

Economic Analysis of Animal Agriculture 2004-2014

UTAH

**A Report for
United Soybean Board**



September 2015



Bridging Your Research Needs.

Decision Innovation Solutions, LLC

3315 109th St. Suite B

Urbandale, IA 50322

www.decision-innovation.com

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Utah Executive Summary

The use of soybean meal as a key feed ingredient is a modest part of Utah'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's success in Utah. The success of Utah animal agriculture in turn has a large impact on the rest of the state and regional economies. For example, in the state of Utah during 2014 animal agriculture contributed:

- \$3.3 billion in economic output
- 19,682 jobs
- \$608.7 million in earnings
- \$154.2 million in income taxes paid at local, state, and federal levels
- \$34.0 million in the form of property taxes

Plus, from 2004-2014 animal agriculture in Utah increased economic output by over \$894.0 million, boosted household earnings by \$164.9 million, contributed 5,357 additional jobs and paid \$41.8 million in additional tax revenues.

Utah's animal agriculture consumed about 156.2 thousand tons of soybean meal in 2014. This soybean meal was fed primarily to:

- Hogs (74.7 thousand tons)
- Turkeys (33.9 thousand tons)
- Egg-Laying Hens (25.2 thousand tons)

This report examines animal agriculture in Utah 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 Utah, 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 Utah and beyond.

Utah Economic Impact of Animal Agriculture

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

- About \$3.3 billion in economic output
- \$608.7 million in household earnings
- 19,682 jobs
- \$154.2 million in income taxes

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

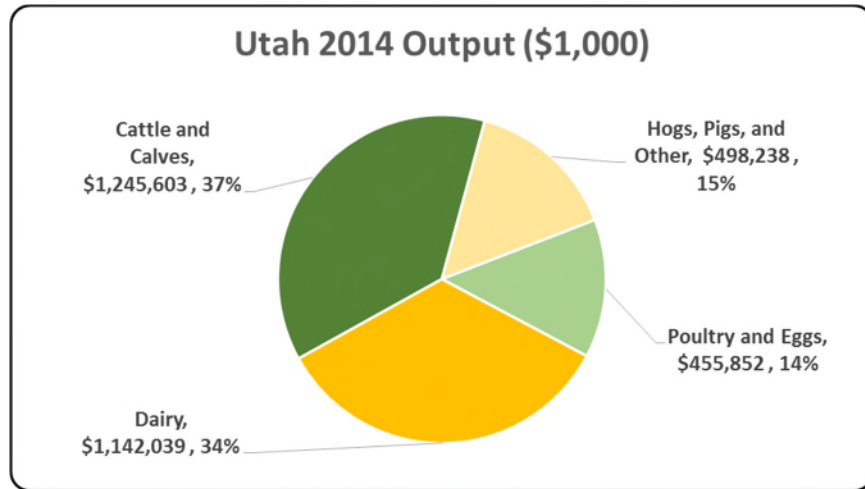
- Increased economic output by \$894.0 million
- Boosted household earnings by \$164.9 million
- Added 5,357 jobs
- Paid an additional \$41.8 million in income taxes

Below is a table which demonstrates this decade of change.

Measure	2014	Change 2004-2014	% Change 2004-2014
Output (\$1,000)	\$ 3,341,731	\$ 894,025	36.53%
Earnings (\$1,000)	\$ 608,658	\$ 164,879	37.15%
Employment (Jobs)	19,682	5,357	37.39%
Income Taxes Paid (\$1,000)	\$ 154,173	\$ 41,764	37.15%
Property Taxes Paid in 2012 (\$1,000)	\$ 33,965		

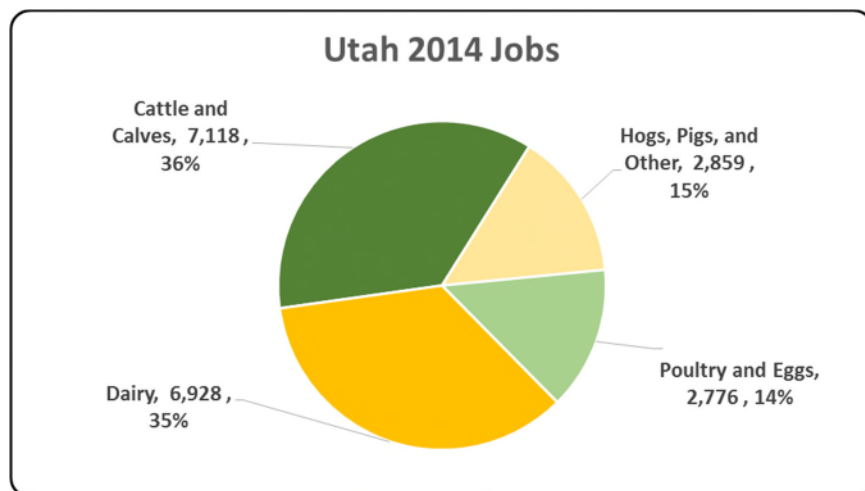
Utah Output

“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 Utah economy. Animal agriculture’s impact on Utah total economic output is about \$3.3 billion.



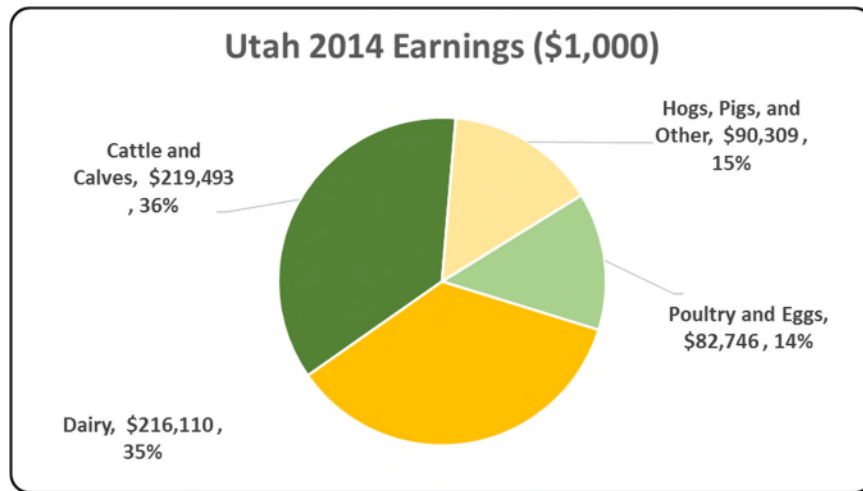
Utah Jobs

“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 Utah in terms of animal agriculture jobs. As shown, animal agriculture contributes significantly to Utah total jobs, contributing 19,682 jobs within and outside of animal agriculture.



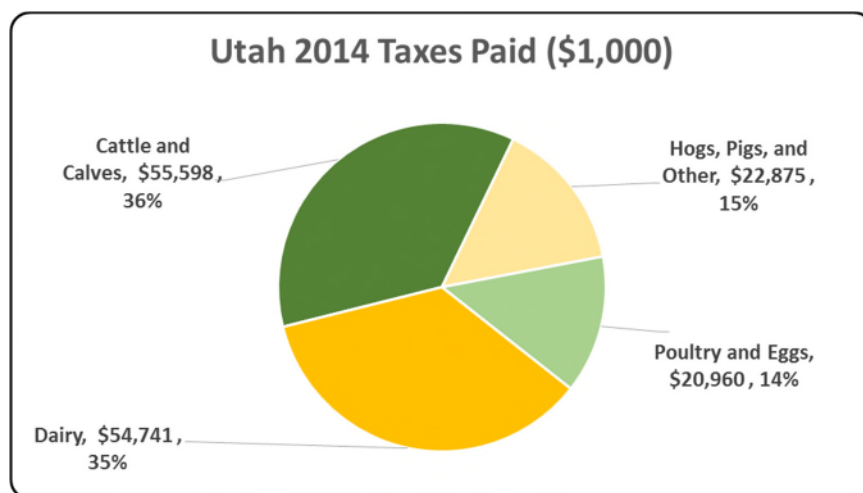
Utah Earnings

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 Utah economy in terms of earnings. Utah's animal agriculture contributed about \$608.7 million to household earnings in 2014.



Utah Taxes Paid by Animal Agriculture

Utah's animal agriculture is also a significant source of tax revenue. In 2014, the state's animal agriculture industry paid about \$154.2 million in income taxes at local, state, and federal levels. Plus the 2012 Census of Agriculture estimated \$34.0 million in property taxes paid by all of Utah agriculture during 2012. Estimates of income taxes paid by animal agriculture are shown in the following chart.



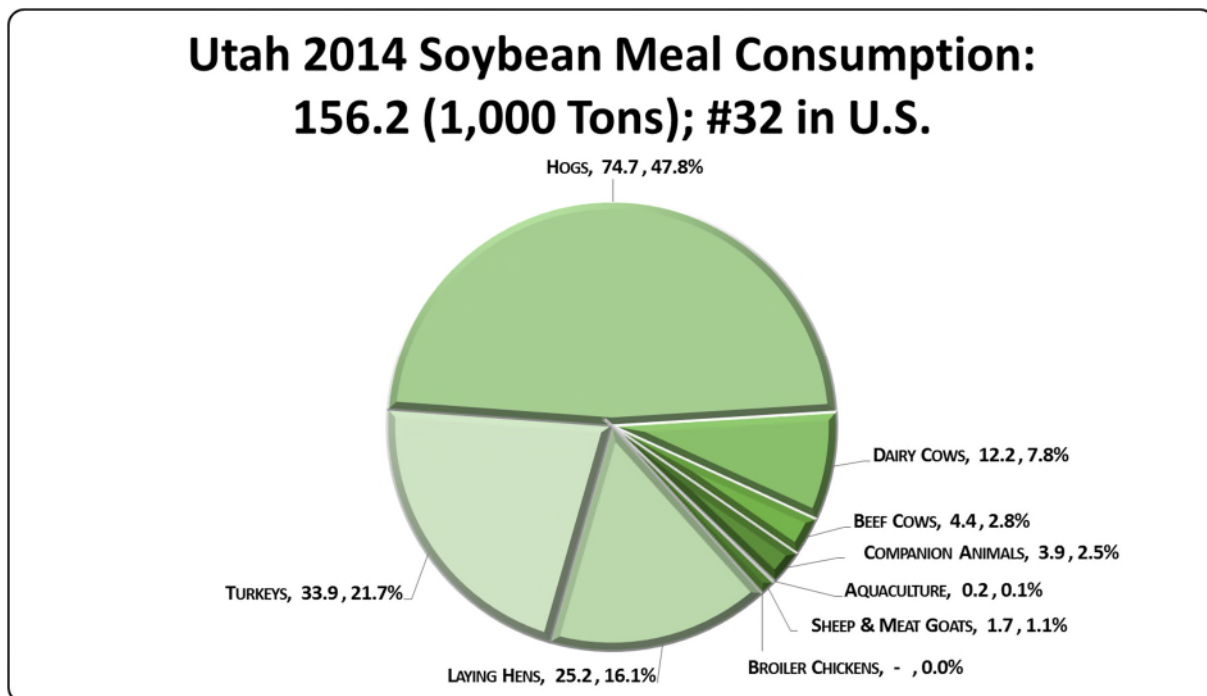
Utah Animal Agriculture Soybean Meal Consumption

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.

Utah’s animal agriculture consumed almost 156.2 thousand tons of soybean meal in 2014, placing the state as #32 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:

- Hogs (74.7 thousand tons)
- Turkeys (33.9 thousand tons)
- Egg-Laying Hens (25.2 thousand tons)

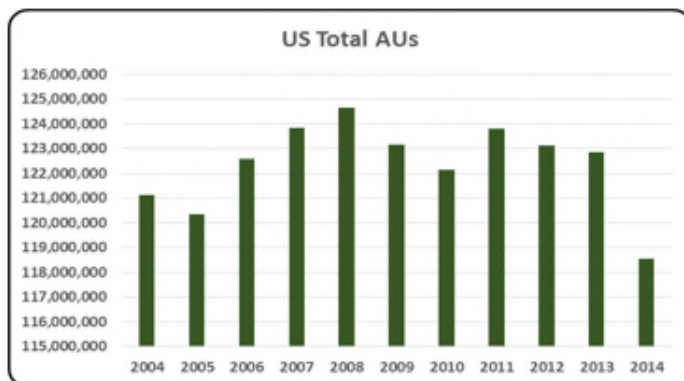


Utah Animal Unit (AU) Trends

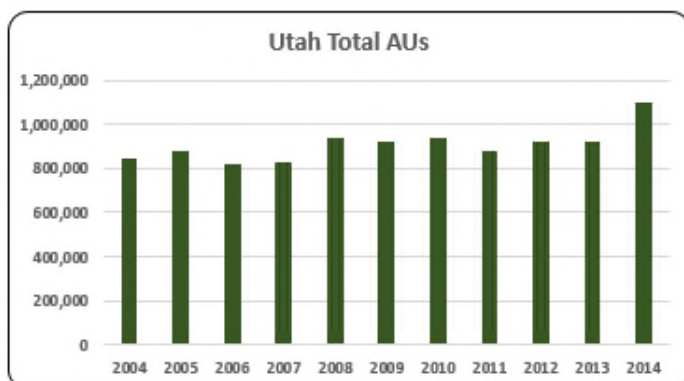
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the United States and abroad have an impact on the size of animal agriculture in the State of Utah. Due to this reality, using a single year as a measure of the presence and strength of a sector can be misleading. 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 Utah and to give perspective on Utah’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.

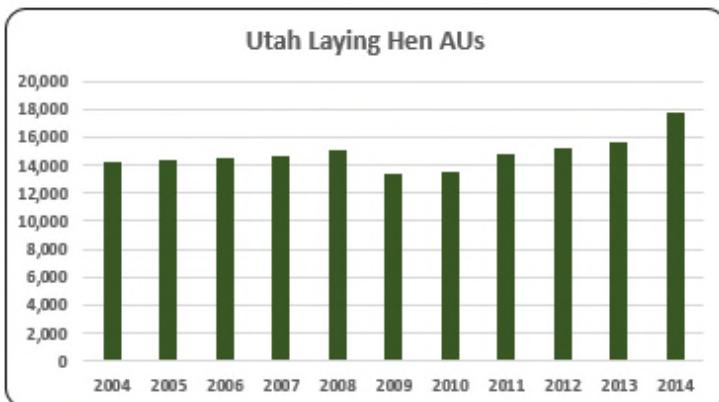
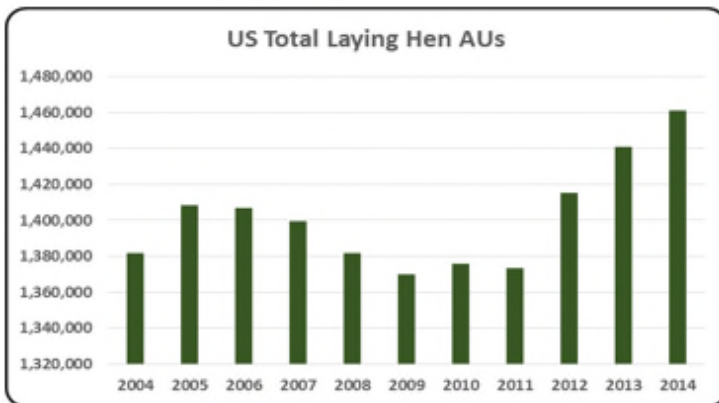
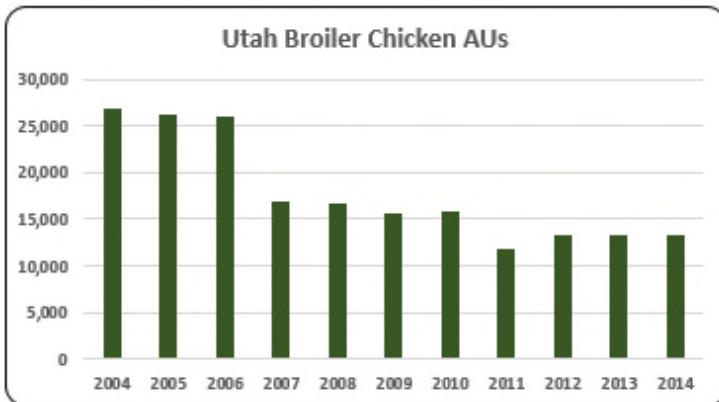
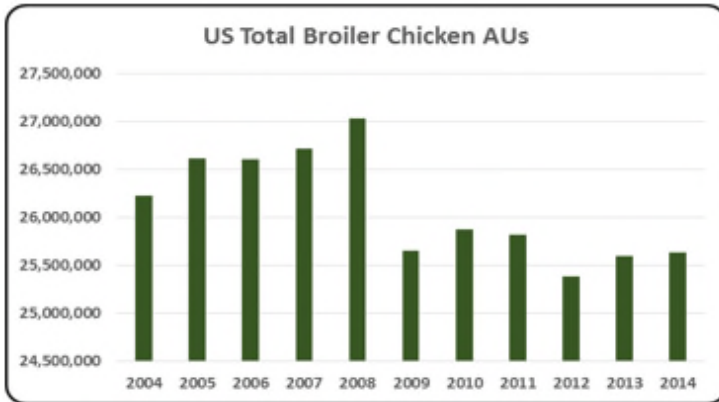
As shown in the accompanying charts and written commentary, certain components of animal agriculture are more present, and therefore more dominant than others. This is due primarily to geography (i.e., weather patterns and access to certain transportation hubs), proximity to high quality, relevant feed ingredients, and the local animal agriculture regulatory framework. In Utah, the largest three segments of animal agriculture in terms of AUs during 2014 were: Beef Cows (651.0 thousand AUs), Hogs (221.9 thousand AUs), and Dairy Cows (133.0 thousand AUs). Total animal units in Utah during 2014 were 1,096.9 thousand AUs.



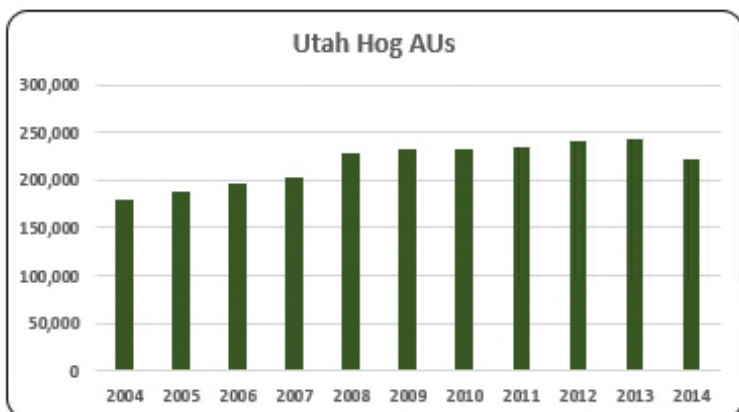
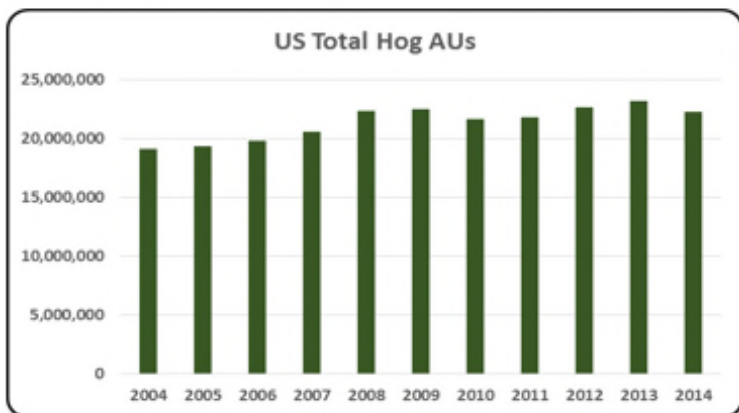
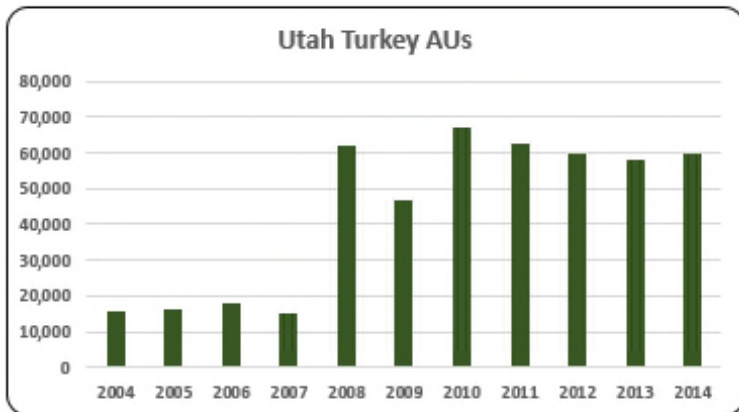
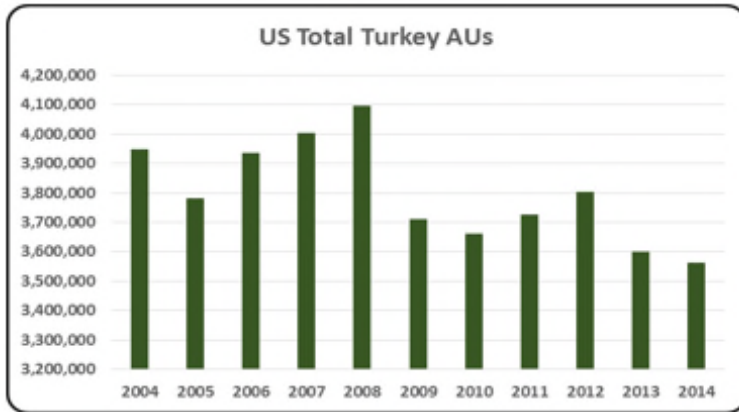
- Overall U.S. total AUs have varied from 2004 to 2014. In 2014 AUs were at an all-time low reflecting, in part, the impact of severe weather on cattle production in some parts of country. During the 2004-14 time period, total AUs in the nation peaked in 2008.



- Less than 1% (0.93%, 1,096.9 thousand) of animal production in the U.S. was in Utah in 2014. Animal production in Utah in 2014 was 29.5% above animal production a decade earlier (847,118 AUs).



- 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).
- Only 1.2% (13,195 broiler AUs) of all animal production in Utah in 2014 was concentrated in broiler production. Broiler production in 2004 (26,775 broiler AUs) was 50.7% above 2014 broiler production.
- 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).
- Utah layer production was only 1.62% (17,769 layer AUs) of all animal production in 2014. Layer production in 2014 was 24.8% higher than a decade earlier (14,234 layer AUs).

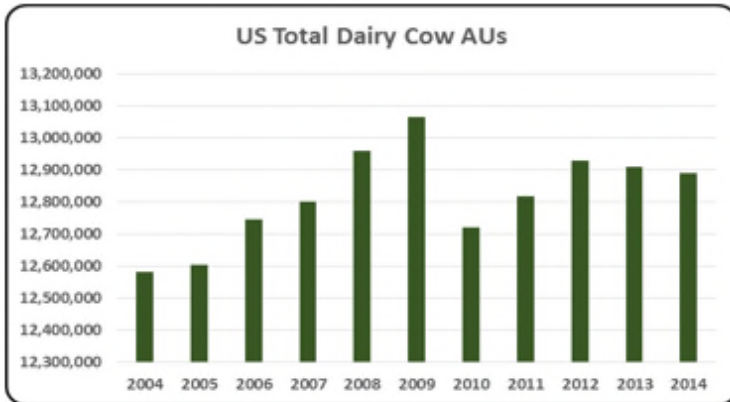


- From 2004 to 2014, the U.S. accounted for 50% of the world’s turkey production. However, in 2014 turkey AUs were the lowest of the decade at 3.5 million, decreasing 13% compared to 2008 (4.1 million turkey AUs) the largest turkey AUs of the decade.

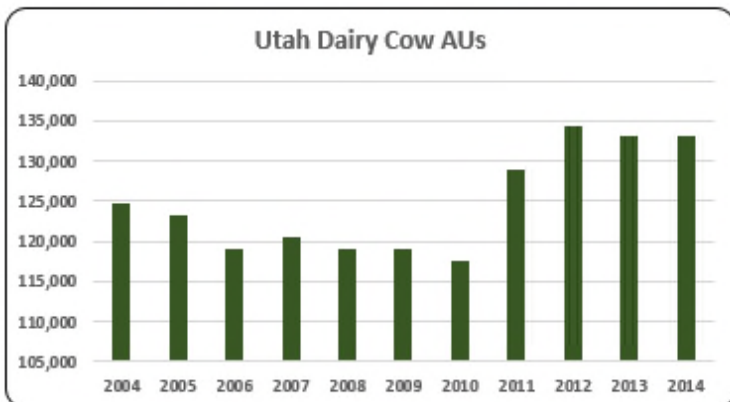
- Turkey production in 2014 (59,981 turkey AUs) was 275.8% higher than production in 2007 (15,959 turkey AUs).

- 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.

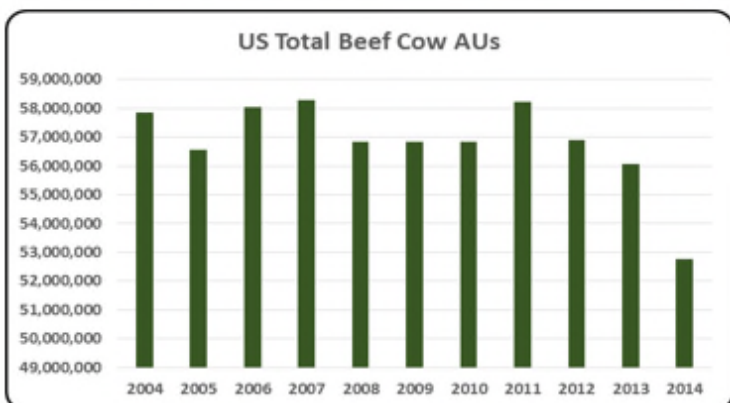
- There were 221,925 hog AUs in Utah in 2014. Hog AUs decreased 8.5% from 2013, however hog production in 2014 was 23.3% higher than ten years earlier (180,000 hog AUs).



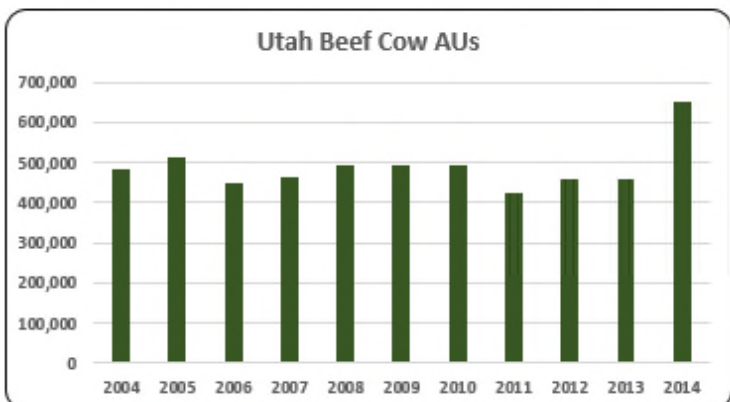
- From 2004 to 2014 dairy cow AUs averaged 12.8 million. In 2014, dairy cow AUs (12.9 million) remained about the same as the previous year but still below the high of 13.1 million AUs, the level in 2009. Despite the fluctuation in AUs, milk supplied has steadily risen.



- There were, on average, 124,727 dairy cow AUs during the 2004- 2014 period. The level of dairy cow AUs in 2014 (133,000) was 6.7% above the level of dairy cow AUs in 2004 (124,600).



- 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.



- About 59.35% of all animal production in Utah in 2014 was concentrated in beef cow production. Beef cow AUs in 2014 (651,000 beef cow AUs) were 34.1% larger than in 2014 (485,550 beef cow AUs).

Utah Additional Information and Methodology

Animal agriculture is an important part of Utah'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 Utah, of interest is the degree to which the industry impacts the Utah economy. Estimates of output, jobs, earnings, taxes paid, and multipliers for Utah 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 Utah'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 Utah which have occurred. As shown in this state report, Utah 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 Utah. 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.

Utah 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 Utah'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 Utah, \$1.988 to \$2.549 million in total economic activity, \$0.360 to \$0.449 in household wages and 11 to 15 additional jobs are generated in the economy at large.

	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)
RIMS II Multipliers	Cattle and Calves	\$ 2.5486	\$ 0.4491	14.6
	Hogs, Pigs, and Other	\$ 1.9878	\$ 0.3603	11.4
	Poultry and Eggs	\$ 2.3408	\$ 0.4249	14.3
	Dairy	\$ 2.2084	\$ 0.4179	13.4

Appendix

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Animal Units (AUs)	Beef Cattle AUs	485,550	510,750	449,850	461,850	492,450	492,450	492,450	425,700	459,825	456,150	651,000
	Hog and Pig AUs	180,000	188,250	195,450	202,200	229,050	233,100	232,350	233,850	240,450	242,475	221,925
	Broiler AUs	26,775	26,212	26,035	16,987	16,722	15,548	15,757	11,873	13,317	13,270	13,195
	Turkey AUs	15,959	16,368	17,785	15,197	61,898	46,890	67,292	62,809	59,892	57,932	59,981
	Egg Layer AUs	14,234	14,321	14,451	14,617	15,069	13,360	13,584	14,848	15,220	15,603	17,769
	Dairy AUs	124,600	123,200	119,000	120,400	119,000	119,000	117,600	128,800	134,400	133,000	133,000
	Total Animal Units	847,118	879,101	822,571	831,250	934,189	920,348	939,032	877,880	923,104	918,430	1,096,870
Value of Production (\$1,000)	Cattle and Calves (\$1,000)	\$ 342,533	\$ 351,595	\$ 250,377	\$ 222,428	\$ 194,220	\$ 185,264	\$ 231,323	\$ 272,474	\$ 302,585	\$ 374,285	\$ 488,740
	Hogs and Pigs (\$1,000)	\$ 157,128	\$ 164,344	\$ 139,583	\$ 152,190	\$ 163,240	\$ 153,912	\$ 184,623	\$ 209,304	\$ 192,252	\$ 210,555	\$ 230,964
	Broilers (\$1,000)	\$ 22,520	\$ 21,332	\$ 16,485	\$ 12,779	\$ 13,152	\$ 11,392	\$ 11,991	\$ 10,564	\$ 13,266	\$ 16,161	\$ 16,954
	Turkeys (\$1,000)	\$ 14,808	\$ 15,702	\$ 18,558	\$ 17,526	\$ 60,877	\$ 40,800	\$ 75,189	\$ 71,849	\$ 76,267	\$ 72,352	\$ 71,148
	Eggs (\$1,000)	\$ 36,012	\$ 23,248	\$ 30,727	\$ 52,618	\$ 72,422	\$ 52,470	\$ 64,329	\$ 70,840	\$ 72,537	\$ 81,139	\$ 106,640
	Milk (\$1,000)	\$ 252,613	\$ 245,828	\$ 221,869	\$ 327,348	\$ 321,456	\$ 216,062	\$ 312,174	\$ 403,956	\$ 382,272	\$ 415,545	\$ 517,134
	Other	\$ 19,241	\$ 21,817	\$ 17,332	\$ 16,712	\$ 18,198	\$ 18,003	\$ 22,294	\$ 19,427	\$ 19,513	\$ 19,599	\$ 19,684
	Sheep and Lambs (\$1,000)	\$ 18,694	\$ 21,258	\$ 16,761	\$ 16,129	\$ 17,603	\$ 17,395	\$ 21,674	\$ 18,796	\$ 18,869	\$ 18,943	\$ 19,016
	Aquaculture (\$1,000)	\$ 547	\$ 559	\$ 571	\$ 583	\$ 595	\$ 608	\$ 620	\$ 632	\$ 644	\$ 656	\$ 668
	Total (\$1,000)	\$ 844,855	\$ 843,866	\$ 694,931	\$ 801,601	\$ 843,565	\$ 677,903	\$ 901,922	\$ 1,058,415	\$ 1,058,692	\$ 1,189,636	\$ 1,451,264

Ag Census Data Category	Animal Type	1997	2002	2007	2012
Number of Farms by NAICS	Beef cattle ranching and farming (112111)	5,309	4,202	5,183	5,231
	Cattle feedlots (112112)	433	583	415	126
	Dairy cattle and milk production (11212)	614	464	335	248
	Hog and pig farming (1122)	114	179	205	199
	Poultry and egg production (1123)	171	334	359	214
	Sheep and goat farming (1124)	667	582	895	763
	Animal aquaculture and other animal production (1125,1129)	1,878	3,482	2,813	3,760
Value of Sales (\$1,000)	Cattle and Calves	260,758	371,418	347,299	364,214
	Hogs and Pigs	40,758	153,112	196,595	290,632
	Poultry and Eggs	68,129	84,178	140,359	140,131
	Milk and Other Dairy Products	196,448	196,812	292,141	326,364
	Aquaculture	1,931	5,746	4,074	6,709
	Other (calculated)	65,219	46,835	62,813	93,368
	Total	633,243	858,101	1,043,281	1,221,418
Input Purchases	Livestock and poultry purchased	(Farms) 5,266	5,172	4,826	6,025
		\$1,000 82,463	158,687	132,323	114,862
	Breeding livestock purchased	(Farms) n/a	2,702	2,864	3,353
		\$1,000 n/a	18,789	31,074	38,315
	Other livestock and poultry purchased	(Farms) n/a	3,092	2,836	3,566
		\$1,000 n/a	139,898	101,250	76,547
	Feed purchased	(Farms) 7,655	9,479	9,214	11,921
	\$1,000 198,854	244,175	389,568	611,302	

	Animal Type	Output (\$1,000)	Earnings (\$1,000)	Employment (Jobs)	Taxes Paid (\$1,000)
2014 Animal Agriculture	Cattle and Calves	\$ 1,245,603	\$ 219,493	7,118	\$ 55,598
	Hogs, Pigs, and Other	\$ 498,238	\$ 90,309	2,859	\$ 22,875
	Poultry and Eggs	\$ 455,852	\$ 82,746	2,776	\$ 20,960
	Dairy	\$ 1,142,039	\$ 216,110	6,928	\$ 54,741
	Total	\$ 3,341,731	\$ 608,658	19,682	\$ 154,173
Change from 2004 to 2014	Cattle and Calves	\$ 151,555	\$ 26,706	866	\$ 6,765
	Hogs, Pigs, and Other	\$ 58,872	\$ 10,671	338	\$ 2,703
	Poultry and Eggs	\$ 240,703	\$ 43,692	1,466	\$ 11,067
	Dairy	\$ 442,896	\$ 83,810	2,687	\$ 21,229
	Total	\$ 894,025	\$ 164,879	5,357	\$ 41,764
	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)	
RIMS II Multipliers	Cattle and Calves	\$ 2.5486	\$ 0.4491	14.6	
	Hogs, Pigs, and Other	\$ 1.9878	\$ 0.3603	11.4	
	Poultry and Eggs	\$ 2.3408	\$ 0.4249	14.3	
	Dairy	\$ 2.2084	\$ 0.4179	13.4	
Tax Rates	Federal effective income tax rate			12.7%	
	Federal Social Security tax rate			7.7%	
	State Effective Rate			5.0%	
	Total			25.3%	

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.