

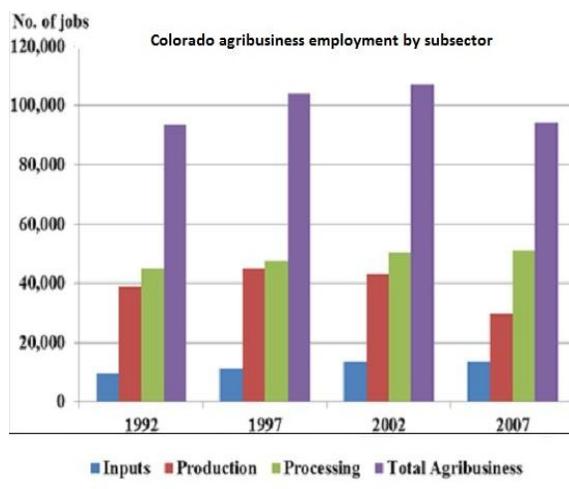
# The Contribution of Agriculture to Colorado's Economy: An Executive Summary<sup>1</sup>

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## Overview

The main purpose of this report is to describe the contribution of agribusiness to the state's economy from a broad perspective. Agribusiness encompasses three distinct economic subsectors. Farm Production includes the usual production of commodities such as wheat, corn, and livestock, but also green houses, orchards and equine operations. Agricultural Inputs are businesses that support production agriculture, including financing and agricultural services. The Processing and Marketing sector is the final agribusiness component and includes the processing and marketing necessary to bring final goods into the hands of the consumer. The Census years for 1992 and 1997 are fairly representative of the longer run agricultural setting, while 2002 may reflect a slower crop sector and, 2007, a much higher crop performance relative to livestock.

As shown in the Figure below, the total number of agricultural jobs in Colorado has varied between 93,000 and a little more than 100,000 over the last 15 years. In 2007, the total was roughly the same as estimated in 1992. The difference, however, is the type of work, as jobs in processing have grown while production jobs have declined. The contribution to employment of the different subsectors is: 30% from production agriculture; 15% from agricultural input suppliers; and 55% from marketing and processing (without the inclusion of restaurants). Overall, jobs in agribusiness provided 2.38% of income in Colorado or \$4.8 billion in 2007; agribusiness employment is declining as a percentage of total employment in the state —from 4.9% in 1992 to 3.3% in 2007. However, a wide variation across counties exists, ranging from 46.7% in Kiowa and 42.4% in Saguache to less than 1% in mountain counties. The largest absolute numbers of jobs are found in Denver County, where the primary subsector is processing and marketing, and Weld County, where the employment is spread across all subsectors in the agribusiness system.



In 2007, production agriculture generated 31% all agribusiness earnings in Colorado (reversing a declining trend since 2002), while the input sector provided 14% of income (which grew steadily from 2002 to 2007), and processing and marketing provided 54%. The variation across counties is important: in Bent, Crowley, Huerfano, Conejos, Kiowa, Cheyenne, and Yuma Counties, production agriculture provides more than 75% of all earnings in agriculture, while agricultural inputs provide as much as 59% of earnings in agriculture in Rio Grande County. Processing and marketing are even more significant in several counties. For example, in Denver it provides 96% of all earnings in agriculture, in Broomfield 88%, in Jefferson 84%, and in Arapahoe 81%.

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The value of inflation adjusted farm products sold peaked in Colorado in the mid-1970s, but in 2007, agricultural output was \$6.1 billion—almost double that of 1992 (in inflation adjusted dollars). In Colorado during 2007, 67% of agriculture’s total market value was derived from livestock production, with live animals and dairy being the prevailing sectors, accounting for 52% and 8% respectively. Also in 2007, about 67% of the market value of field crop harvested (excluding nursery, greenhouse crops and sod) was produced on irrigated land, down from 96% in 2002—which, notably, was a drought year. Colorado ranks among the top five states in several agricultural commodities—primarily those related to animal agriculture. In 2007, Colorado was 2nd in the nation in market weight sheep and lambs (those that are fed), 4th in the country cattle on feed, and 5th in potato production. The broader categories of livestock, including sheep and lambs and all cattle, also place Colorado in the top ten states in value of output, as do winter wheat and all wheat production combined.

The largest subsector in Colorado agriculture is cattle and calves, with over 50% of all receipts. It declined over the 15-year period by about 7%, with temporary growth in 2002. The pattern of this growth was relative only because wheat harvested was low due to the 2002 drought (in 2007 all wheat harvested was up 42% from 2002). Also, strong wheat and other grain sales were a factor in the decreased percentages for cattle in 2007. Fruits, vegetables, and dairy grew fairly consistently over the Census years examined, while other crops and hay declined in percentage terms.

**Contribution analysis.** The report also provided an input-output analysis of several measures of agriculture’s contribution in regard to employment, output (or sales) and value added (or GDP) using multipliers to describe linkages between the sectors of the Colorado economy. These multipliers are used to describe how an initial impact in a particular economic sector creates a total effect as that initial change “ripples” throughout the related sectors. Each subsector of the economy (production, processing and input supply) was evaluated and then the aggregated impacts were also examined. The total industry sales were \$24 billion of direct output (sales) and \$41 billion in total output, so that each million dollar increase in agricultural output results in \$1.7 million in total sales. Likewise, the total industry had \$7 billion of direct value added and \$16 billion in total value added, and employed 77,140 employees directly and 172,921 employees when indirect and induced effects were included. The addition of retail agriculture almost doubles the output and value added attributed to agriculture and more than triples employment numbers. The inclusion of food retailing increases the results to \$74 billion in total output, \$35 billion in value added and 570,079 total jobs.

A related analysis was done to look at location quotients, which gave a final perspective on the economic contribution of agriculture the state’s counties relative to the state average employment in agriculture. These results showed that, in Kiowa, Saguache and Washington counties, agribusiness provides more than 15 times the state average of employment. Overall, there are 22 counties where agribusiness is more than five times as concentrated as in the state on average, and there are 17 counties where agribusiness is less concentrated than the state level. This infers that some counties specialize in agricultural products while others are not meeting local needs for agriculturally-related goods and services.

### ***Extended State and County Level Results***

The last section of the report contains several extended results that look at specific aspects of the agricultural contribution to the State’s economy. The main results from these analyses are reported below.

**Farm Balance sheet.** The report reviewed the farm investment and financial health for the state's production agriculture. Between 1997 and 2007, farm equity grew by 85%, as increases in total farm assets (77%) outpaced the debt increase (18%). Thus, Colorado's debt-to-asset ratios ranged from 4% to 14% between 1997 and 2007. These ratios were variable but generally lower than the national averages, denoting a superior solvency.

**Concentration.** Concentration in crop or livestock farming in three farm size categories (by acres or herd size) and the percentage of sales made by each size of operation for the 1997, 2002 and 2007 Census data. An industry is concentrated when a small number of relatively large enterprises account for a large share of total sales. In the grain sector—including corn, wheat, barley, sorghum and other grains—small farms producing on less than 100 acres are few and their number is decreasing over time (the number of small-sized farms was 5% of all grain producing farms and they sold less than 0.5% of total grain in 2007); farms with more than 500 acres are becoming more numerous and produce a larger share of the total production, and they accounted for 94% of total sales in 2007, increasing their by 60% from 1997 to 2007. Both small and medium size farms (100-500 acres) consistently decreased in both number and sales. However, many farms are in the large category, and a 500 acre grain farm is not really large, so concentration is not thought to be much of an issue in grain farming,

Concentration in cattle and calf production has been increasing over the years and has continued despite the market contraction during the bovine spongiform encephalopathy (BSE) crisis in 2004 and 2005. Farms and ranches that sold 1,000 or more animals were only 2% of farms but accounted for over 84% of total market sales, while producers who sold less than 100 animals per year represented about 80% of the farms, but accounted for only 5% of total sales. These proportions shifted only by several percentage points from 1997 to 2007. Again, 1,100 head ranch does not have market power and there are many such farms, so concentration is not thought to be much of an issue at the producer level either.

**Agricultural Exports.** Colorado's agricultural exports were \$1.2 billion in 2008, which represented a return to 1997 levels after adjusting for inflation. Canada and Mexico were the major importers of agricultural products, and accounted together for more than one-half of total exports during the implementation of NAFTA, which was concluded in 2007. The other main importers from Colorado were Asian countries, and included Japan (15%) and then China (7.3%). Additionally, the Republic of Korea, Taiwan, Vietnam, Hong Kong, Thailand and Philippines together summed to about 12% of total US exports in agricultural goods.

Wheat and live animals together account for more than half of the state's exports, while the remaining top exports are hides/skins, vegetables (9% of total exports) and feeds and fodder (8%). These last three categories together account for more than a quarter of total exports. The state ranks 5th in exports of hides and skins, and 9th in Wheat and products. Exports of beef from Colorado comprise fresh beef (chilled, not frozen), frozen beef, and beef variety meats. Fresh beef exports from Colorado represented 81% of beef exports, while frozen beef was 14% of the state's beef exports in 2008. The period 1997 to 2005 saw severely depressed markets for live animals and meat. (Major events were the drought in 2002 and safety concerns over bovine spongiform encephalopathy (BSE) in 2004-2005.)

**Direct Sales.** Direct sales of agricultural products include sales made through farm stands, farmers' markets, subscription farming (consumer supported agriculture), specialty stores, and sales made online. Fruit and vegetables continued to be the mainstay, although in 2007 flowers, meat, dairy and value added products such as cheese and baked goods increased as well. In Colorado, the value of agricultural products directly sold by producers more than doubled in real terms between 1997 and

2002, and increased further by nearly 13% in 2007. Similarly, the average direct sales per farm grew by 48% between 1997 and 2007. Mesa County showed the greatest growth from 2002, with over a 100% increase.

**Nontraded products.** Other nontraditional products of agriculture increasingly demanded by consumers recreational, educational, food- and culturally-related activities on private agricultural lands. The total receipts for agritourism and recreational services increased by 163% between 2002 and 2007

**Government payments** account for a little less than 3% of total cash receipts; however, other income including government payments, that farmers received in Colorado in 2007 ranged from as high as 44% in Kiowa County to less than \$50,000 in eight counties, and zero in five additional counties. Eight counties received over 10% of their total cash receipts and other income from government payments. Kit Carson County received over \$21 million in government payments, but this only accounted for 5.5% of total cash receipts and other income. Weld County producers received over \$19 million in government payments, but this accounted for only 1.0% of total cash receipts and other income.

**Agricultural Land Use.** In 2007, private land in farms made up 46% of Colorado's total land area (30 million acres out of 66.3 million). Federal and state lands used for grazing added 10 million acres (7 million of federal, and 3 of state), so more than 60% of land in Colorado supports agriculture. The number of farms has increased by 18% between 2002 and 2007, which continues a trend over the past decades, while average farm size has declined. Colorado's trends are opposite those of the U.S. For the US as a whole, the number of farms is declining, as are acres in farms, but average size is increasing. With relatively fixed acreage in farms in Colorado, these trends imply that large farms are declining and small ones are growing.

In 2007, more than 37,000 farms and ranches worked on 31.6 million acres. Seventeen percent of Colorado's land area was used for cropland (11.5 million acres) and only 9% of the total land in farms was irrigated, 75% of the total value of Colorado's crops comes from irrigated acreage, as most of Colorado's hay, corn, and pasture for livestock is grown on irrigated land. Pasture and range land account for 56% of the non-federal acreage used for agriculture in 2007—which is only a slight increase from 2002. From 1997 to 2007, land in farms grew by three percent and woodlands grew by 0.9% of total land in farms. Together, these results suggest that there may have been changes in the benefits of cropping and woodlands as opposed to leaving land in pasture. In essence, one third of the agricultural sales, about \$2 billion, from Colorado came from just one fifth of the acres considered land in farms.

**Taxes derived from agricultural lands.** Agricultural land, improvements and personal property yielded 1.0% of all property taxes in Colorado in 2007, thereby generating an estimated \$59.7 million in revenue for local government services. This was based on a total assessed value of assets of \$800 million in inflation-adjusted dollars. However, agriculture's share of total assessed property has declined from almost 2% in 1994 to a little under 1% in 2007. Even though agricultural property tax revenues represents only 1% of the tax base in Colorado, in eleven counties it makes up more than 20% of all revenues. These counties include Sedgwick, Kiowa, Phillips, Kit Carson, Bent, Jackson, Washington, Baca, Lincoln, Saguache, and Prowers. Weld, Yuma, Kit Carson, Morgan and Logan counties all derived more than \$2 million in tax revenues from agricultural lands, with Weld generating nearly \$7 million in 2007.