

Economic Analysis of Animal Agriculture 2004-2014

NEW MEXICO

**A Report for
United Soybean Board**



September 2015



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New Mexico Executive Summary

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

- \$5.7 billion in economic output
- 27,992 jobs
- \$979.7 million in earnings
- \$247.2 million in income taxes paid at local, state, and federal levels
- \$36.2 million in the form of property taxes

Plus, from 2004-2014 animal agriculture in New Mexico increased economic output by over \$1.7 billion, boosted household earnings by \$284.7 million, contributed 8,144 additional jobs and paid \$71.8 million in additional tax revenues.

New Mexico's animal agriculture consumed about 61.0 thousand tons of soybean meal in 2014. This soybean meal was fed primarily to:

- Dairy Cows (41.3 thousand tons)
- Beef Cows (9.0 thousand tons)
- Companion Animals (4.4 thousand tons)

This report examines animal agriculture in New Mexico 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 New Mexico, 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 New Mexico and beyond.

New Mexico Economic Impact of Animal Agriculture

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

- About \$5.7 billion in economic output
- \$979.7 million in household earnings
- 27,992 jobs
- \$247.2 million in income taxes

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

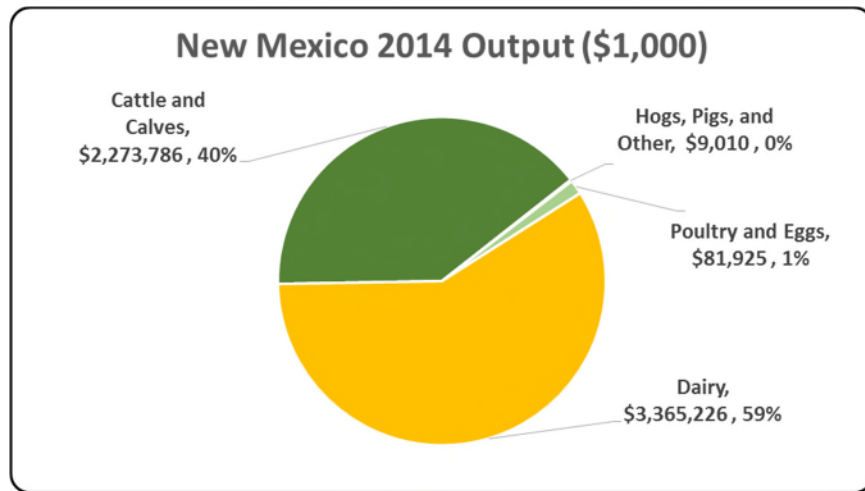
- Increased economic output by \$1.7 billion
- Boosted household earnings by \$284.7 million
- Added 8,144 jobs
- Paid an additional \$71.8 million in income taxes

Below is a table which demonstrates this decade of change.

Measure	2014	Change 2004-2014	% Change 2004-2014
Output (\$1,000)	\$ 5,729,947	\$ 1,664,590	40.95%
Earnings (\$1,000)	\$ 979,683	\$ 284,693	40.96%
Employment (Jobs)	27,992	8,144	41.03%
Income Taxes Paid (\$1,000)	\$ 247,174	\$ 71,828	40.96%
Property Taxes Paid in 2012 (\$1,000)	\$ 36,159		

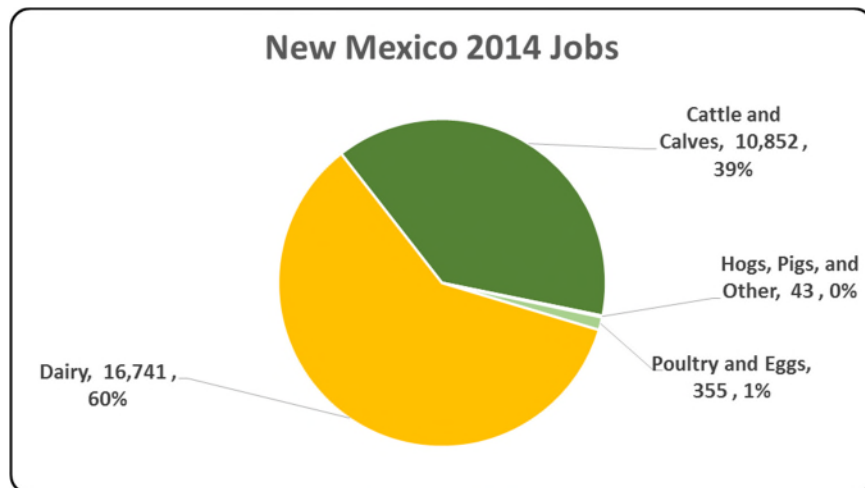
New Mexico Output

“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 New Mexico economy. Animal agriculture’s impact on New Mexico total economic output is about \$5.7 billion.



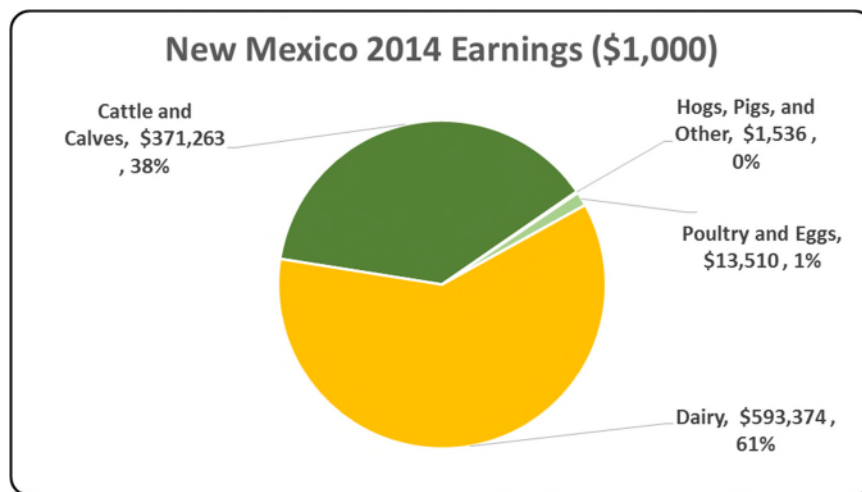
New Mexico Jobs

“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 New Mexico in terms of animal agriculture jobs. As shown, animal agriculture contributes significantly to New Mexico total jobs, contributing 27,992 jobs within and outside of animal agriculture.



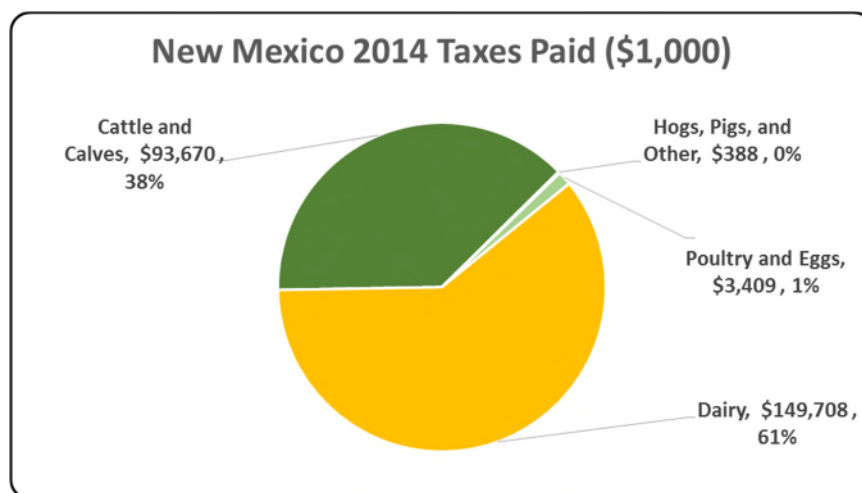
New Mexico Earnings

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 New Mexico economy in terms of earnings. New Mexico's animal agriculture contributed about \$979.7 million to household earnings in 2014.



New Mexico Taxes Paid by Animal Agriculture

New Mexico's animal agriculture is also a significant source of tax revenue. In 2014, the state's animal agriculture industry paid about \$247.2 million in income taxes at local, state, and federal levels. Plus the 2012 Census of Agriculture estimated \$36.2 million in property taxes paid by all of New Mexico agriculture during 2012. Estimates of income taxes paid by animal agriculture are shown in the following chart.



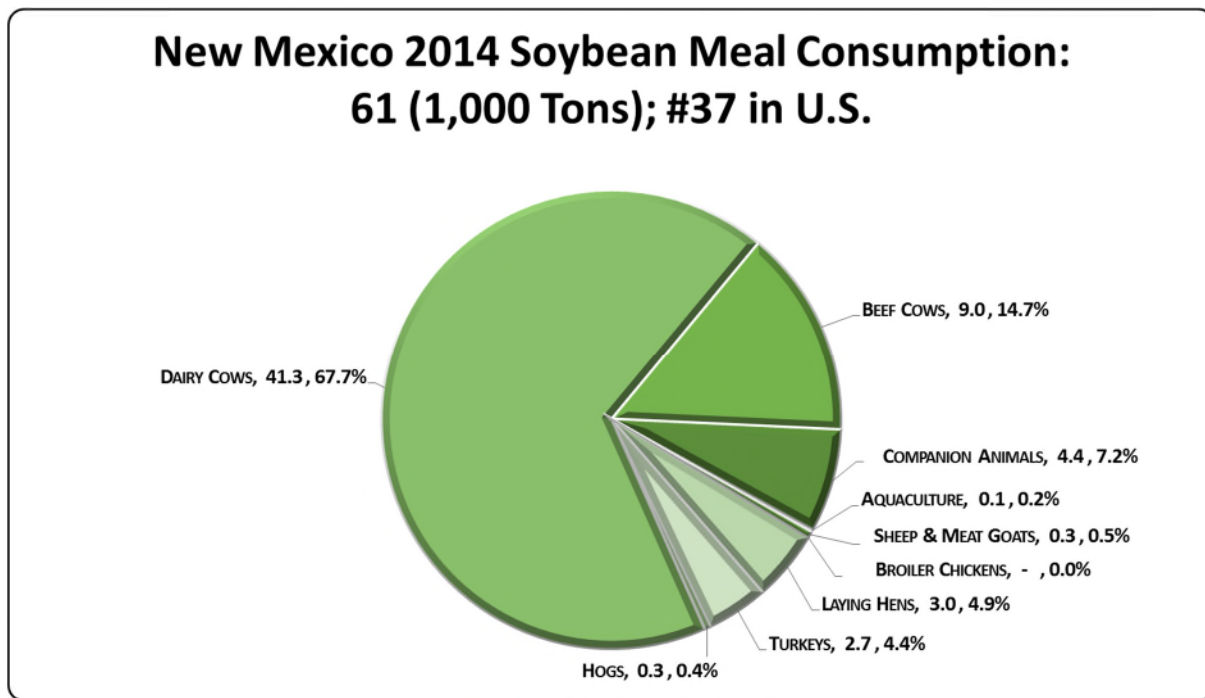
New Mexico Animal Agriculture Soybean Meal Consumption

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.

New Mexico's animal agriculture consumed almost 61.0 thousand tons of soybean meal in 2014, placing the state as #37 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 (41.3 thousand tons)
- Beef Cows (9.0 thousand tons)
- Companion Animals (4.4 thousand tons)

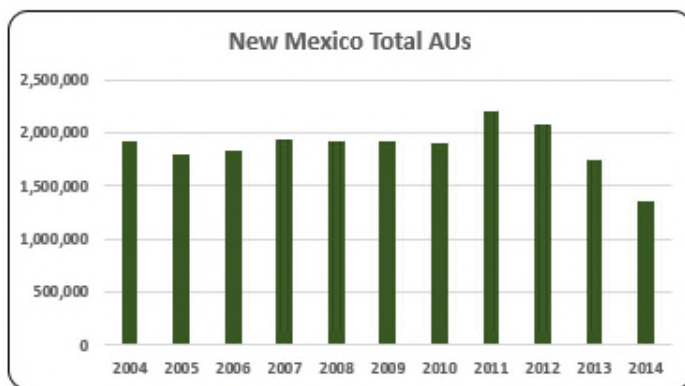
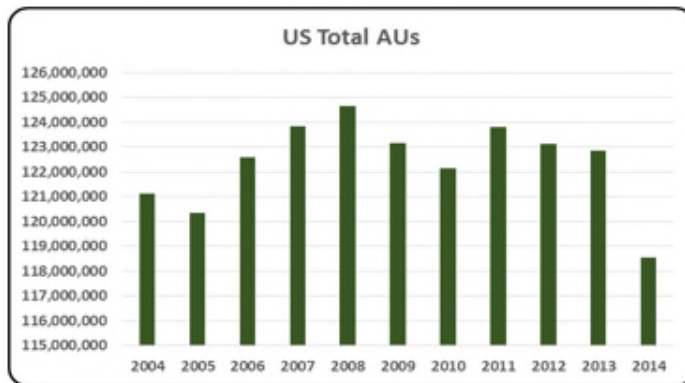


New Mexico Animal Unit (AU) Trends

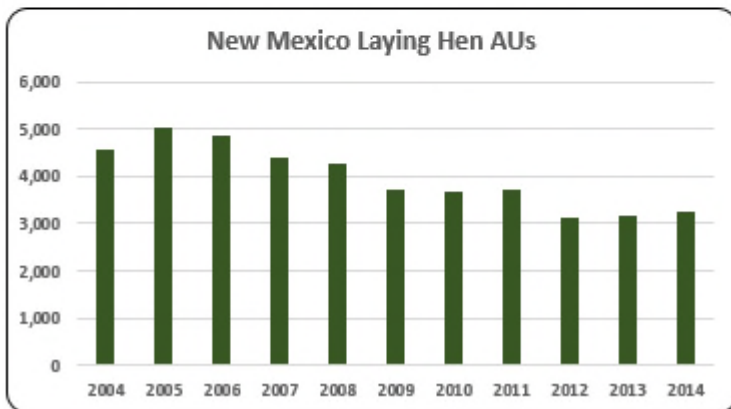
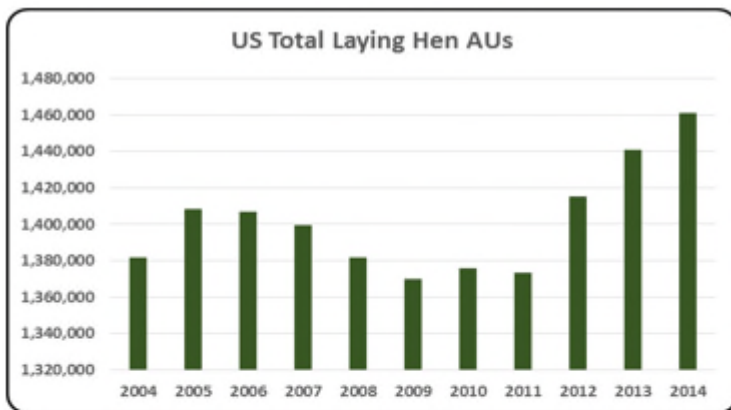
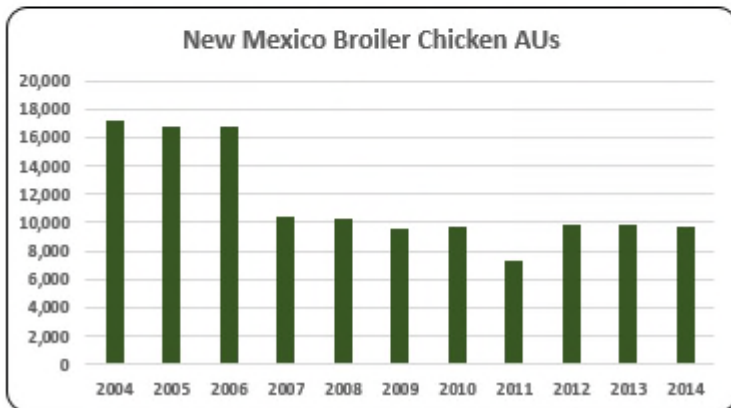
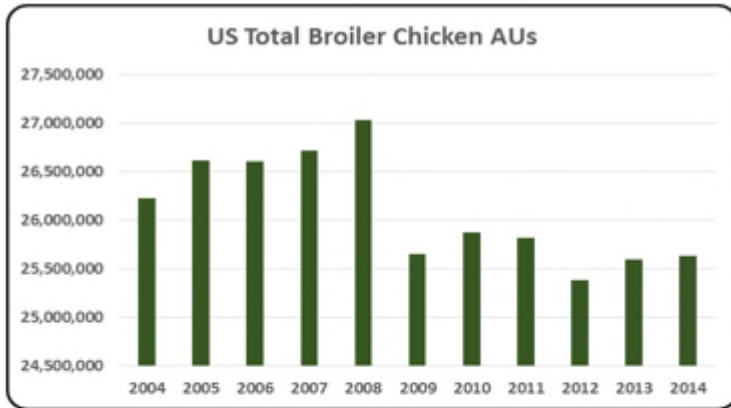
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the United States and abroad have an impact on the size of animal agriculture in the State of New Mexico. Due to this reality, using a single year as a measure of the presence and strength of a sector can 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 New Mexico and to give perspective on New Mexico’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 New Mexico, the largest three segments of animal agriculture in terms of AUs during 2014 were: Beef Cows (877.4 thousand AUs), Dairy Cows (452.2 thousand AUs), and Broilers (9.8 thousand AUs). Total animal units in New Mexico during 2014 were 1,347.8 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.
- 2011 was a record year for animal production in New Mexico with 2,193.54 thousand AUs. 2014 was a record low animal production with 1,347.8 thousand decreasing 22% year-over-year.

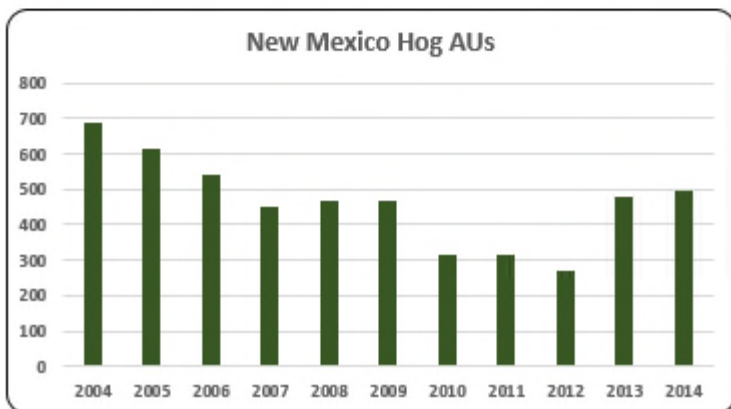
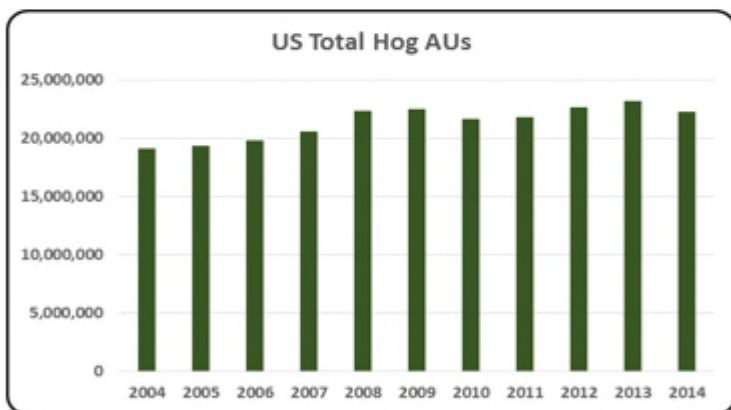
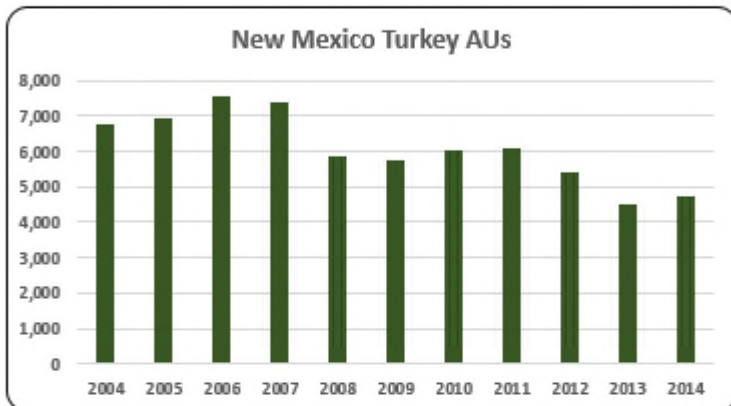
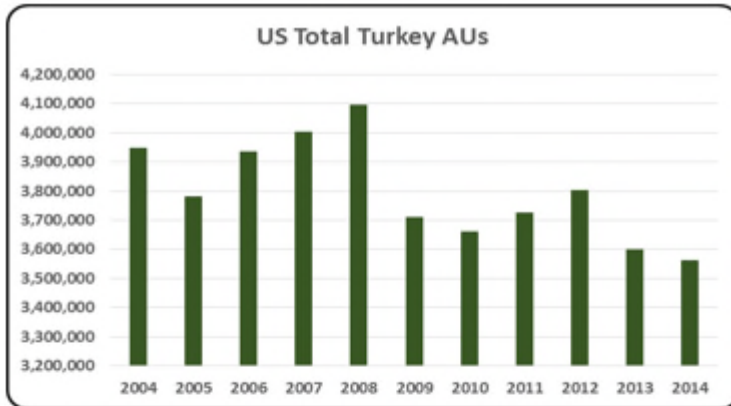


- U.S. broiler production is clustered in a number of states, with Georgia being the largest producer. On average from 2004 to 2014, broiler chicken AUs were about 26.1 million. In 2014, AUs rebounded 1% from the low AUs numbers in 2012 (25.4 million AUs).

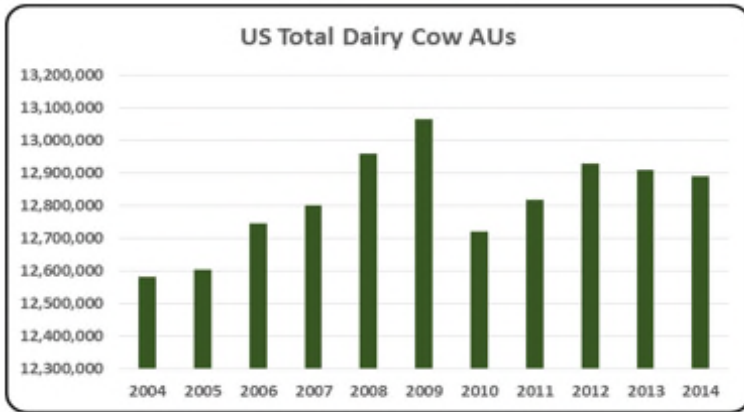
- Broiler production represented 0.7% (9,761 broiler AUs) of all AUs in the state in 2014. Broiler production has declined 43.2% from the beginning of the decade.

- 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).

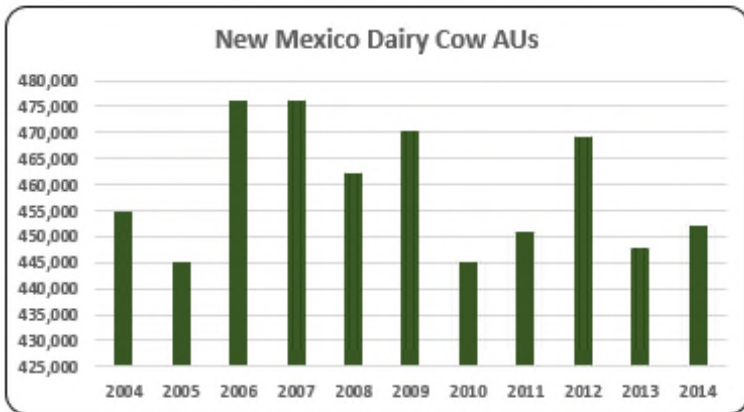
- Less than a 0.24% (3,232 layer AUs) of animal production was layer production in 2014. The decline in layer production from 2004 to 2014 was about 30%.



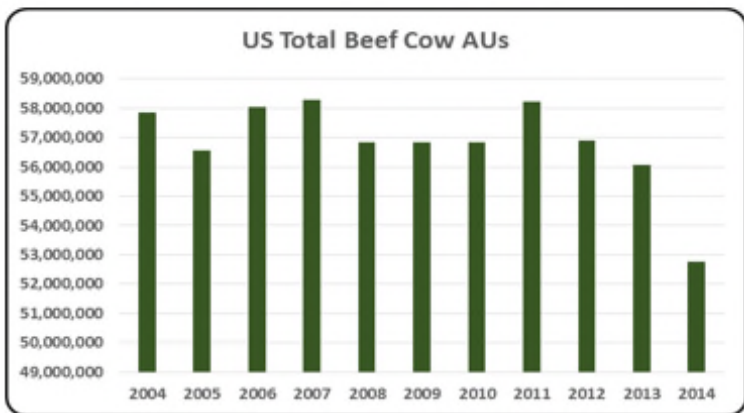
- From 2004 to 2014, the U.S. accounted for 50% of the world’s turkey production. However, in 2014 turkey AUs were the lowest of the decade at 3.5 million, decreasing 13% compared to 2008 (4.1 million turkey AUs) the largest turkey AUs of the decade.
- Turkey production sunk 30% during the decade to 4,722 turkey AUs in 2014.
- 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.
- Hog production is the smallest animal enterprise in New Mexico with only 495 AUs in 2014.



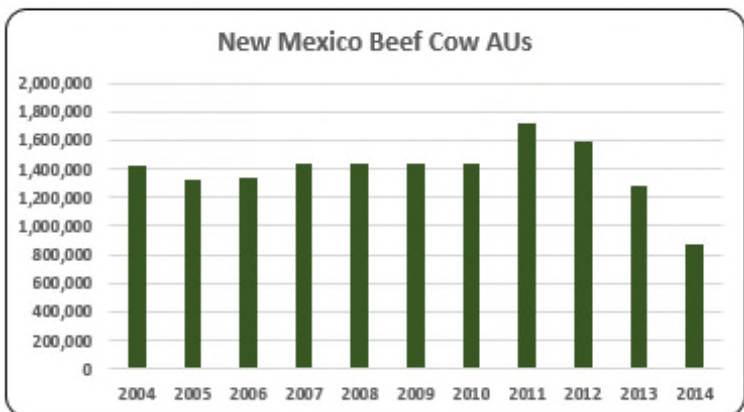
- From 2004 to 2014 dairy cow AUs averaged 12.8 million. In 2014, dairy cow AUs (12.9 million) remained about the same as the previous year but still below the high of 13.1 million AUs, the level in 2009. Despite the fluctuation in AUs, milk supplied has steadily risen.



- Dairy Cow production is the second largest animal production in New Mexico with an average of 459,073 throughout the decade.



- 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.



- 2014 was a record low beef cow production with 877,425 beef cow AUs. 2011 had a record high beef cow production with 1,725.2 thousand AUs.

New Mexico Additional Information and Methodology

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

New Mexico 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 New Mexico'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 New Mexico, \$1.651 to \$2.593 million in total economic activity, \$0.282 to \$0.423 in household wages and 8 to 12 additional jobs are generated in the economy at large.

	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)
RIMS II Multipliers	Cattle and Calves	\$ 2.5931	\$ 0.4234	12.4
	Hogs, Pigs, and Other	\$ 1.6510	\$ 0.2815	7.9
	Poultry and Eggs	\$ 1.7949	\$ 0.2960	7.8
	Dairy	\$ 1.8619	\$ 0.3283	9.3

Appendix

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Animal Units (AUs)	Beef Cattle AUs	1,429,200	1,329,900	1,332,300	1,431,900	1,437,000	1,437,000	1,437,000	1,725,150	1,597,050	1,275,450	877,425
	Hog and Pig AUs	690	615	540	450	465	465	315	315	270	480	495
	Broiler AUs	17,184	16,822	16,709	10,453	10,290	9,568	9,696	7,306	9,851	9,817	9,761
	Turkey AUs	6,771	6,944	7,545	7,363	5,886	5,765	6,005	6,112	5,420	4,521	4,722
	Egg Layer AUs	4,582	5,046	4,869	4,374	4,249	3,717	3,692	3,714	3,133	3,182	3,232
	Dairy AUs	455,000	445,200	476,000	476,000	462,000	470,400	445,200	450,800	469,000	448,000	452,200
	Total Animal Units	1,913,427	1,804,528	1,837,964	1,930,541	1,919,890	1,926,914	1,901,908	2,193,397	2,084,724	1,741,449	1,347,835
Value of Production (\$1,000)	Cattle and Calves (\$1,000)	\$ 491,627	\$ 544,291	\$ 502,289	\$ 513,195	\$ 587,945	\$ 539,497	\$ 659,946	\$ 893,864	\$ 993,045	\$ 723,204	\$ 876,860
	Hogs and Pigs (\$1,000)	\$ 608	\$ 521	\$ 316	\$ 272	\$ 300	\$ 267	\$ 264	\$ 252	\$ 181	\$ 472	\$ 579
	Broilers (\$1,000)	\$ 14,453	\$ 13,691	\$ 10,580	\$ 7,864	\$ 8,093	\$ 7,011	\$ 7,379	\$ 6,501	\$ 9,813	\$ 11,955	\$ 12,541
	Turkeys (\$1,000)	\$ 6,282	\$ 6,661	\$ 7,873	\$ 8,492	\$ 7,949	\$ 5,331	\$ 7,142	\$ 8,011	\$ 7,861	\$ 5,176	\$ 8,667
	Eggs (\$1,000)	\$ 14,603	\$ 8,840	\$ 9,800	\$ 16,087	\$ 19,387	\$ 13,798	\$ 15,147	\$ 16,608	\$ 18,625	\$ 21,042	\$ 24,435
	Milk (\$1,000)	\$ 1,017,287	\$ 993,993	\$ 923,230	\$ 1,370,520	\$ 1,376,375	\$ 956,384	\$ 1,245,198	\$ 1,586,338	\$ 1,417,926	\$ 1,514,716	\$ 1,807,415
	Other	\$ 6,381	\$ 6,732	\$ 4,766	\$ 5,688	\$ 4,918	\$ 5,650	\$ 5,925	\$ 5,240	\$ 5,119	\$ 4,999	\$ 4,878
	Sheep and Lambs (\$1,000)	\$ 6,155	\$ 6,441	\$ 4,410	\$ 5,267	\$ 4,432	\$ 5,099	\$ 5,309	\$ 4,559	\$ 4,373	\$ 4,188	\$ 4,002
	Aquaculture (\$1,000)	\$ 226	\$ 291	\$ 356	\$ 421	\$ 486	\$ 551	\$ 616	\$ 681	\$ 746	\$ 811	\$ 876
	Total (\$1,000)	\$ 1,551,241	\$ 1,574,729	\$ 1,458,854	\$ 1,922,117	\$ 2,004,968	\$ 1,527,938	\$ 1,941,001	\$ 2,516,813	\$ 2,452,570	\$ 2,281,565	\$ 2,735,375

Ag Census Data Category	Animal Type	1997	2002	2007	2012
Number of Farms by NAICS	Beef cattle ranching and farming (112111)	7,061	5,395	7,219	8,989
	Cattle feedlots (112112)	183	142	102	68
	Dairy cattle and milk production (11212)	164	185	196	196
	Hog and pig farming (1122)	87	96	125	76
	Poultry and egg production (1123)	94	116	396	134
	Sheep and goat farming (1124)	403	344	1,634	1,222
	Animal aquaculture and other animal production (1125,1129)	1,168	2,692	3,091	3,852
Value of Sales (\$1,000)	Cattle and Calves	656,701	533,952	576,025	630,837
	Hogs and Pigs	1,250	381	375	392
	Poultry and Eggs	16,609	17,468	withheld	3,346
	Milk and Other Dairy Products	463,450	730,083	1,009,671	1,251,065
	Aquaculture	withheld	1,604	3,228	6,909
	Other (calculated)	29,883	19,285	32,641	16,440
	Total	1,167,893	1,302,773	1,621,940	1,908,989
Input Purchases	Livestock and poultry purchased	(Farms) 4,419	3,708	4,054	4,962
		\$1,000 221,246	217,212	187,501	137,673
	Breeding livestock purchased	(Farms) n/a	2,344	2,569	3,043
		\$1,000 n/a	71,093	66,729	33,048
	Other livestock and poultry purchased	(Farms) n/a	2,060	2,066	2,530
		\$1,000 n/a	146,119	120,772	104,625
	Feed purchased	(Farms) 7,760	9,443	12,073	16,204
	\$1,000 334,541	486,979	697,004	1,124,762	

	Animal Type	Output (\$1,000)	Earnings (\$1,000)	Employment (Jobs)	Taxes Paid (\$1,000)
2014 Animal Agriculture	Cattle and Calves	\$ 2,273,786	\$ 371,263	10,852	\$ 93,670
	Hogs, Pigs, and Other	\$ 9,010	\$ 1,536	43	\$ 388
	Poultry and Eggs	\$ 81,925	\$ 13,510	355	\$ 3,409
	Dairy	\$ 3,365,226	\$ 593,374	16,741	\$ 149,708
	Total	\$ 5,729,947	\$ 979,683	27,992	\$ 247,174
Change from 2004 to 2014	Cattle and Calves	\$ 676,115	\$ 110,396	3,227	\$ 27,853
	Hogs, Pigs, and Other	\$ (5,450)	\$ (929)	(26)	\$ (234)
	Poultry and Eggs	\$ 2,435	\$ 402	11	\$ 101
	Dairy	\$ 991,491	\$ 174,825	4,932	\$ 44,108
	Total	\$ 1,664,590	\$ 284,693	8,144	\$ 71,828
	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)	
RIMS II Multipliers	Cattle and Calves	\$ 2.5931	\$ 0.4234	12.4	
	Hogs, Pigs, and Other	\$ 1.6510	\$ 0.2815	7.9	
	Poultry and Eggs	\$ 1.7949	\$ 0.2960	7.8	
	Dairy	\$ 1.8619	\$ 0.3283	9.3	
Tax Rates	Federal effective income tax rate				12.7%
	Federal Social Security tax rate				7.7%
	State Effective Rate				4.9%
	Total				25.2%

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.