proprietor Income from Food and Beverage From Wholesaling and Retailing

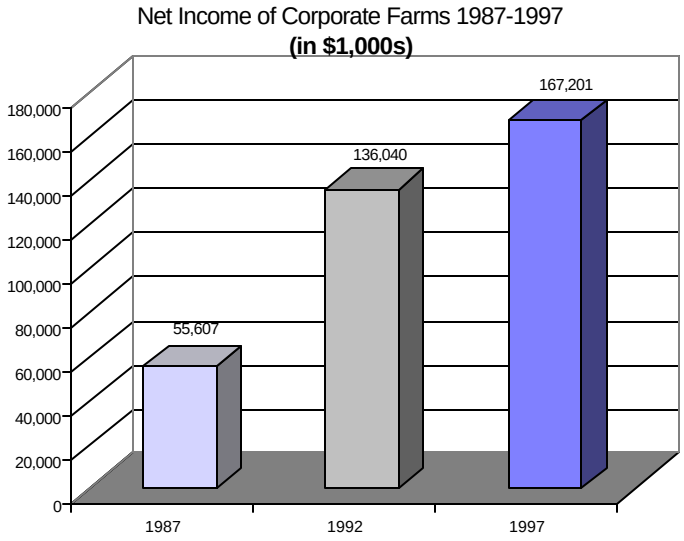
County	Employment	Income	County	Employment	Income
Colorado	233,938	3,818,002	Kit Carson	394	4,322
Adams	15,254	307,549	Lake	456	5,925
Alamosa	1,033	13,318	La Plata	3,175	42,855
Arapahoe	26,460	485,545	Larimer	13,718	177,951
Archuleta	559	5,161	Las Animas	721	9,163
Baca	163	1,742	Lincoln	349	4,145
Bent	176	1,572	Logan	989	11,485
Boulder	16,998	253,703	Mesa	7,094	102,366
Chaffee	1,176	13,080	Mineral	27	360
Cheyenne	62	601	Moffat	750	9,671
Clear Creek	628	10,741	Montezuma	1,138	13,458
Conejos	156	1,879	Montrose	1,520	20,448
Costilla	89	967	Morgan	1,272	13,717
Crowley	74	576	Otero	1,135	12,526
Custer	152	1,227	Ouray	337	3,501
Delta	1,183	13,943	Park	311	3,060
Denver	42,361	873,717	Phillips	160	1,172
Dolores	70	655	Pitkin	2,921	53,886
Douglas	5,707	74,775	Prowers	813	7,951
Eagle	4,238	71,737	Pueblo	6,758	88,745
Elbert	222	1,687	Rio Blanco	263	2,812
El Paso	24,121	326,753	Rio Grande	802	12,845
Fremont	1,472	16,212	Routt	2,207	27,668
Garfield	2,592	38,378	Saguache	163	1,893
Gilpin	144	1,396	San Juan	98	1,267
Grand	1,020	14,545	San Miguel	782	10,514
Gunnison	1,605	16,236	Sedgwick	155	1,116
Hinsdale	48	652	Summit	3,238	50,375
Huerfano	403	3,359	Teller	913	9,323
Jackson	69	545	Washington	155	1,709
Jefferson	25,584	439,669	Weld	6,781	114,560
Kiowa	43	368	Yuma	461	4,534

Wholesale and Retail Sales ($1000)
1987-1997



Appendix 4: Net Income for Corporate Farming

Table 8. Net Income of Corporate Farms (1,000)

County	1987	1992	1997
Adams	1,995	1,455	2,148
Alamosa	936	1,523	1,351
Arapahoe	98	-95	0
Archuleta	418	229	0
Baca	3,744	1,629	1,176
Bent	549	3,131	3,107
Boulder	656	288	312
Chaffee	160	-102	-64
Cheyenne	2,242	5,009	7,156
Clear Creek	0	0	0
Conejos	165	1,322	1,943
Costilla	3,721	0	351
Crowley	352	2,696	3,032
Custer	92	0	0
Delta	132	1,573	-56
Denver	72	0	0
Dolores	0	0	0
Douglas	100	-233	-87
Eagle	0	0	-90
Elbert	598	210	0
El Paso	64	113	-80
Fremont	0	0	0
Garfield	-186	-70	-67
Gilpin	0	0	0
Grand	0	0	0
Gunnison	220	309	-58
Hinsdale	0	0	0
Huerfano	0	0	0
Jackson	152	110	0
Jefferson	79	-451	-70
Kiowa	1,699	2,556	3,673
Kit Carson	3,758	7,132	7,285
Lake	0	0	0
La Plata	0	-183	-139
Larimer	-357	3,115	3,492
Las Animas	194	852	-57
Lincoln	3,035	1,822	0
Logan	15	12,288	17,625
Mesa	-1,325	658	-242
Mineral	0	0	0
Moffat	90	0	-54
Montezuma	0	0	0
Montrose	413	263	78
Morgan	3,487	12,829	12,797
Otero	1,609	6,887	6,666
Ouray	0	-75	-71
Park	0	94	50
Phillips	1,282	3,072	5,050
Pitkin	-56	0	0
Prowers	2,386	11,001	13,376
Pueblo	1,165	327	-64
Rio Blanco	0	0	-92
Rio Grande	2,949	1,679	3,098
Routt	251	304	0
Saguache	6,007	4,641	5,656
San Juan	0	0	0
San Miguel	0	0	0
Sedgwick	1,913	2,472	3,861
Summit	-68	0	0
Teller	0	0	0
Washington	2,211	6,652	9,307
Weld	5,409	29,487	45,433
Yuma	2,417	9,525	10,627
Colorado	55,607	136,040	167,201

Net Income from corporate farms has increased by over 200% since 1987. This fact is reflected in the concentration of farming that we have witnessed as well over the past ten years. See page 6 in the full report for the graphs of farm concentration in cattle and grains.