

# Economic Analysis of Animal Agriculture 2004-2014

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**TEXAS**

**A Report for  
United Soybean Board**



**September 2015**



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## Texas Executive Summary

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

- \$43.2 billion in economic output
- 287,445 jobs
- \$7.9 billion in earnings
- \$1.6 billion in income taxes paid at local, state, and federal levels
- \$553.9 million in the form of property taxes

Plus, from 2004-2014 animal agriculture in Texas increased economic output by over \$9.4 billion, boosted household earnings by \$1.7 billion, contributed 63,914 additional jobs and paid \$354.6 million in additional tax revenues.

Texas's animal agriculture consumed about 1.3 million tons of soybean meal in 2014. This soybean meal was fed primarily to:

- Broilers (842.5 thousand tons)
- Hogs (129.7 thousand tons)
- Beef Cows (119.4 thousand tons)

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

## Texas Economic Impact of Animal Agriculture

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

- About \$43.2 billion in economic output
- \$7.9 billion in household earnings
- 287,445 jobs
- \$1.6 billion in income taxes

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

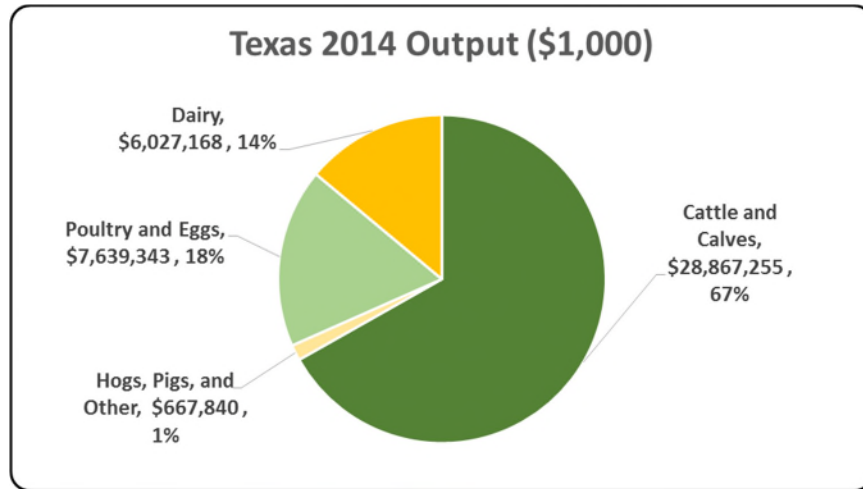
- Increased economic output by \$9.4 billion
- Boosted household earnings by \$1.7 billion
- Added 63,914 jobs
- Paid an additional \$354.6 million in income taxes

Below is a table which demonstrates this decade of change.

Measure	2014	Change 2004-2014	% Change 2004-2014
Output (\$1,000)	\$ 43,201,606	\$ 9,392,126	27.78%
Earnings (\$1,000)	\$ 7,922,110	\$ 1,744,078	28.23%
Employment (Jobs)	287,445	63,914	28.59%
Income Taxes Paid (\$1,000)	\$ 1,610,565	\$ 354,571	28.23%
Property Taxes Paid in 2012 (\$1,000)	\$ 553,870		

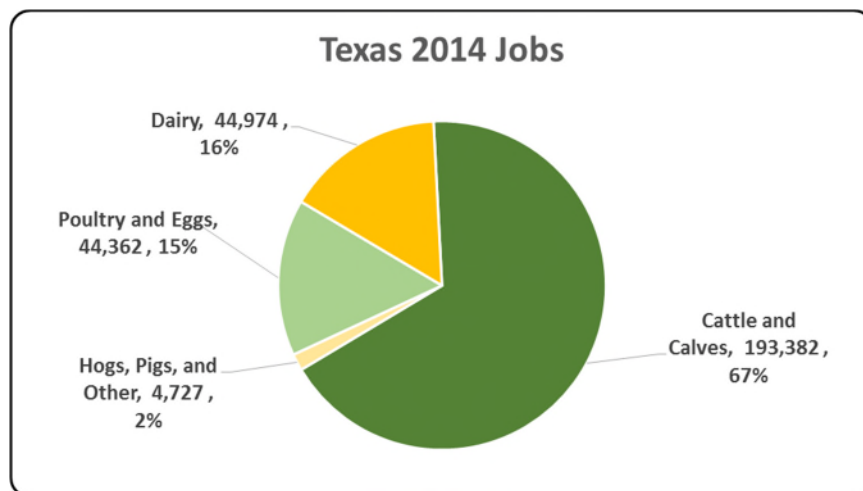
### Texas Output

“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 Texas economy. Animal agriculture’s impact on Texas total economic output is about \$43.2 billion.



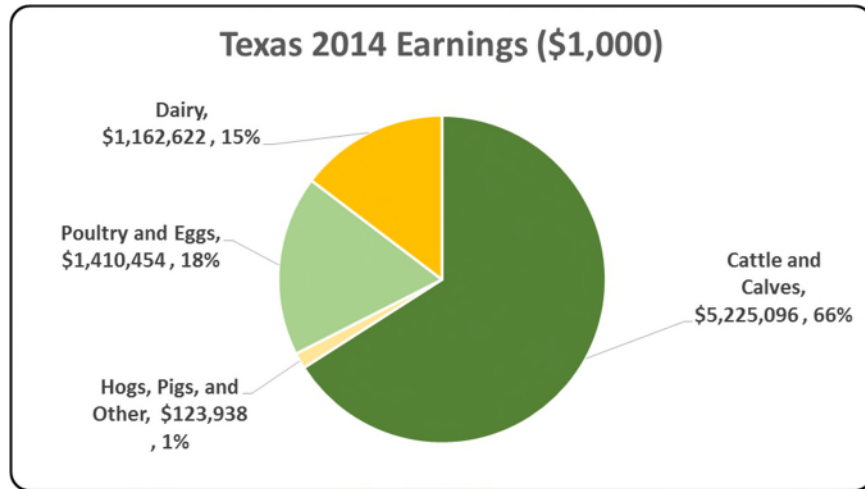
### Texas Jobs

“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 Texas in terms of animal agriculture jobs. As shown, animal agriculture contributes significantly to Texas total jobs, contributing 287,445 jobs within and outside of animal agriculture.



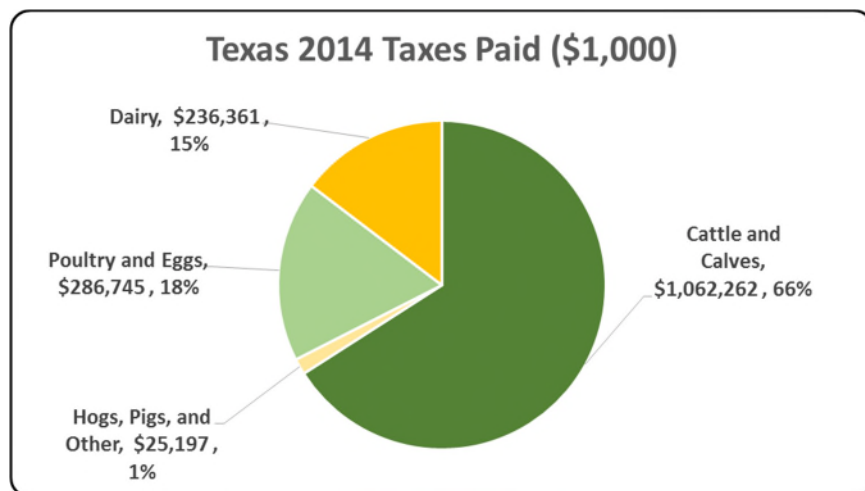
### Texas Earnings

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 Texas economy in terms of earnings. Texas’s animal agriculture contributed about \$7.9 billion to household earnings in 2014.



### Texas Taxes Paid by Animal Agriculture

Texas’s animal agriculture is also a significant source of tax revenue. In 2014, the state’s animal agriculture industry paid about \$1.6 billion in income taxes at local, state, and federal levels. Plus the 2012 Census of Agriculture estimated \$553.9 million in property taxes paid by all of Texas agriculture during 2012. Estimates of income taxes paid by animal agriculture are shown in the following chart.



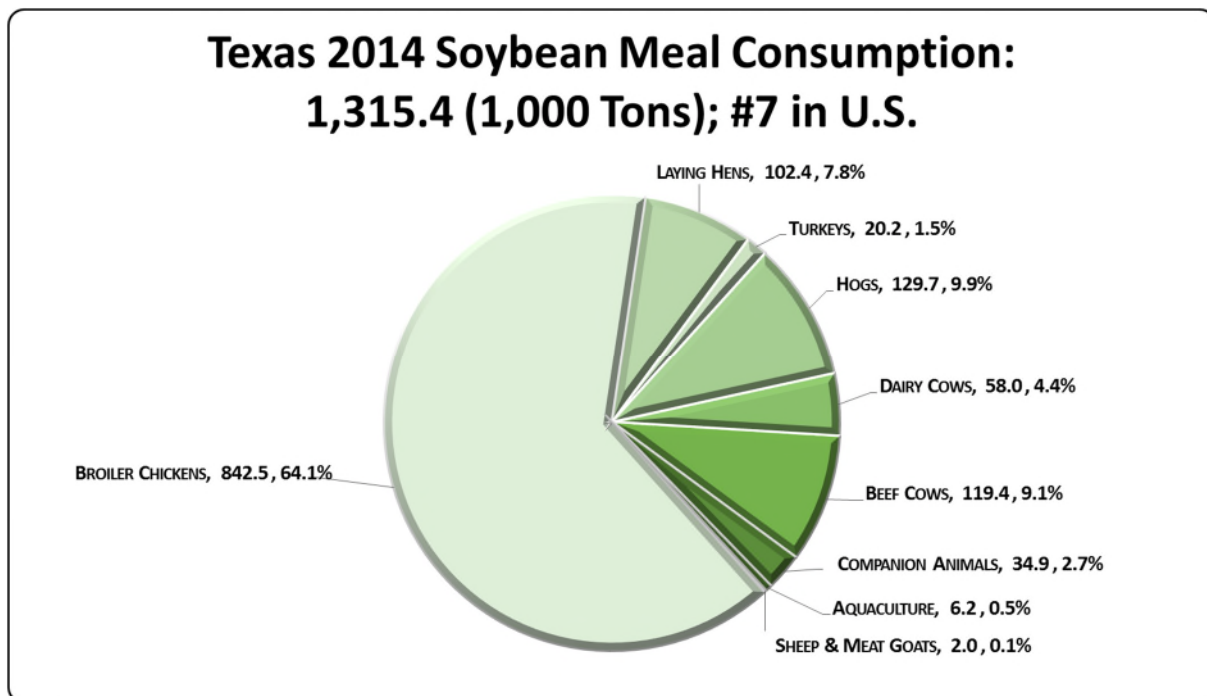
### Texas Animal Agriculture Soybean Meal Consumption

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.

Texas’s animal agriculture consumed almost 1.3 million tons of soybean meal in 2014, placing the state as #7 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:

- Broilers (842.5 thousand tons)
- Hogs (129.7 thousand tons)
- Beef Cows (119.4 thousand tons)

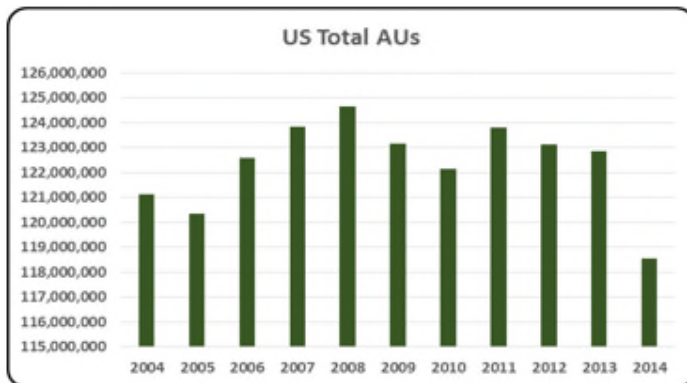


### Texas Animal Unit (AU) Trends

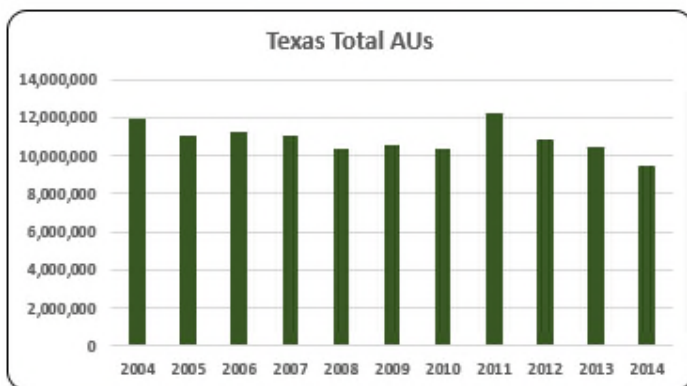
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the United States and abroad have an impact on the size of animal agriculture in the State of Texas. Due to this reality, using a single year as a measure of the presence and strength of a sector can be 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 Texas and to give perspective on Texas’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 Texas, the largest three segments of animal agriculture in terms of AUs during 2014 were: Beef Cows (6,629.4 thousand AUs), Broilers (1,778.7 thousand AUs), and Dairy Cows (616.0 thousand AUs). Total animal units in Texas during 2014 were 9,461.8 thousand AUs.

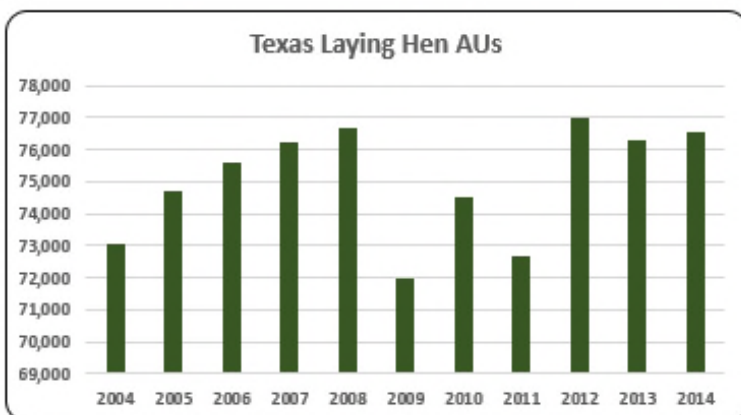
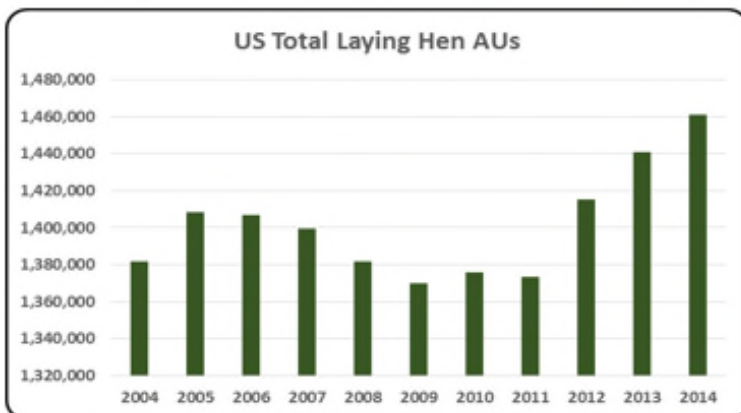
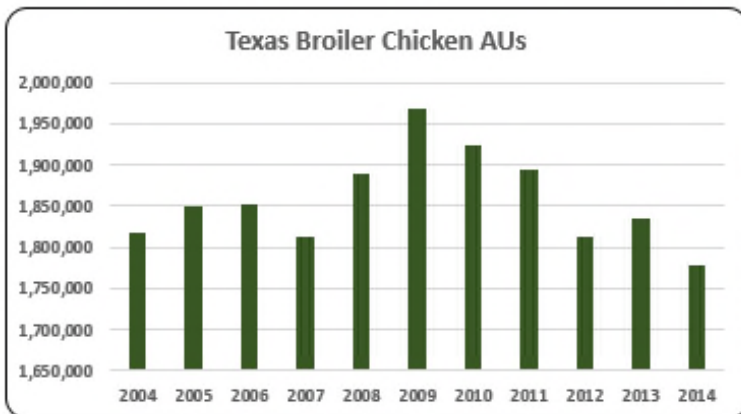
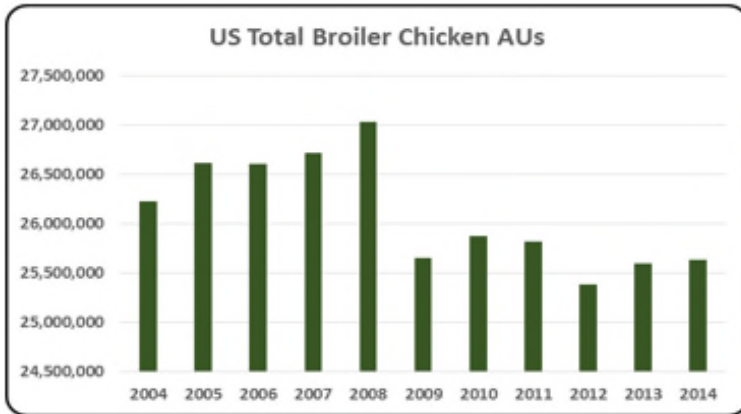


- Overall U.S. total AUs have varied from 2004 to 2014. In 2014 AUs were at an all-time low reflecting, in part, the impact of severe weather on cattle production in some parts of country. During the 2004-14 time period, total AUs in the nation peaked in 2008.

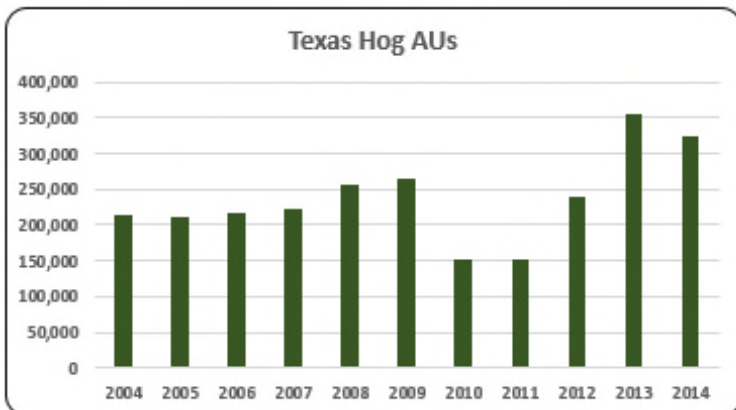
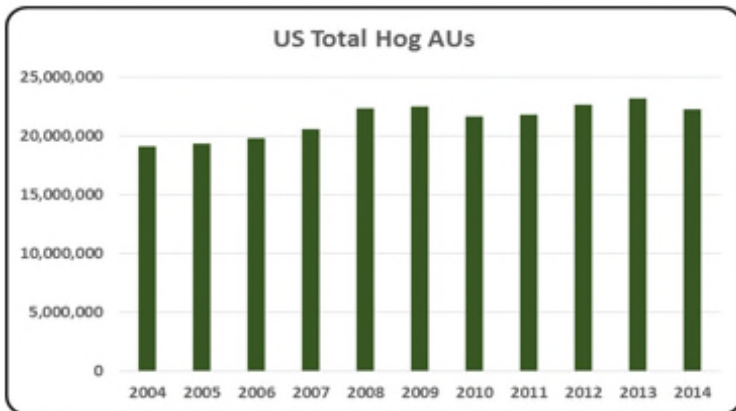
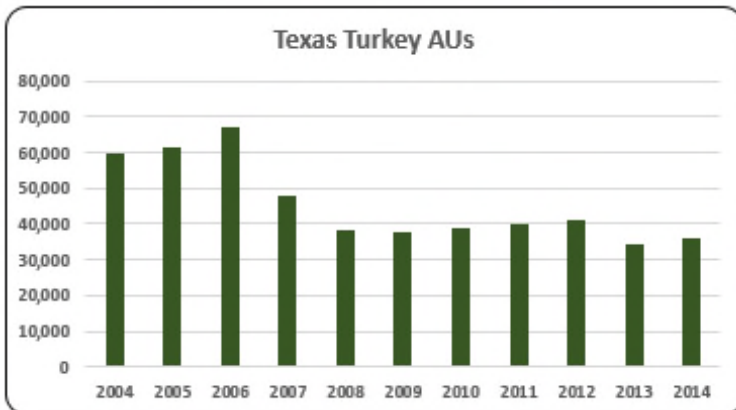
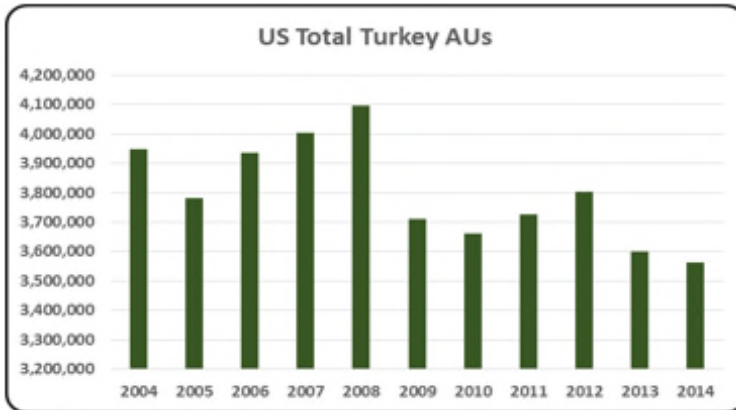


- There were 9,461.8 thousand AUs in Texas in 2014. The number of AUs declined 10.0% in 2014 year-over-year. Eight percent of all AUs in the U.S. were in Texas in 2014.

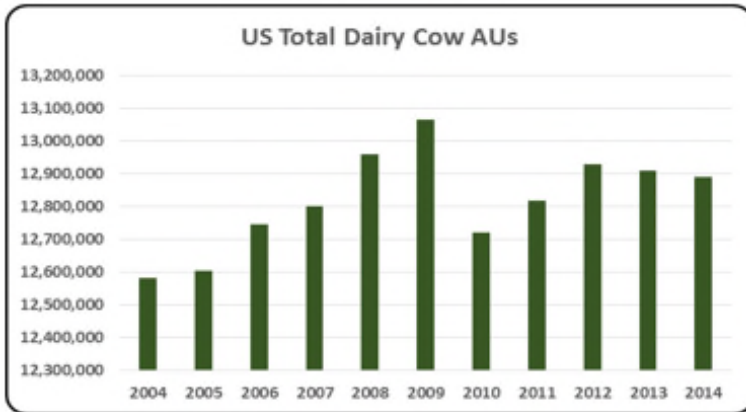




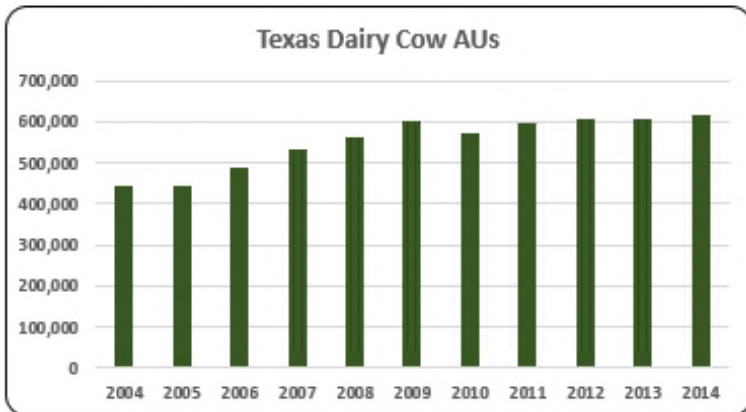
- U.S. broiler production is clustered in a number of states, with Georgia being the largest producer. On average from 2004 to 2014, broiler chicken AUs were about 26.1 million. In 2014, AUs rebounded 1% from the low AUs numbers in 2012 (25.4 million AUs).
- Broiler production in Texas contributed 18.8% (1,778.7 broiler AUs) of all animal production in the state in 2014. There was a record broiler production in 2009 with 1,967.6 thousand broiler AUs. Since 2009 broiler production declined to the lowest level of the decade in 2014.
- 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 1% (76,554 layer AUs) of all animal production in 2014 was in layer production. 2014 production was almost 5% above the level of layer AUs in 2004 (73,028).



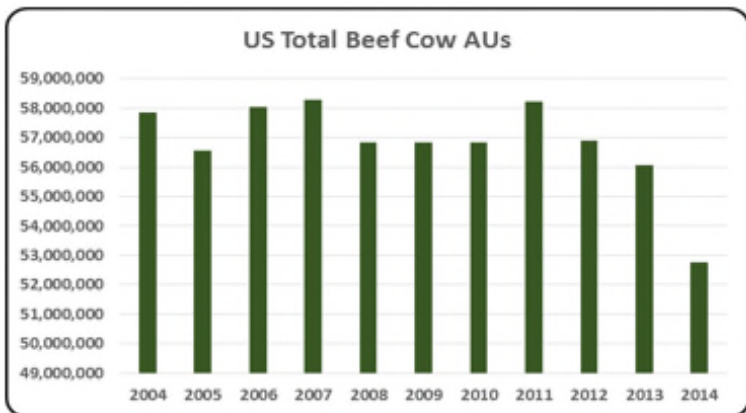
- From 2004 to 2014, the U.S. accounted for 50% of the world’s turkey production. However, in 2014 turkey AUs were the lowest of the decade at 3.5 million, decreasing 13% compared to 2008 (4.1 million turkey AUs) the largest turkey AUs of the decade.
- Turkey production in Texas was the smallest of all animal production in the state, contributing only 0.38% to Texas animal production 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.
- On average, there were 236,895 hog AUs in Texas from 2004 to 2014. Hog production in 2014 (325,350 hog AUs) was 52.1% higher than production in 2004 (213,945 hog AUs).



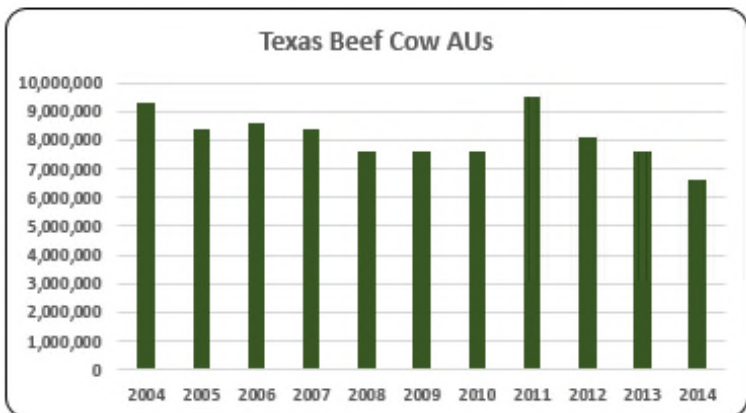
- From 2004 to 2014 dairy cow AUs averaged 12.8 million. In 2014, dairy cow AUs (12.9 million) remained about the same as the previous year but still below the high of 13.1 million AUs, the level in 2009. Despite the fluctuation in AUs, milk supplied has steadily risen.



- Dairy cow production in 2014 (616,000 dairy cow AUs) was 38.8% above production in 2004 (443,800 dairy cow AUs).



- 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.



- Seventy percent (6,629.4 thousand beef cow AUs) of all Texas AUs were from beef cows. Beef cow production declined 12.7% year-over-year and in 2014 it was 28.7% below the level of production in 2004 (9,293.3 thousand beef cow AUs).

## Texas Additional Information and Methodology

Animal agriculture is an important part of Texas'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 Texas, of interest is the degree to which the industry impacts the Texas economy. Estimates of output, jobs, earnings, taxes paid, and multipliers for Texas 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 Texas'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 Texas which have occurred. As shown in this state report, Texas 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 Texas. 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](mailto:info@decision-innovation.com) or 515.257.6077.

### Texas 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 Texas’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 Texas, \$2.006 to \$3.139 million in total economic activity, \$0.372 to \$0.568 in household wages and 14 to 21 additional jobs are generated in the economy at large.

	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)
RIMS II Multipliers	Cattle and Calves	\$ 3.1386	\$ 0.5681	21.0
	Hogs, Pigs, and Other	\$ 2.0056	\$ 0.3722	14.2
	Poultry and Eggs	\$ 2.6767	\$ 0.4942	15.5
	Dairy	\$ 2.3764	\$ 0.4584	17.7

## Appendix

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
<b>Animal Units (AUs)</b>	<b>Beef Cattle AUs</b>	9,293,250	8,405,250	8,565,000	8,393,250	7,581,750	7,581,750	7,581,750	9,523,500	8,115,900	7,593,150	6,629,400
	<b>Hog and Pig AUs</b>	213,945	209,850	218,100	221,550	255,150	264,300	151,050	151,800	239,850	354,900	325,350
	<b>Broiler AUs</b>	1,817,194	1,850,108	1,850,806	1,812,577	1,890,047	1,967,590	1,922,536	1,894,354	1,811,287	1,833,746	1,778,675
	<b>Turkey AUs</b>	59,969	61,504	66,830	47,940	38,319	37,535	39,097	39,794	41,083	34,271	35,792
	<b>Egg Layer AUs</b>	73,028	74,676	75,576	76,228	76,676	71,992	74,488	72,672	77,001	76,294	76,554
	<b>Dairy AUs</b>	443,800	445,200	490,000	532,000	560,000	602,000	574,000	595,000	609,000	609,000	616,000
	<b>Total Animal Units</b>	<b>11,901,186</b>	<b>11,046,588</b>	<b>11,266,311</b>	<b>11,083,544</b>	<b>10,401,942</b>	<b>10,525,167</b>	<b>10,342,921</b>	<b>12,277,120</b>	<b>10,894,122</b>	<b>10,501,361</b>	<b>9,461,771</b>
<b>Value of Production (\$1,000)</b>	<b>Cattle and Calves (\$1,000)</b>	\$ 6,221,904	\$ 6,045,767	\$ 5,704,640	\$ 6,025,583	\$ 6,449,008	\$ 5,481,429	\$ 6,101,526	\$ 8,076,312	\$ 7,423,536	\$ 7,536,504	\$ 9,197,494
	<b>Hogs and Pigs (\$1,000)</b>	\$ 90,809	\$ 101,839	\$ 104,926	\$ 107,819	\$ 131,583	\$ 106,533	\$ 75,023	\$ 103,262	\$ 266,045	\$ 197,889	\$ 241,847
	<b>Broilers (\$1,000)</b>	\$ 1,424,520	\$ 1,436,644	\$ 1,198,800	\$ 1,404,552	\$ 1,592,244	\$ 1,650,227	\$ 1,757,083	\$ 1,678,517	\$ 1,747,550	\$ 2,184,957	\$ 2,261,860
	<b>Turkeys (\$1,000)</b>	\$ 55,642	\$ 59,001	\$ 69,732	\$ 55,287	\$ 51,756	\$ 34,710	\$ 46,501	\$ 52,154	\$ 59,584	\$ 39,237	\$ 65,696
	<b>Eggs (\$1,000)</b>	\$ 306,322	\$ 238,798	\$ 254,055	\$ 373,500	\$ 462,283	\$ 347,480	\$ 395,052	\$ 421,982	\$ 445,497	\$ 471,264	\$ 526,459
	<b>Milk (\$1,000)</b>	\$ 979,467	\$ 985,626	\$ 950,285	\$ 1,454,648	\$ 1,573,792	\$ 1,175,720	\$ 1,509,588	\$ 1,993,056	\$ 1,794,452	\$ 1,960,440	\$ 2,536,260
	<b>Other</b>	\$ 78,827	\$ 82,889	\$ 73,761	\$ 75,786	\$ 71,214	\$ 84,557	\$ 93,346	\$ 86,389	\$ 87,973	\$ 89,557	\$ 91,141
	<b>Sheep and Lambs (\$1,000)</b>	\$ 47,769	\$ 47,530	\$ 34,101	\$ 31,824	\$ 22,951	\$ 31,992	\$ 36,480	\$ 25,222	\$ 22,504	\$ 19,787	\$ 17,069
	<b>Aquaculture (\$1,000)</b>	\$ 31,058	\$ 35,359	\$ 39,660	\$ 43,962	\$ 48,263	\$ 52,565	\$ 56,866	\$ 61,167	\$ 65,469	\$ 69,770	\$ 74,071
	<b>Total (\$1,000)</b>	<b>\$ 9,157,490</b>	<b>\$ 8,950,564</b>	<b>\$ 8,356,199</b>	<b>\$ 9,497,175</b>	<b>\$ 10,331,880</b>	<b>\$ 8,880,655</b>	<b>\$ 9,978,119</b>	<b>\$ 12,411,672</b>	<b>\$ 11,824,637</b>	<b>\$ 12,479,848</b>	<b>\$ 14,920,757</b>

Ag Census Data Category	Animal Type	1997	2002	2007	2012
Number of Farms by NAICS	Beef cattle ranching and farming (112111)	123,248	127,974	124,992	127,726
	Cattle feedlots (112112)	2,481	5,035	2,229	898
	Dairy cattle and milk production (11212)	1,888	1,221	1,027	656
	Hog and pig farming (1122)	1,785	1,760	1,732	1,184
	Poultry and egg production (1123)	2,065	3,032	5,829	3,980
	Sheep and goat farming (1124)	5,580	8,786	13,272	15,603
	Animal aquaculture and other animal production (1125,1129)	9,703	23,378	28,622	26,587
Value of Sales (\$1,000)	Cattle and Calves	7,271,061	8,083,024	10,503,774	13,013,127
	Hogs and Pigs	116,079	128,231	237,504	239,358
	Poultry and Eggs	1,164,596	1,260,951	2,113,086	2,624,759
	Milk and Other Dairy Products	741,735	676,703	1,245,441	1,698,264
	Aquaculture	20,403	31,058	46,102	82,033
	Other (calculated)	226,460	223,026	289,592	201,944
	<b>Total</b>	<b>9,540,334</b>	<b>10,402,993</b>	<b>14,435,499</b>	<b>17,859,485</b>
Input Purchases	Livestock and poultry purchased	(Farms) 61,645	65,435	55,194	61,054
		\$1,000 3,221,969	4,524,369	6,017,794	6,860,573
	Breeding livestock purchased	(Farms) n/a	43,559	36,667	39,929
		\$1,000 n/a	186,906	420,373	418,586
	Other livestock and poultry purchased	(Farms) n/a	30,388	25,541	29,879
		\$1,000 n/a	4,337,463	5,597,421	6,441,987
	Feed purchased	(Farms) 130,839	167,033	158,144	185,019
	\$1,000 2,868,805	2,700,281	4,226,444	7,272,692	



	Animal Type	Output (\$1,000)	Earnings (\$1,000)	Employment (Jobs)	Taxes Paid (\$1,000)
<b>2014 Animal Agriculture</b>	Cattle and Calves	\$ 28,867,255	\$ 5,225,096	193,382	\$ 1,062,262
	Hogs, Pigs, and Other	\$ 667,840	\$ 123,938	4,727	\$ 25,197
	Poultry and Eggs	\$ 7,639,343	\$ 1,410,454	44,362	\$ 286,745
	Dairy	\$ 6,027,168	\$ 1,162,622	44,974	\$ 236,361
	<b>Total</b>	<b>\$ 43,201,606</b>	<b>\$ 7,922,110</b>	<b>287,445</b>	<b>\$ 1,610,565</b>
<b>Change from 2004 to 2014</b>	Cattle and Calves	\$ 4,394,006	\$ 795,334	29,435	\$ 161,691
	Hogs, Pigs, and Other	\$ 241,463	\$ 44,811	1,709	\$ 9,110
	Poultry and Eggs	\$ 1,646,525	\$ 303,998	9,561	\$ 61,803
	Dairy	\$ 3,110,133	\$ 599,935	23,208	\$ 121,967
	<b>Total</b>	<b>\$ 9,392,126</b>	<b>\$ 1,744,078</b>	<b>63,914</b>	<b>\$ 354,571</b>
	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)	
<b>RIMS II Multipliers</b>	Cattle and Calves	\$ 3.1386	\$ 0.5681	21.0	
	Hogs, Pigs, and Other	\$ 2.0056	\$ 0.3722	14.2	
	Poultry and Eggs	\$ 2.6767	\$ 0.4942	15.5	
	Dairy	\$ 2.3764	\$ 0.4584	17.7	
<b>Tax Rates</b>	Federal effective income tax rate				12.7%
	Federal Social Security tax rate				7.7%
	State Effective Rate				0.0%
	<b>Total</b>				<b>20.3%</b>

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.