

Economic Analysis of Animal Agriculture 2005-2015

ALASKA

**A Report for
United Soybean Board**



September 2016



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Alaska Executive Summary

The use of soybean meal as a key feed ingredient is a small part of Alaska's animal agriculture. While the degree to which animal agriculture utilizes this versatile feed ingredient has fluctuated with time, it remains a factor of animal agriculture's success in the State of Alaska. In the State of Alaska during 2015 animal agriculture contributed:

- \$24.1 million in economic output
- 102 jobs
- \$4.8 million in earnings
- \$1.0 million in income taxes paid at local, state, and federal levels
- \$1.3 million in the form of property taxes

Alaska's animal agriculture consumed almost 2,400 tons of soybean meal in 2015. This soybean meal was fed primarily to:

- Turkeys (1,300 tons)
- Companion Animals (600 tons)
- Egg-Laying Hens (300 tons)

This report examines animal agriculture in Alaska 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 Alaska, many opportunities and challenges will arise. It is expected that animal agriculture will continue to be a minor contributor to the economic well-being of the people of Alaska and beyond.

Alaska Economic Impact of Animal Agriculture

Animal agriculture is a small part of Alaska's economy. In 2015, Alaska's animal agriculture contributed the following to the economy:

- About \$24.1 million in economic output
- \$4.8 million in household earnings
- 102 jobs
- \$1.0 million in income taxes
-

During the last decade Alaska's animal agriculture has:

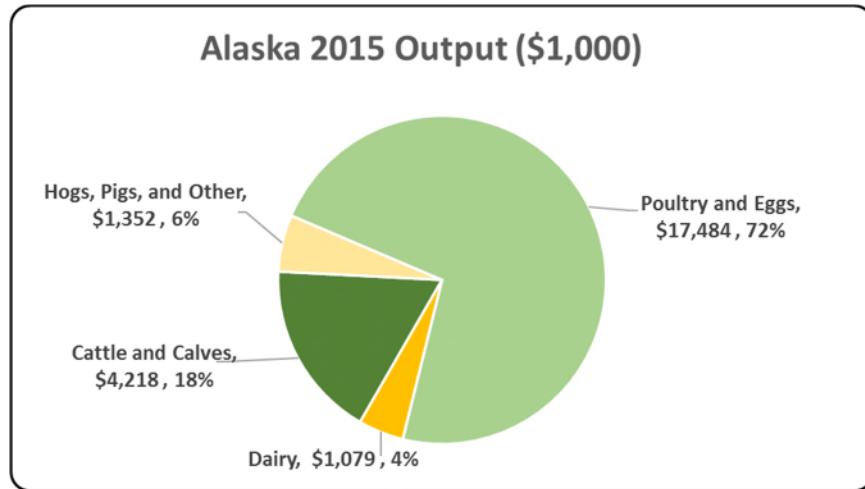
- Increased economic output by \$2.4 million
- Boosted household earnings by \$444,000
- Added 7 jobs
- Paid an additional \$90,000 in income taxes

Below is a table which demonstrates this decade of change.

Measure	2015	Change 2005-2015	% Change 2005-2015
Output (\$1,000)	\$ 24,133	\$ 2,362	10.85%
Earnings (\$1,000)	\$ 4,790	\$ 444	10.22%
Employment (Jobs)	102	7	7.79%
Income Taxes Paid (\$1,000)	\$ 974	\$ 90	10.22%
Property Taxes Paid in 2012 (\$1,000)	\$ 1,345		

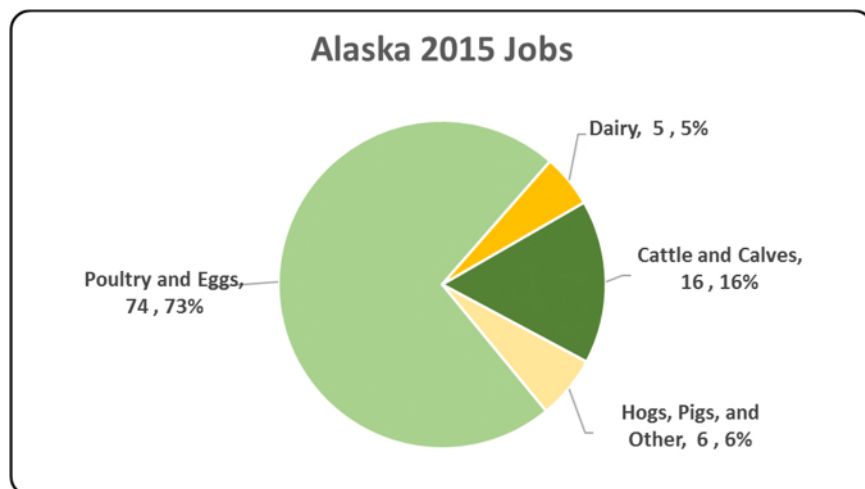
Alaska Output

“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 table illustrates the impact of animal agriculture to the Alaska economy. Animal agriculture’s impact on Alaska total economic output is about \$24.1 million.



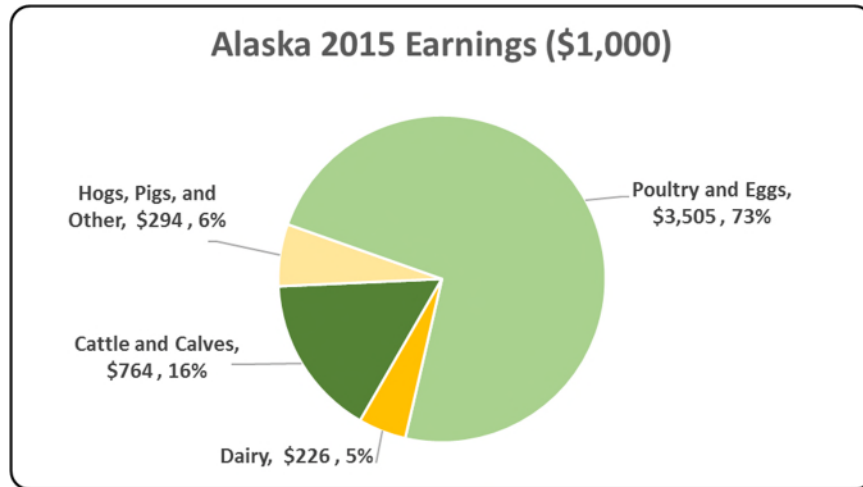
Alaska Jobs

“Jobs” represents an estimate of the number of full or part-time positions (jobs) currently filled in an area and/or industry. The table illustrates the contribution to Alaska in terms of animal agriculture jobs. As shown, animal agriculture contributes 102 jobs within and outside of animal agriculture.



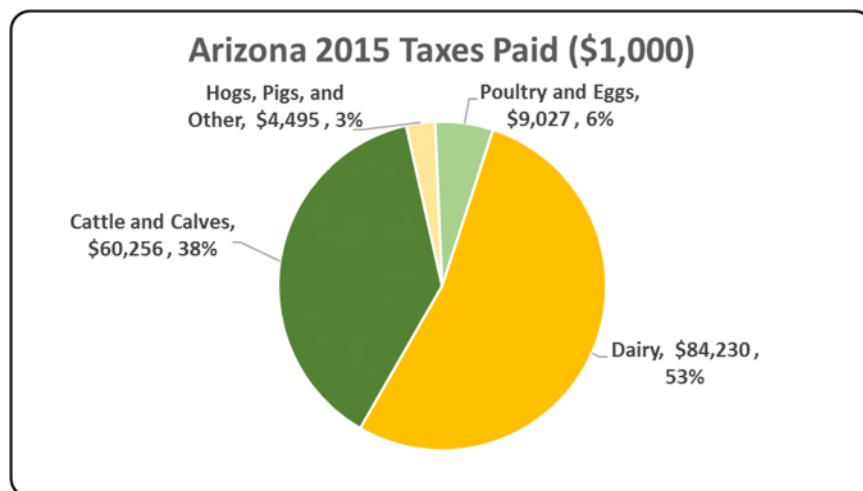
Alaska Earnings

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 Alaska economy in terms of earnings. Alaska’s animal agriculture contributed about \$4.8 million to household earnings in 2015.



Alaska Taxes Paid by Animal Agriculture

Alaska’s animal agriculture is not a significant source of tax revenue. In 2015, the state’s animal agriculture industry paid about \$1.0 million in income taxes at local, state, and federal levels. Plus the 2012 Census of Agriculture estimated \$1.3 million in property taxes paid by all of Alaska agriculture during 2012. Estimates of income taxes paid by animal agriculture are shown in the following chart.



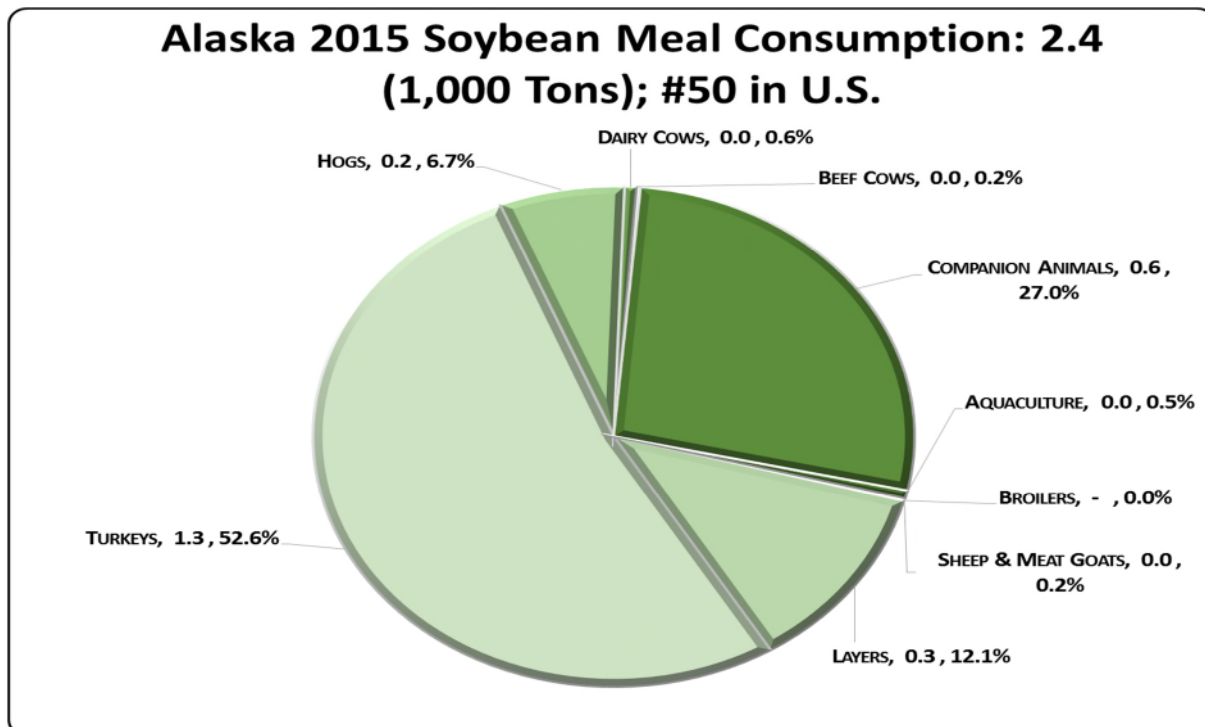
Alaska Animal Agriculture Soybean Meal Consumption

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 2014-15 soybean marketing year by up to sixteen specific animal species has been estimated.

Alaska's animal agriculture consumed almost 2,400 tons of soybean meal in 2015, placing the state as #50 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:

- Turkeys (1,300 tons)
- Companion Animals (600 tons)
- Egg-Laying Hens (300 tons)

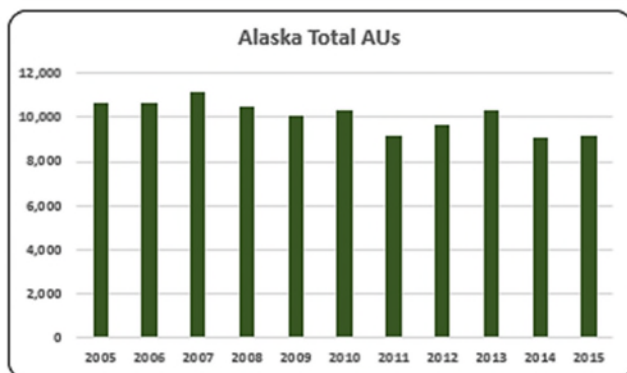
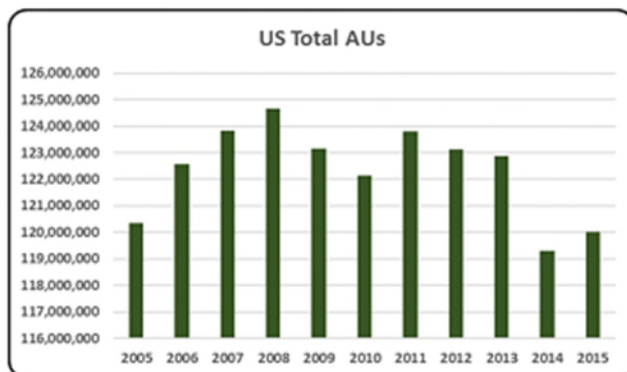


Alaska Animal Unit (AU) Trends

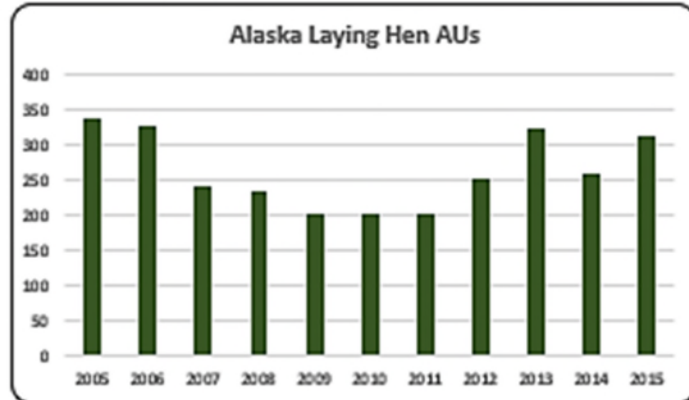
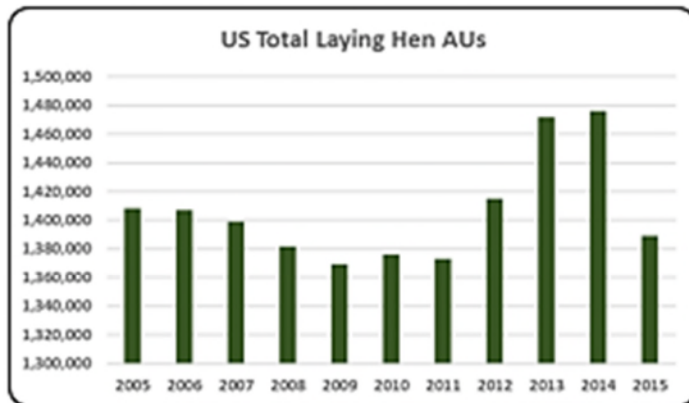
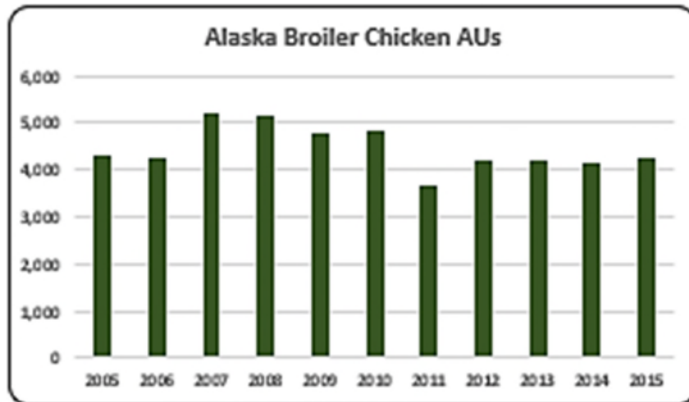
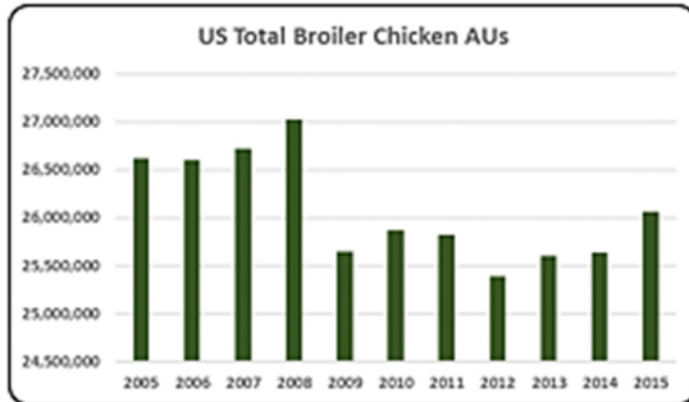
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the United States and abroad have an impact on the size of animal agriculture in the State of Alaska. Due to this reality, using a single year as a measure of the presence and strength of a sector can be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

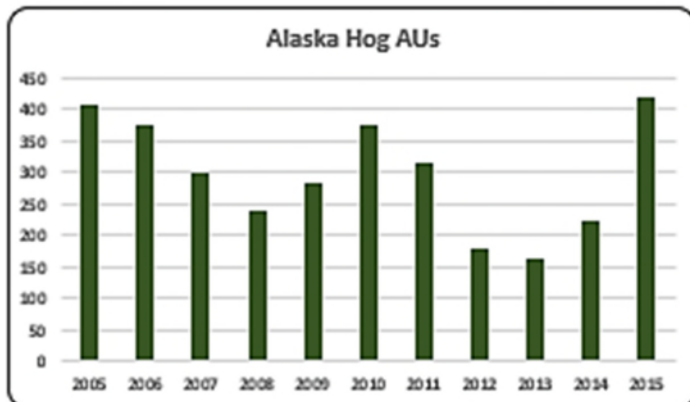
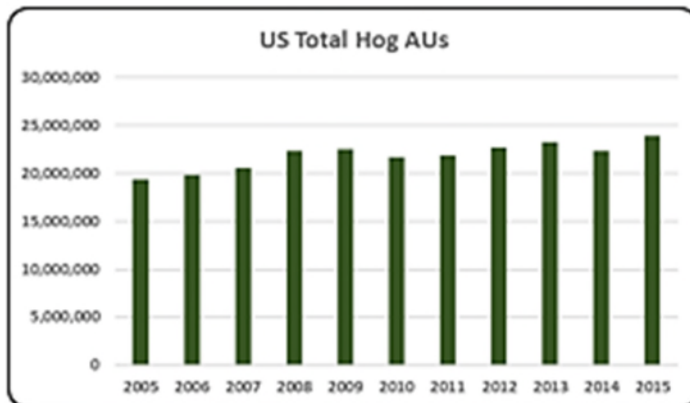
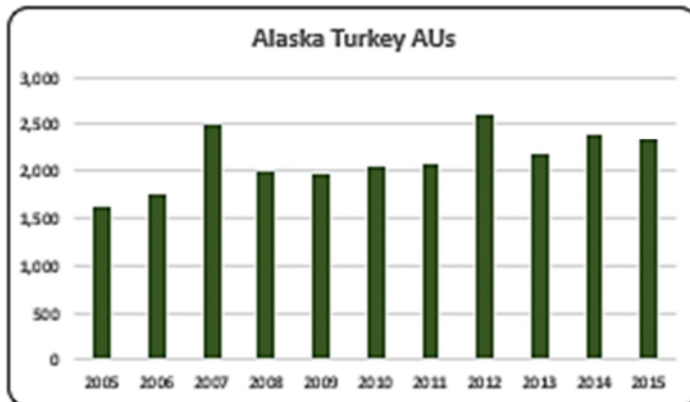
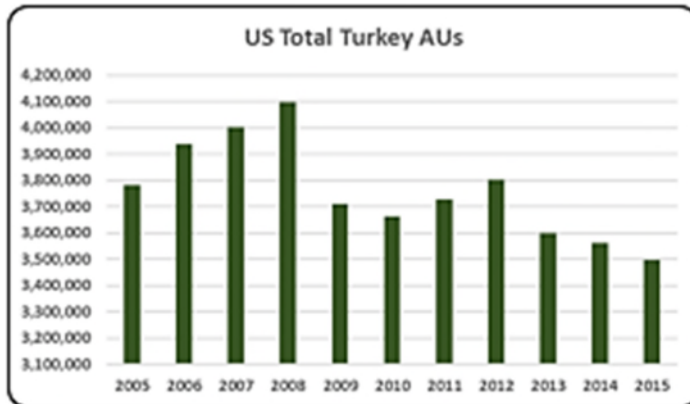
As shown in the accompanying charts and written commentary, certain components of animal agriculture are more present, and therefore more dominant than others. This is due primarily to geography (i.e., weather patterns and access to certain transportation hubs), proximity to high quality, relevant feed ingredients, and the local animal agriculture regulatory framework. In Alaska, the largest three segments of animal agriculture in terms of AUs during 2015 were: Broilers (4,265 AUs), Turkeys (2,344 AUs), and Beef Cows (1,380 AUs). Total animal units in Alaska during 2015 were 9,139 AUs.



- Overall U.S. total AUs have varied from 2005 to 2015. 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 2005-2015 time period, total AUs in the nation peaked in 2008.
- Alaska is one of the few states with very low animal production. There were 9,139 AUs in 2015 for all species included in this study, and the average AUs from 2005 to 2015 was 10,061.



- U.S. broiler production is clustered in a number of states, with Georgia being the largest producer. On average from 2005 to 2015, broiler chicken AUs were about 26.0 million. In 2015, AUs rebounded 3% from the low AUs numbers in 2012 (25.4 million AUs).
- This year 4,265 of all animal units in Alaska was in the broiler industry. The average broiler AUs during 2005-2015 was 4,458.
- On average, the layer AUs during 2005-2015 were 1.4 million. In 2015 layer AUs were 1.3 million, down 6% from the 2014 decade high (1.4 million AUs). This drastic decrease in 2015 was due to the losses in major egg laying states from the avian influenza outbreak.
- Layer AUs in 2015 was equal to 310, representing 0.02% of all layers in the U.S during that year. On average there were only 262 layers from 2005 to 2015.

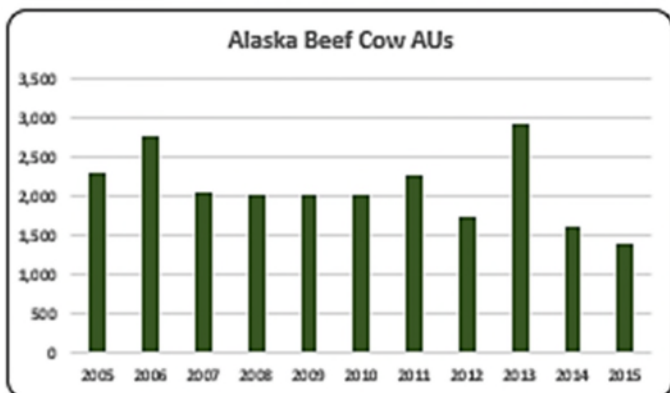
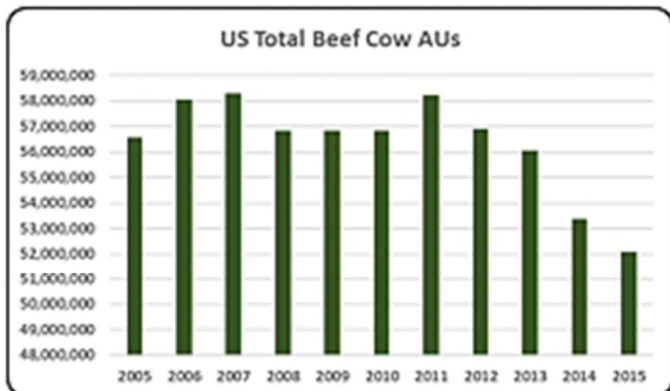
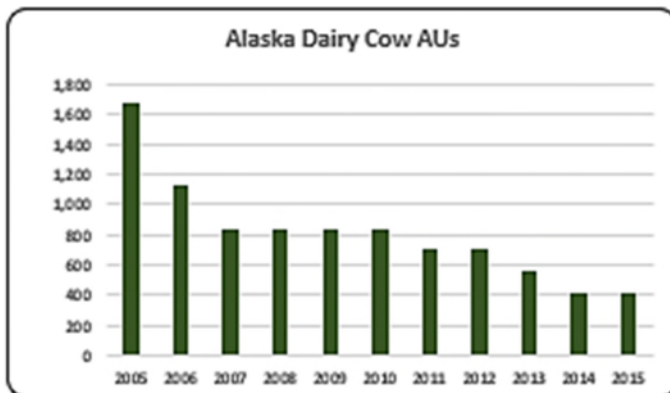
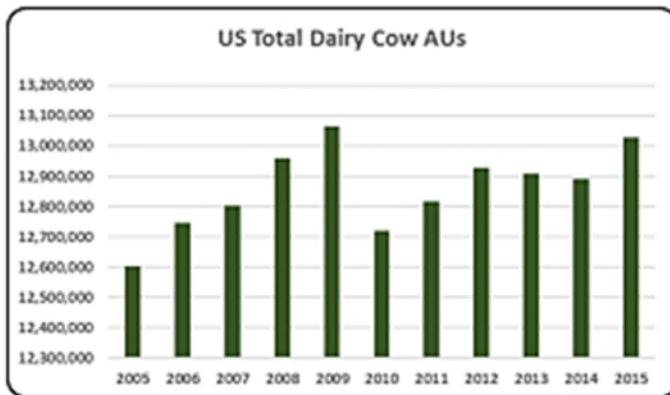


- In 2015 turkey AUs were the lowest of the decade at 3.5 million, decreasing 15% compared to 2008 (4.1 million turkey AUs) the largest turkey AUs of the decade. The most recent contributor to this decline has been avian influenza.

- There were 2,344 turkey AUs in 2015 representing only 0.06% of all turkeys AUs in the U.S. during that year.

- On average from 2005 to 2015, hog AUs were about 21.8 million. Hog AUs in 2015 increased 24% to 23.9 million AUs compared to the decade low in 2005 (19.4 million AUs). Despite the fluctuation in AUs, the pork supply was relatively stable.

- Hog production in Alaska is minimal with only 420 AUs in 2015 and an average of 299 AUs for the decade.



- From 2005 to 2015 dairy cow AUs averaged 12.8 million. In 2015, dairy cow AUs (13.0 million) finally reached near the 2009 high of 13.1 million AUs. Milk supplies have steadily risen.
- The number of dairy cows in the state has consistently decreased since 2005. Dairy cow AUs were 1,680 in 2005 compared to 420 in 2015.
- From 2005 to 2015 beef cow AUs averaged 56.3 million. In 2015 beef cow AUs decreased to 52.0 million, the lowest of the decade. States that traditionally raise a lot of cattle like Texas and Oklahoma continue to work through the lingering effects of the drought of the last several years.
- Alaska beef cow AUs averaged 2,095 from 2005 to 2015. Beef cow AUs decreased 45% from previous year's AUs.

Alaska Additional Information and Methodology

Animal agriculture is a small part of Alaska'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 2005-2015 time period
- Soybean meal usage by animal species during the 2014/15 soybean marketing year
- Animal Unit (AU) trends from 2005-2015

Given the long-term presence of animal agriculture in Alaska, of interest is the degree to which the industry impacts the Alaska economy. Estimates of output, jobs, earnings, taxes paid, and multipliers for Alaska 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 Alaska'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 2005-2015 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 Alaska which have occurred. As shown in this state report, Alaska 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 Alaska. 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 2014-15 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.

Alaska 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 Alaska'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 Alaska, \$1.30 to \$1.40 million in total economic activity, \$0.25 to \$0.29 in household wages and 5 to 7 additional jobs are generated in the economy at large.

	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)
RIMS II Multipliers	Cattle and Calves	\$ 1.364	\$ 0.247	5.3
	Hogs, Pigs, and Other	\$ 1.303	\$ 0.283	6.1
	Poultry and Eggs	\$ 1.359	\$ 0.272	5.7
	Dairy	\$ 1.401	\$ 0.294	6.9

Appendix

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Animal Units (AUs)	Beef Cattle AUs	2,295	2,775	2,055	2,010	2,010	2,010	2,250	1,725	2,925	1,605	1,380
	Hog and Pig AUs	405	375	300	240	285	375	315	180	165	225	420
	Broiler AUs	4,303	4,274	5,227	5,145	4,784	4,848	3,653	4,196	4,181	4,157	4,265
	Turkey AUs	1,612	1,752	2,507	2,004	1,963	2,044	2,081	2,602	2,170	2,396	2,344
	Egg Layer AUs	337	325	239	233	203	202	203	250	324	258	310
	Dairy AUs	1,680	1,120	840	840	840	840	700	700	560	420	420
	Total Animal Units	10,632	10,621	11,168	10,471	10,085	10,320	9,202	9,652	10,325	9,061	9,139
Value of Production (\$1,000)	Cattle and Calves (\$1,000)	\$ 3,137	\$ 3,621	\$ 1,444	\$ 1,205	\$ 2,162	\$ 2,371	\$ 2,563	\$ 1,620	\$ 1,021	\$ 2,849	\$ 3,092
	Hogs and Pigs (\$1,000)	\$ 580	\$ 480	\$ 421	\$ 378	\$ 547	\$ 586	\$ 422	\$ 272	\$ 261	\$ 401	\$ 436
	Broilers (\$1,000)	\$ 3,616	\$ 2,802	\$ 4,034	\$ 4,121	\$ 3,556	\$ 3,716	\$ 3,253	\$ 4,181	\$ 5,094	\$ 5,344	\$ 4,662
	Turkeys (\$1,000)	\$ 1,531	\$ 1,810	\$ 2,851	\$ 2,461	\$ 2,241	\$ 2,820	\$ 3,136	\$ 4,261	\$ 3,374	\$ 3,817	\$ 4,065
	Eggs (\$1,000)	\$ 705	\$ 782	\$ 1,283	\$ 1,546	\$ 1,100	\$ 1,208	\$ 1,324	\$ 1,485	\$ 1,678	\$ 2,686	\$ 4,142
	Milk (\$1,000)	\$ 2,754	\$ 1,970	\$ 2,006	\$ 1,699	\$ 1,470	\$ 1,732	\$ 1,670	\$ 1,368	\$ 704	\$ 767	\$ 770
	Other	\$ 826	\$ 801	\$ 776	\$ 751	\$ 726	\$ 701	\$ 676	\$ 651	\$ 626	\$ 601	\$ 576
	Sheep and Lambs (\$1,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Aquaculture (\$1,000)	\$ 826	\$ 801	\$ 776	\$ 751	\$ 726	\$ 701	\$ 676	\$ 651	\$ 626	\$ 601	\$ 576
	Total (\$1,000)	\$ 13,150	\$ 12,265	\$ 12,815	\$ 12,161	\$ 11,802	\$ 13,134	\$ 13,045	\$ 13,838	\$ 12,758	\$ 16,466	\$ 17,743

Ag Census Data Category	Animal Type	1997	2002	2007	2012	
Number of Farms by NAICS	Beef cattle ranching and farming (112111)	45	31	41	51	
	Cattle feedlots (112112)	7	8	4	1	
	Dairy cattle and milk production (11212)	12	15	6	6	
	Hog and pig farming (1122)	16	13	14	9	
	Poultry and egg production (1123)	10	14	32	26	
	Sheep and goat farming (1124)	14	11	19	27	
	Animal aquaculture and other animal production (1125,1129)	126	137	167	158	
Value of Sales (\$1,000)	Cattle and Calves	1,639	759	768	1,085	
	Hogs and Pigs	320	205	242	338	
	Poultry and Eggs	32	104	207	353	
	Milk and Other Dairy Products	2,776	3,246	1,487	withheld	
	Aquaculture	n/a	20,807	28,540	29,774	
	Other (calculated)	3,915	479	1,027	withheld	
	Total	8,682	25,600	32,271	31,550	
Input Purchases	Livestock and poultry purchased	(Farms)	127	117	118	168
		\$1,000	1,291	569	303	569
	Breeding livestock purchased	(Farms)	n/a	51	46	46
		\$1,000	n/a	432	107	250
	Other livestock and poultry purchased	(Farms)	n/a	80	86	148
		\$1,000	n/a	137	196	320
	Feed purchased	(Farms)	234	293	299	364
	\$1,000	2,532	4,078	5,096	6,386	

	Animal Type	Output (\$1,000)	Earnings (\$1,000)	Employment (Jobs)	Taxes Paid (\$1,000)
2015 Animal Agriculture	Cattle and Calves	\$ 4,218	\$ 764	16	\$ 155
	Hogs, Pigs, and Other	\$ 1,352	\$ 294	6	\$ 60
	Poultry and Eggs	\$ 17,484	\$ 3,505	74	\$ 713
	Dairy	\$ 1,079	\$ 226	5	\$ 46
	Total	\$ 24,133	\$ 4,790	102	\$ 974
Change from 2005 to 2015	Cattle and Calves	\$ (975)	\$ (177)	(4)	\$ (36)
	Hogs, Pigs, and Other	\$ (891)	\$ (194)	(4)	\$ (39)
	Poultry and Eggs	\$ 7,834	\$ 1,571	33	\$ 319
	Dairy	\$ (3,605)	\$ (756)	(18)	\$ (154)
	Total	\$ 2,362	\$ 444	7	\$ 90
RIMS II Multipliers	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)	
	Cattle and Calves	\$ 1.364	\$ 0.247	5.3	
	Hogs, Pigs, and Other	\$ 1.303	\$ 0.283	6.1	
	Poultry and Eggs	\$ 1.359	\$ 0.272	5.7	
	Dairy	\$ 1.401	\$ 0.294	6.9	
Tax Rates	Federal effective income tax rate			12.7%	
	Federal Social Security tax rate			7.7%	
	State Effective Rate			0.0%	
	Total			20.3%	

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.

