

Economic Analysis of Animal Agriculture 2004-2014

IDAHO

**A Report for
United Soybean Board**



September 2015



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Idaho Executive Summary

The use of soybean meal as a key feed ingredient is a moderate part of Idaho's animal agriculture. While the degree to which animal agriculture utilizes this versatile feed ingredient has fluctuated with time, it remains a driver of animal agriculture success in Idaho. The success of Idaho animal agriculture in turn has a large impact on the rest of the state and regional economies. For example, in the state of Idaho during 2014 animal agriculture contributed:

- \$11.8 billion in economic output
- 59,108 jobs
- \$2.0 billion in earnings
- \$563.0 million in income taxes paid at local, state, and federal levels
- \$78.9 million in the form of property taxes

Plus, from 2004-2014 animal agriculture in Idaho increased economic output by over \$5 billion, boosted household earnings by \$864.0 million, contributed 25,132 additional jobs and paid \$239.6 million in additional tax revenues.

Idaho's animal agriculture consumed about 108.4 thousand tons of soybean meal in 2014. This soybean meal was fed primarily to:

- Dairy Cows (73.1 thousand tons)
- Beef Cows (10.4 thousand tons)
- Turkeys (7.0 thousand tons)

This report examines animal agriculture in Idaho over the last decade. While this analysis is certainly instructive and allows improved understanding of animal agriculture's impact during that time, as the next decade unfolds in Idaho, many opportunities and challenges will arise. And, if past is prologue, animal agriculture will continue to be a major contributor to the economic well-being of the people of Idaho and beyond.

Idaho Economic Impact of Animal Agriculture

Animal agriculture is an integral part of Idaho's economy. In 2014, Idaho's animal agriculture contributed the following to the economy:

- About \$11.8 billion in economic output
- \$2.0 billion in household earnings
- 59,108 jobs
- \$563.0 million in income taxes

And the animal agriculture sector has shown substantial growth during challenging economic times. During the last decade Idaho's animal agriculture has:

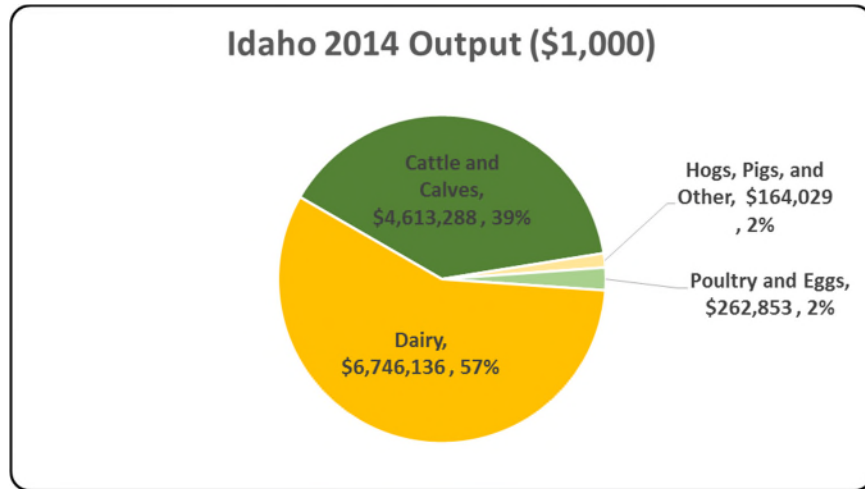
- Increased economic output by \$5.0 billion
- Boosted household earnings by \$864.0 million
- Added 25,132 jobs
- Paid an additional \$239.6 million in income taxes

Below is a table which demonstrates this decade of change.

Measure	2014	Change 2004-2014	% Change 2004-2014
Output (\$1,000)	\$ 11,786,306	\$ 4,996,955	73.60%
Earnings (\$1,000)	\$ 2,030,434	\$ 863,954	74.07%
Employment (Jobs)	59,108	25,132	73.97%
Income Taxes Paid (\$1,000)	\$ 563,039	\$ 239,574	74.07%
Property Taxes Paid in 2012 (\$1,000)	\$ 78,925		

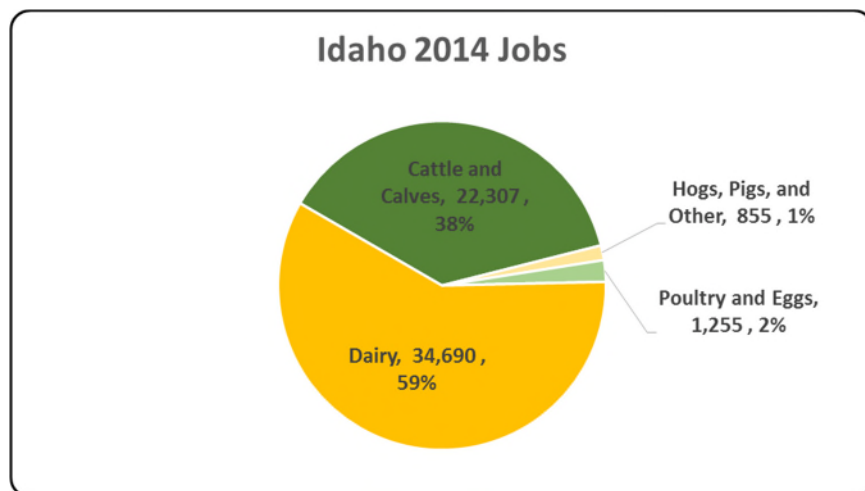
Idaho Output

“Output” refers to the total value of all the output (production or sales) of a study area and/or industry within a study area and was calculated using RIMS II multipliers. This is a gross number that does not make any deductions for the cost or origination of inputs that were used in the production process. The chart illustrates the impact of animal agriculture to the Idaho economy. Animal agriculture’s impact on Idaho total economic output is about \$11.8 billion.



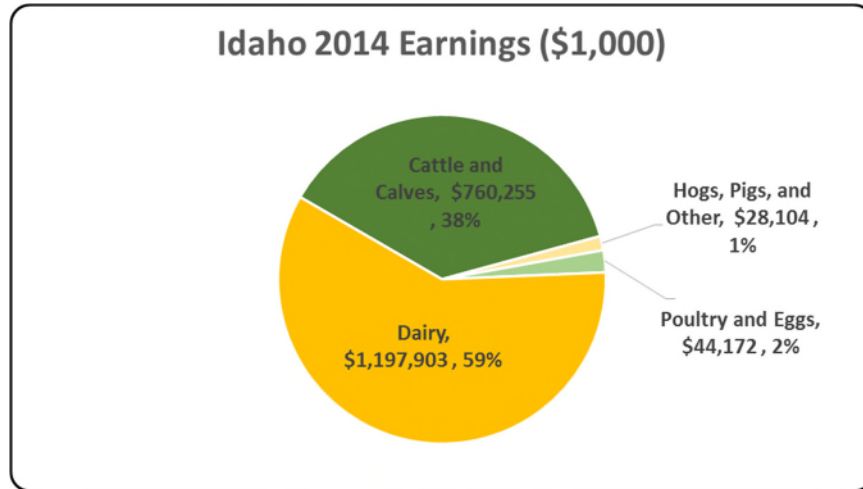
Idaho Jobs

“Jobs” represents an estimate of the number of full or part-time positions (jobs) currently filled in an area and/or industry. The chart illustrates the contribution to Idaho in terms of animal agriculture jobs. As shown, animal agriculture contributes significantly to Idaho total jobs, contributing 59,108 jobs within and outside of animal agriculture.



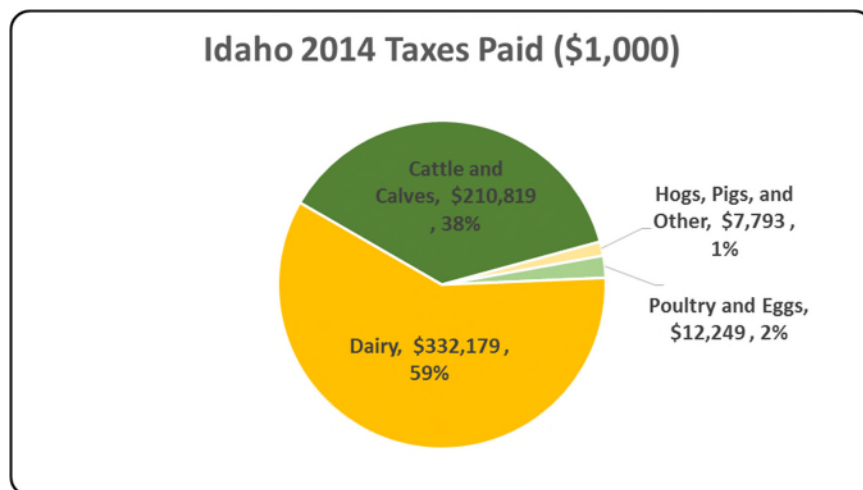
Idaho Earnings

Earnings includes wages and salaries plus proprietors' income, which is the net earnings of sole-proprietors and partnerships. The chart illustrates the impact of animal agriculture to the Idaho economy in terms of earnings. Idaho's animal agriculture contributed about \$2.0 billion to household earnings in 2014.



Idaho Taxes Paid by Animal Agriculture

Idaho's animal agriculture is also a significant source of tax revenue. In 2014, the state's animal agriculture industry paid about \$563.0 million in income taxes at local, state, and federal levels. Plus the 2012 Census of Agriculture estimated \$78.9 million in property taxes paid by all of Idaho agriculture during 2012. Estimates of income taxes paid by animal agriculture are shown in the following chart.



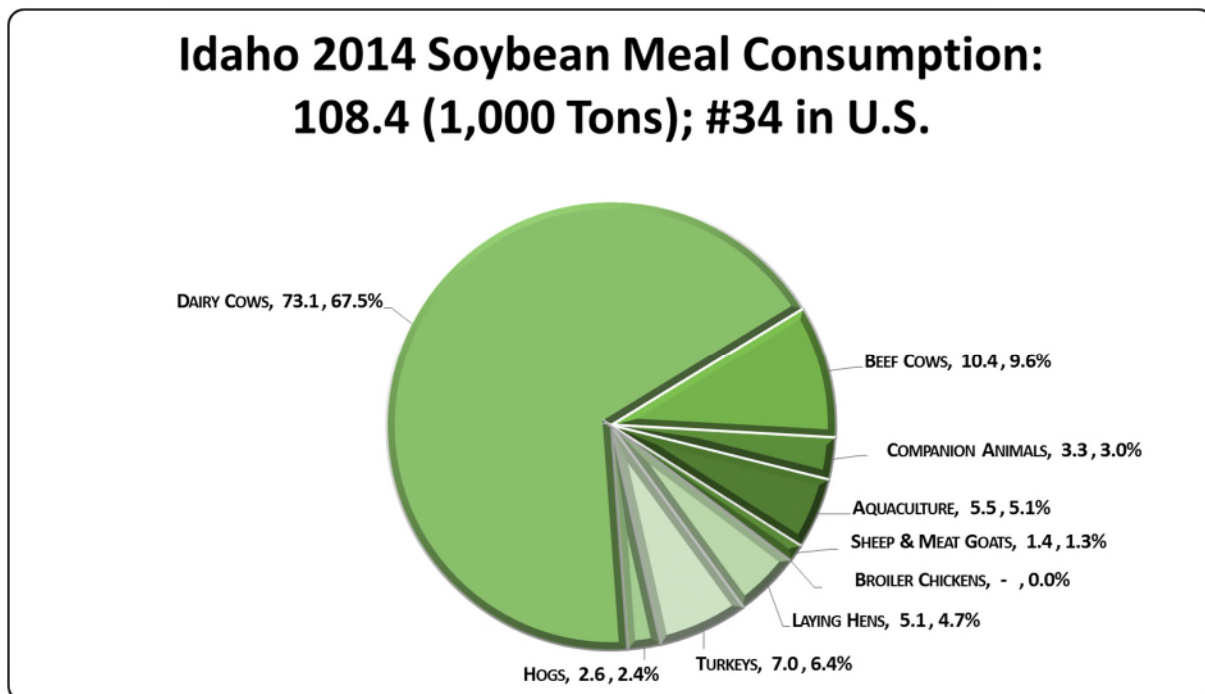
Idaho Animal Agriculture Soybean Meal Consumption

The choice to use soybean meal in animal agriculture is highly dependent upon nutritional requirements of animals (which would encompass varying life stages within an animal species), accessibility to various feed ingredients capable of competing with soybean meal (from both a nutritional and price standpoint), and consumer preferences which have influence on production practices.

Through in-depth conversations with many of the nation’s top nutritionists and researchers from both private industry and public institutions, “bottom up” estimates of soybean meal usage by animal type were determined. Using the input from these conversations and additional analysis performed by Decision Innovation Solutions, the quantity of soybean meal used during the 2013-14 soybean marketing year by up to sixteen specific animal species has been estimated.

Idaho’s animal agriculture consumed almost 108.4 thousand tons of soybean meal in 2014, placing the state as #34 in the nation in terms of soybean meal consumption (see figure below). The three segments of animal agriculture that led the state in estimated soybean meal consumption are:

- Dairy Cows (73.1 thousand tons)
- Beef Cows (10.4 thousand tons)
- Turkeys (7.0 thousand tons)

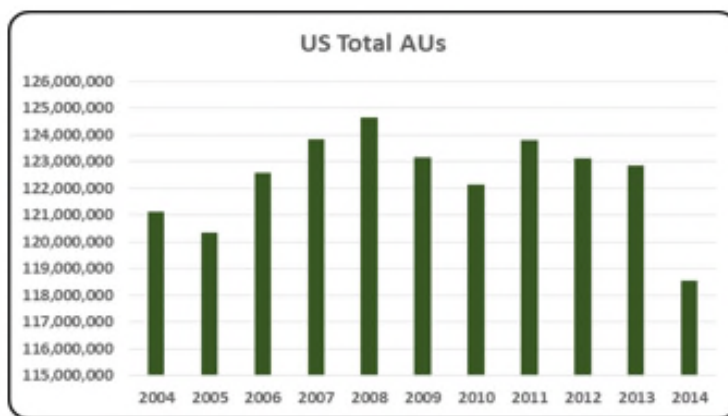


Idaho Animal Unit (AU) Trends

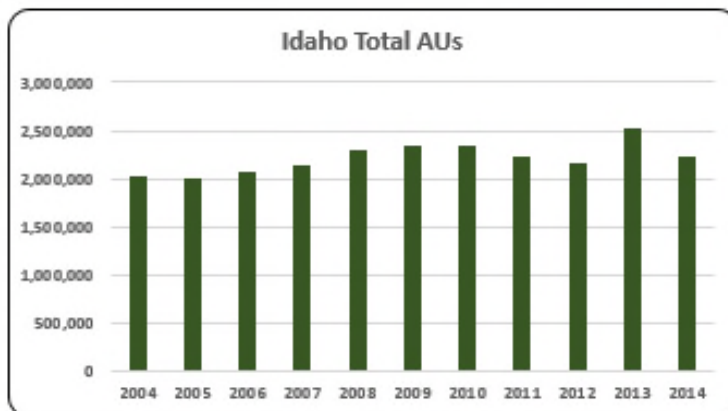
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the United States and abroad have an impact on the size of animal agriculture in the State of Idaho. Due to this reality, using a single year as a measure of the presence and strength of a sector can be misleading. The use of animal units allows for a more accurate comparison of differing sizes of livestock and poultry. This section is included to bring context to the question of what animal agriculture means to Idaho and to give perspective on Idaho’s contribution to the nation’s animal agriculture industry and beyond.

Similar to using a single year to measure the presence and strength of a sector, in some circumstances AUs can be misleading. This is because AUs do not reflect important considerations like increased weights, improved livability, increased laying potential, etc.

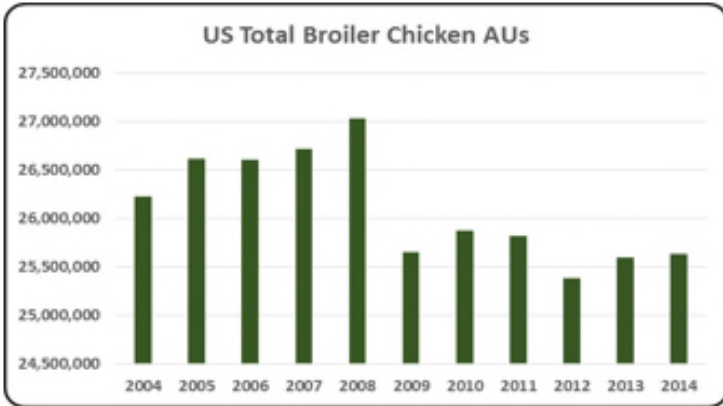
As shown in the accompanying charts and written commentary, certain components of animal agriculture are more present, and therefore more dominant than others. This is due primarily to geography (i.e., weather patterns and access to certain transportation hubs), proximity to high quality, relevant feed ingredients, and the local animal agriculture regulatory framework. In Idaho, the largest three segments of animal agriculture in terms of AUs during 2014 were: Beef Cows (1,370.4 thousand AUs), Dairy Cows (791.0 thousand AUs), and Broilers (36.5 thousand AUs). Total animal units in Idaho during 2014 were 2,230.5 thousand AUs



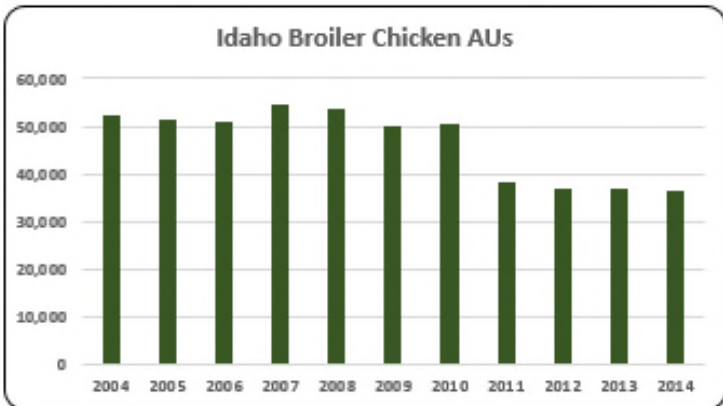
- Overall U.S. total AUs have varied from 2004 to 2014. In 2014 AUs were at an all-time low reflecting, in part, the impact of severe weather on cattle production in some parts of country. During the 2004-14 time period, total AUs in the nation peaked in 2008.



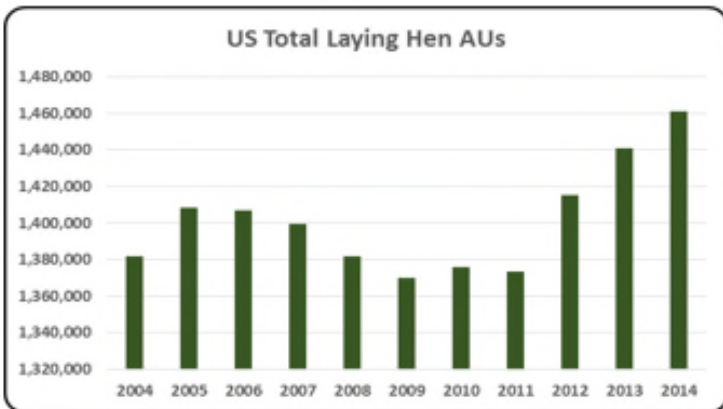
- There were 2,230.5 thousand AUs in Idaho in 2014 representing 1.88%. Beef cow production is the largest animal production in Idaho with 61.44% of all AUs in the state in 2014.



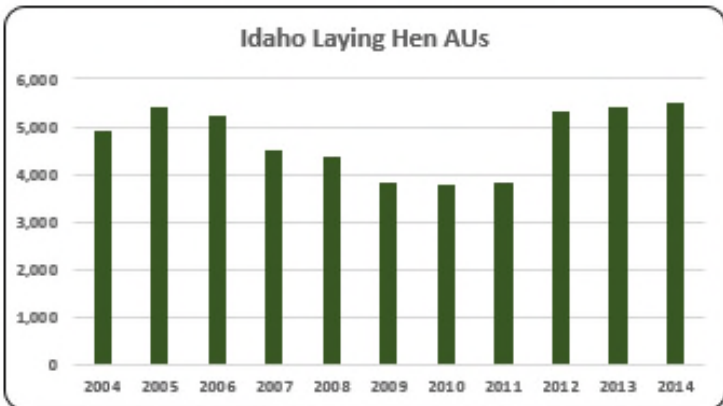
- U.S. broiler production is clustered in a number of states, with Georgia being the largest producer. On average from 2004 to 2014, broiler chicken AUs were about 26.1 million. In 2014, AUs rebounded 1% from the low AUs numbers in 2012 (25.4 million AUs).



- Over 1.5% (36,513) of all AUs in Idaho were in the broiler industry. In general, broiler production in Idaho has declined over this time frame.

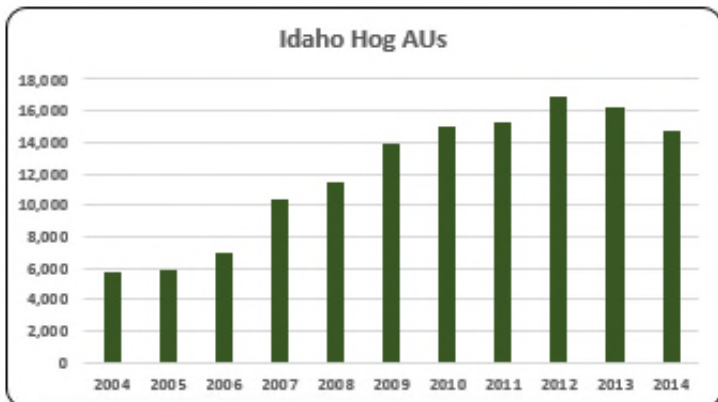
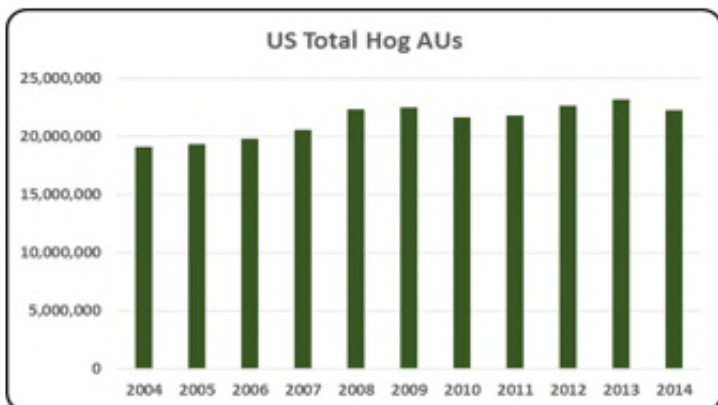
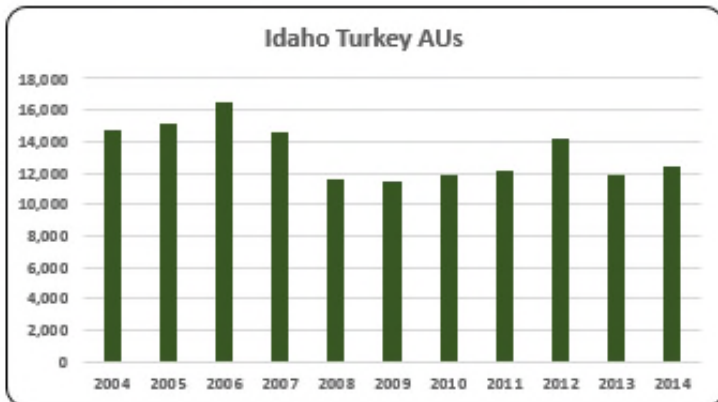
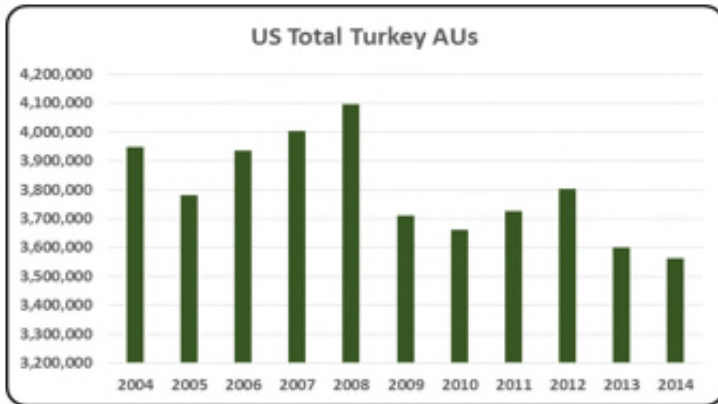


- On average, the layer AUs during 2004-2014 were 1.4 million. In 2014 layer AUs were 1.5 million, up 7% from the lowest number in 2009 (1.4 million AUs).

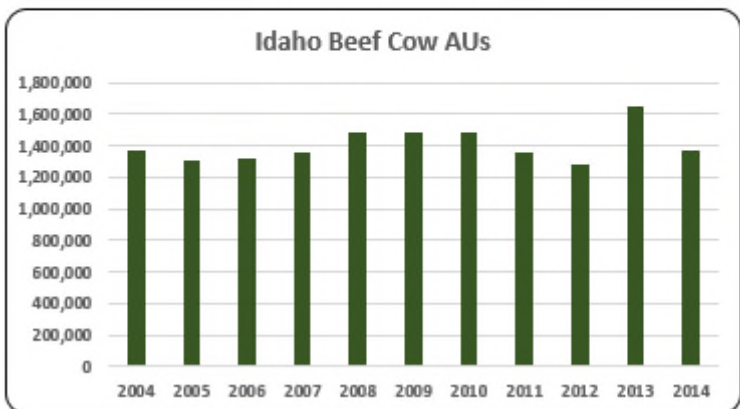
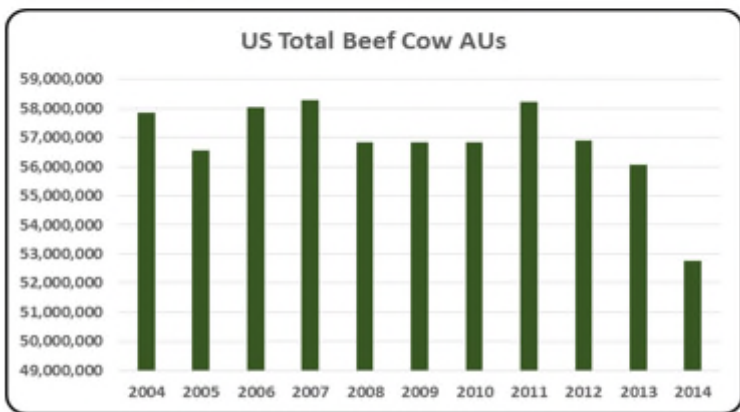
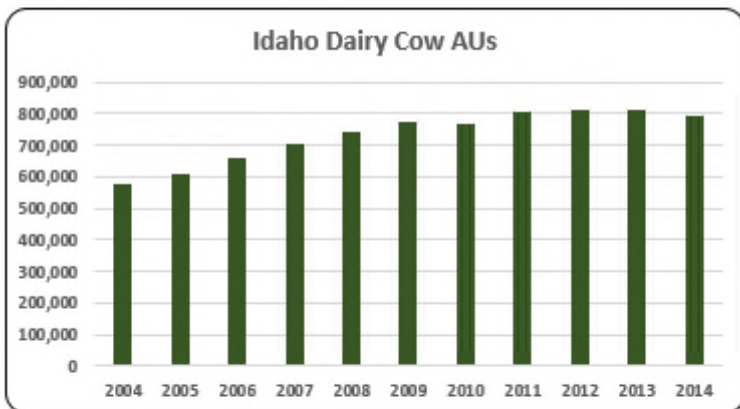
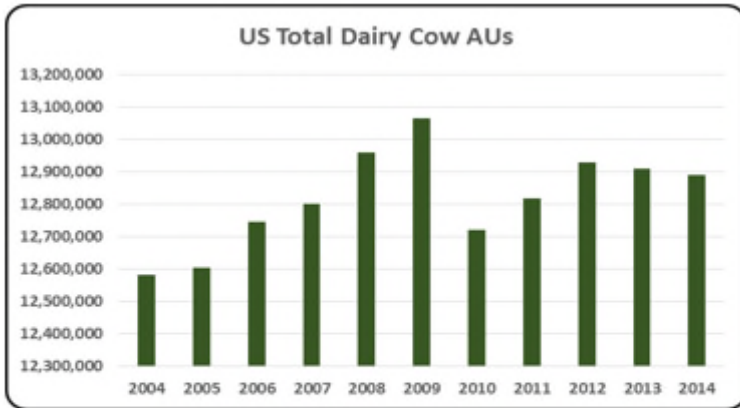


- Layer production in Idaho is the smallest of all animal production in the state representing 0.25% (5,494) of all AUs.

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- From 2004 to 2014, the U.S. accounted for 50% of the world’s turkey production. However, in 2014 turkey AUs were the lowest of the decade at 3.5 million, decreasing 13% compared to 2008 (4.1 million turkey AUs) the largest turkey AUs of the decade.
- Less than 1% (12,371) of all AUs in Idaho were turkey AUs in 2014. Turkey AUs rose 4.4% year-over-year but was 13% below the turkey AUs in 2012.
- On average from 2004 to 2014, hog AUs were about 21.4 million. In 2013 hog AUs reached a high of 23.2 million AUs as prices of main feed ingredients, particularly corn, decreased to pre-2010 price levels. Hog AUs in 2014 decreased 4.4% to 22.3 million AUs year-over-year, primarily due to the porcine epidemic diarrhea virus (PEDv) outbreak. Despite the fluctuation in AUs, the pork supply was relatively stable.
- Hogs AUs decreased 9.5% to 14,697 in 2014. However, hog numbers have been increasing since 2004. Hog AUs in 2014 represented only 0.66% of all AUs in Idaho.



- From 2004 to 2014 dairy cow AUs averaged 12.8 million. In 2014, dairy cow AUs (12.9 million) remained about the same as the previous year but still below the high of 13.1 million AUs, the level in 2009. Despite the fluctuation in AUs, milk supplied has steadily risen.
- In 2014 35.5% of all AUs of the state were dairy cow AUs. In 2014 dairy cow AUs decreased 2.6% to 791,000, but overall the trend in the dairy cow industry has been positive. In 2014, 6.14% of all dairy cow AUs in the U.S. were in Idaho.
- From 2004 to 2014 beef cow AUs averaged 56.8 million. In 2014 beef cow AUs decreased to 52.8 million, the lowest of the decade. States that raise a large number of cattle and calves like Texas and Oklahoma were plagued with drought conditions during 2014.
- There were 1,370.4 thousand beef cow AUs in Idaho in 2014 representing 61.44%. Beef cow AUs in 2014 were 16.6% below the record numbers the previous year (1,642.5 thousand).

Idaho Additional Information and Methodology

Animal agriculture is an important part of Idaho's current and future economic health. To quantify the connection between animal agriculture and local economies, the United Soybean Board commissioned [Decision Innovation Solutions](#), an economic research firm in Urbandale, Iowa, to conduct an in-depth analysis of several aspects of animal agriculture. This analysis includes the following components:

- Economic impact of animal agriculture to local (state) economies during the 2004-2014 time period
- Soybean meal usage by animal species during the 2013/14 soybean marketing year
- Animal Unit (AU) trends from 2004-2014

Given the long-term presence of animal agriculture in Idaho, of interest is the degree to which the industry impacts the Idaho economy. Estimates of output, jobs, earnings, taxes paid, and multipliers for Idaho animal agriculture are presented in this report. Methodology for this section of the report closely mirrors that followed in years' past. Also presented are estimates of the change in how animal agriculture has impacted Idaho's economy over the last decade. Differences, to the extent they are present, are noted within the larger national report which accompanies this state report.

As with any industry across the economic spectrum, there are ebbs and flows in activity that have implications for other parts of the economy. Again using the same 2004-2014 time period as with the economic impact section of this state report, the "Animal Unit Trends" seeks to quantify production changes in animal agriculture in Idaho which have occurred. As shown in this state report, Idaho has seen changes within its animal agriculture industry. Expectations are that animal agriculture will continue to evolve over the next decade.

Animal agriculture is the single largest user of soybean meal in Idaho. Through in-depth conversations with many of the nation's top nutritionists and researchers, "bottom up" estimates of soybean meal usage by animal type were determined. Using the input from these conversations and additional analysis performed by Decision Innovation Solutions, the quantity of soybean meal used during the 2013-14 soybean marketing year for up to sixteen specific animal species has been estimated.

Should readers have comments or questions regarding methodology, results and interpretation, please contact the authors at info@decision-innovation.com or 515.257.6077.

Idaho Multipliers

Economic multipliers give a sense for how economic activity in a given industry is related to other industries in the same study area. To estimate the impact of animal agriculture on Idaho's economy, we applied RIMS II multipliers from the Department of Commerce, Bureau of Economic Analysis for cattle ranching and farming, dairy cattle and milk production, poultry and egg production, and other animal production (primarily hogs and pigs), where applicable.

Multipliers are generally stated in the form of "per million dollars" of output. As it relates to this analysis, multipliers are stated as the activity related to every million dollars of economic output in animal agriculture. Referring to the multipliers below, for every million dollars in output generated by the various segments of animal agriculture in Idaho, \$1.888 to \$2.665 million in total economic activity, \$0.324 to \$0.439 in household wages and 10 to 13 additional jobs are generated in the economy at large.

	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)
RIMS II Multipliers	Cattle and Calves	\$ 2.6651	\$ 0.4392	12.9
	Hogs, Pigs, and Other	\$ 1.8881	\$ 0.3235	9.8
	Poultry and Eggs	\$ 2.3648	\$ 0.3974	11.3
	Dairy	\$ 2.1051	\$ 0.3738	10.8

Appendix

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Animal Units (AUs)	Beef Cattle AUs	1,370,550	1,309,350	1,317,000	1,353,000	1,483,500	1,483,500	1,483,500	1,355,100	1,279,050	1,642,500	1,370,400
	Hog and Pig AUs	5,700	5,880	6,915	10,335	11,430	13,935	14,949	15,245	16,888	16,241	14,697
	Broiler AUs	52,352	51,250	50,904	54,445	53,596	49,832	50,502	38,054	36,850	36,721	36,513
	Turkey AUs	14,750	15,128	16,438	14,570	11,646	11,408	11,882	12,094	14,200	11,846	12,371
	Egg Layer AUs	4,914	5,412	5,222	4,483	4,355	3,809	3,784	3,806	5,325	5,408	5,494
	Dairy AUs	576,800	609,000	662,200	702,800	742,000	775,600	770,000	803,600	813,400	812,000	791,000
	Total Animal Units	2,025,066	1,996,019	2,058,679	2,139,633	2,306,527	2,338,083	2,334,617	2,227,899	2,165,713	2,524,716	2,230,475
Value of Production (\$1,000)	Cattle and Calves (\$1,000)	\$ 847,228	\$ 867,997	\$ 858,146	\$ 917,671	\$ 917,195	\$ 806,950	\$ 1,020,475	\$ 1,113,672	\$ 1,240,020	\$ 1,384,324	\$ 1,731,000
	Hogs and Pigs (\$1,000)	\$ 4,649	\$ 4,541	\$ 5,351	\$ 8,319	\$ 9,513	\$ 10,366	\$ 13,982	\$ 17,589	\$ 19,411	\$ 17,768	\$ 18,486
	Broilers (\$1,000)	\$ 44,032	\$ 41,709	\$ 32,232	\$ 40,958	\$ 42,153	\$ 36,513	\$ 38,431	\$ 33,860	\$ 36,709	\$ 44,720	\$ 46,913
	Turkeys (\$1,000)	\$ 13,686	\$ 14,512	\$ 17,152	\$ 16,803	\$ 15,730	\$ 10,549	\$ 14,133	\$ 15,851	\$ 20,595	\$ 13,562	\$ 22,708
	Eggs (\$1,000)	\$ 14,479	\$ 11,492	\$ 10,844	\$ 13,354	\$ 32,952	\$ 23,453	\$ 25,745	\$ 28,227	\$ 31,656	\$ 35,765	\$ 41,531
	Milk (\$1,000)	\$ 1,363,950	\$ 1,422,540	\$ 1,286,790	\$ 2,055,722	\$ 2,105,865	\$ 1,433,700	\$ 1,903,177	\$ 2,438,184	\$ 2,426,882	\$ 2,578,752	\$ 3,204,663
	Other	\$ 57,600	\$ 58,179	\$ 54,510	\$ 57,164	\$ 58,830	\$ 59,418	\$ 67,764	\$ 64,394	\$ 65,725	\$ 67,057	\$ 68,389
	Sheep and Lambs (\$1,000)	\$ 21,148	\$ 20,494	\$ 15,592	\$ 17,012	\$ 17,445	\$ 16,800	\$ 23,913	\$ 19,309	\$ 19,408	\$ 19,506	\$ 19,605
	Aquaculture (\$1,000)	\$ 36,452	\$ 37,685	\$ 38,918	\$ 40,152	\$ 41,385	\$ 42,618	\$ 43,851	\$ 45,085	\$ 46,318	\$ 47,551	\$ 48,784
	Total (\$1,000)	\$ 2,345,624	\$ 2,420,971	\$ 2,265,025	\$ 3,109,991	\$ 3,182,237	\$ 2,380,949	\$ 3,083,707	\$ 3,711,777	\$ 3,840,998	\$ 4,141,949	\$ 5,133,690

Ag Census Data Category	Animal Type	1997	2002	2007	2012	
Number of Farms by NAICS	Beef cattle ranching and farming (112111)	7,697	7,027	7,712	7,505	
	Cattle feedlots (112112)	443	686	517	150	
	Dairy cattle and milk production (11212)	926	748	677	589	
	Hog and pig farming (1122)	180	340	250	217	
	Poultry and egg production (1123)	84	143	267	345	
	Sheep and goat farming (1124)	465	653	835	815	
	Animal aquaculture and other animal production (1125,1129)	2,153	5,345	3,468	3,112	
Value of Sales (\$1,000)	Cattle and Calves	907,428	1,149,407	1,383,742	1,808,929	
	Hogs and Pigs	5,188	3,260	6,757	withheld	
	Poultry and Eggs	15,111	12,636	12,673	49,733	
	Milk and Other Dairy Products	556,225	869,526	1,843,788	2,333,364	
	Aquaculture	35,919	39,840	56,219	52,582	
	Other (calculated)	51,655	46,421	60,797	75,765	
	Total	1,571,526	2,121,090	3,363,976	4,320,373	
Input Purchases	Livestock and poultry purchased	(Farms)	7,820	7,350	6,598	7,669
		\$1,000	469,600	616,224	584,795	633,046
	Breeding livestock purchased	(Farms)	n/a	3,871	3,473	4,155
		\$1,000	n/a	93,697	128,710	102,481
	Other livestock and poultry purchased	(Farms)	n/a	4,439	4,074	4,718
		\$1,000	n/a	522,527	456,085	530,564
Feed purchased	(Farms)	11,438	14,692	13,075	14,615	
	\$1,000	450,829	646,250	1,137,906	1,921,092	

	Animal Type	Output (\$1,000)	Earnings (\$1,000)	Employment (Jobs)	Taxes Paid (\$1,000)
2014 Animal Agriculture	Cattle and Calves	\$ 4,613,288	\$ 760,255	22,307	\$ 210,819
	Hogs, Pigs, and Other	\$ 164,029	\$ 28,104	855	\$ 7,793
	Poultry and Eggs	\$ 262,853	\$ 44,172	1,255	\$ 12,249
	Dairy	\$ 6,746,136	\$ 1,197,903	34,690	\$ 332,179
	Total	\$ 11,786,306	\$ 2,030,434	59,108	\$ 563,039
Change from 2004 to 2014	Cattle and Calves	\$ 1,783,551	\$ 293,923	8,624	\$ 81,505
	Hogs, Pigs, and Other	\$ 16,734	\$ 2,867	87	\$ 795
	Poultry and Eggs	\$ 48,886	\$ 8,215	233	\$ 2,278
	Dairy	\$ 3,147,785	\$ 558,948	16,186	\$ 154,996
	Total	\$ 4,996,955	\$ 863,954	25,132	\$ 239,574
	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)	
RIMS II Multipliers	Cattle and Calves	\$ 2.6651	\$ 0.4392	12.9	
	Hogs, Pigs, and Other	\$ 1.8881	\$ 0.3235	9.8	
	Poultry and Eggs	\$ 2.3648	\$ 0.3974	11.3	
	Dairy	\$ 2.1051	\$ 0.3738	10.8	
Tax Rates	Federal effective income tax rate				12.7%
	Federal Social Security tax rate				7.7%
	State Effective Rate				7.4%
	Total				27.7%

Sources: 1997, 2002, 2007 and 2012 Census of Agriculture, USDA/NASS Survey Data, RIMS II Multipliers (U.S. Bureau of Economic Analysis), Tax Policy Institute and Tax Foundation.