

Economic Analysis of Animal Agriculture 2005-2015

FLORIDA

**A Report for
United Soybean Board**



September 2016



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Contents

Contents.....	2
Florida Executive Summary.....	3
Florida Economic Impact of Animal Agriculture.....	4
Florida Output.....	5
Florida Jobs.....	5
Florida Earnings.....	6
Florida Taxes Paid by Animal Agriculture.....	6
Florida Animal Agriculture Soybean Meal Consumption.....	7
Florida Animal Unit (AU) Trends.....	8
Florida Additional Information and Methodology.....	12
Florida Multipliers.....	13
Appendix.....	14

Florida Executive Summary

The use of soybean meal as a key feed ingredient is a modest part of Florida'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 the State of Florida. The success of Florida animal agriculture in turn has an impact on the rest of the state and regional economies. For example, in the State of Florida during 2015 animal agriculture contributed:

- \$3.3 billion in economic output
- 20,129 jobs
- \$756.5 million in earnings
- \$153.8 million in income taxes paid at local, state, and federal levels
- \$189.3 million in the form of property taxes

Plus, from 2005-2015 animal agriculture in Florida has increased economic output by over \$736.0 million, boosted household earnings by \$161.8 million, contributed 4,226 additional jobs and paid \$32.9 million in additional tax revenues.

Florida's animal agriculture consumed almost 223.1 thousand tons of soybean meal in 2015. This soybean meal was fed primarily to:

- Broilers (92.6 thousand tons)
- Egg-Laying Hens (55.6 thousand tons)
- Dairy Cows (31.7 thousand tons)

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

Florida Economic Impact of Animal Agriculture

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

- About \$3.3 billion in economic output
- \$756.5 million in household earnings
- 20,129 jobs
- \$153.8 million in income taxes

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

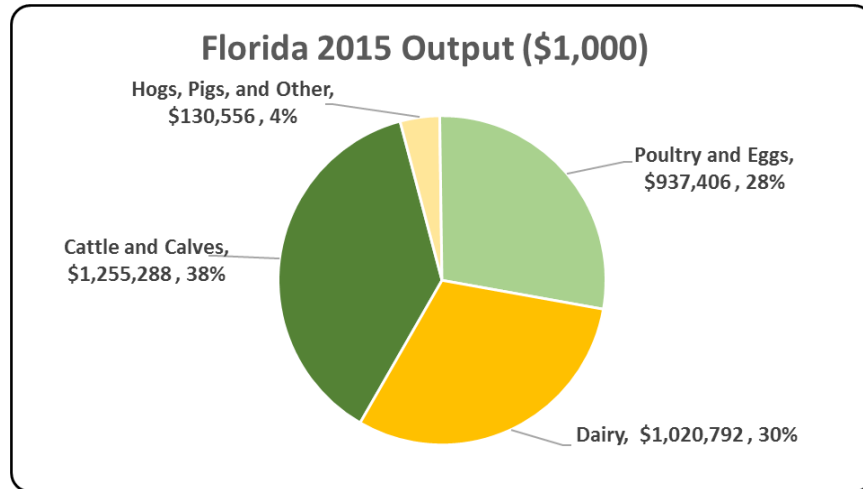
- Increased economic output by \$736.0 million
- Boosted household earnings by \$161.8 million
- Added 4,226 jobs
- Paid an additional \$32.9 million in income taxes

Below is a table which demonstrates this decade of change.

Measure	2015	Change 2005-2015	% Change 2005-2015
Output (\$1,000)	\$ 3,344,041	\$ 735,954	28.22%
Earnings (\$1,000)	\$ 756,520	\$ 161,797	27.21%
Employment (Jobs)	20,129	4,226	26.57%
Income Taxes Paid (\$1,000)	\$ 153,800	\$ 32,893	27.21%
Property Taxes Paid in 2012 (\$1,000)	\$ 189,340		

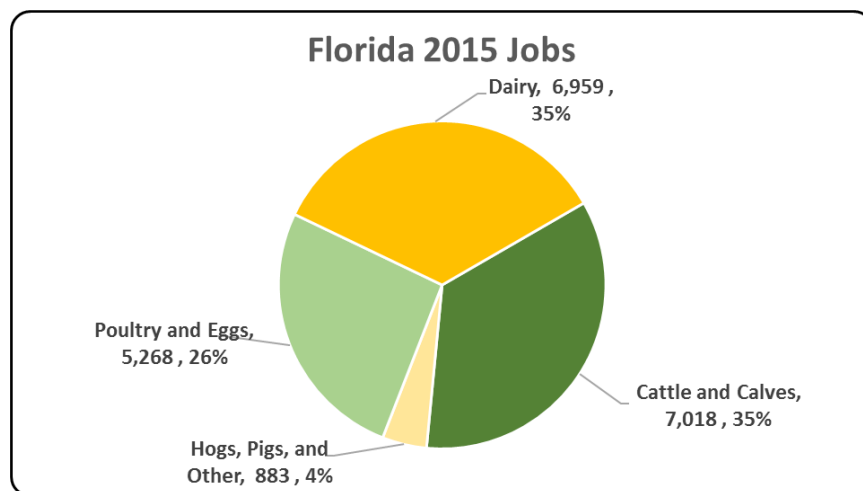
Florida Output

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



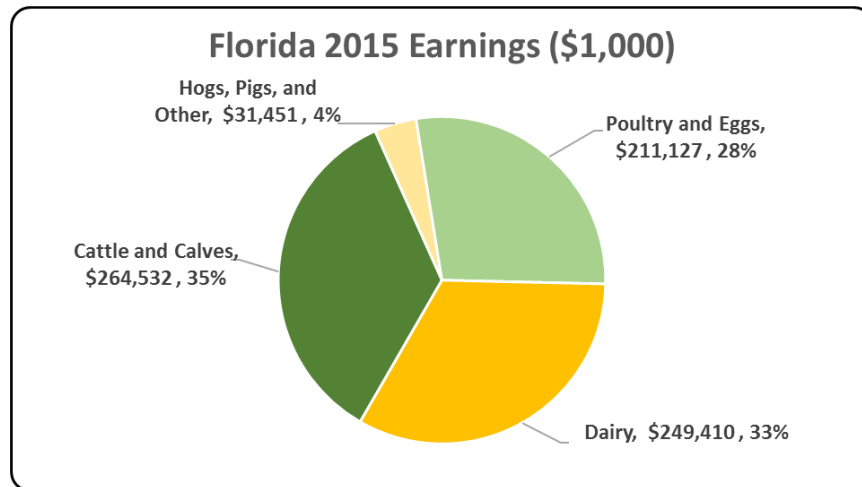
Florida Jobs

“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 Florida in terms of animal agriculture jobs. As shown, animal agriculture contributes about 20,129 jobs within and outside of animal agriculture.



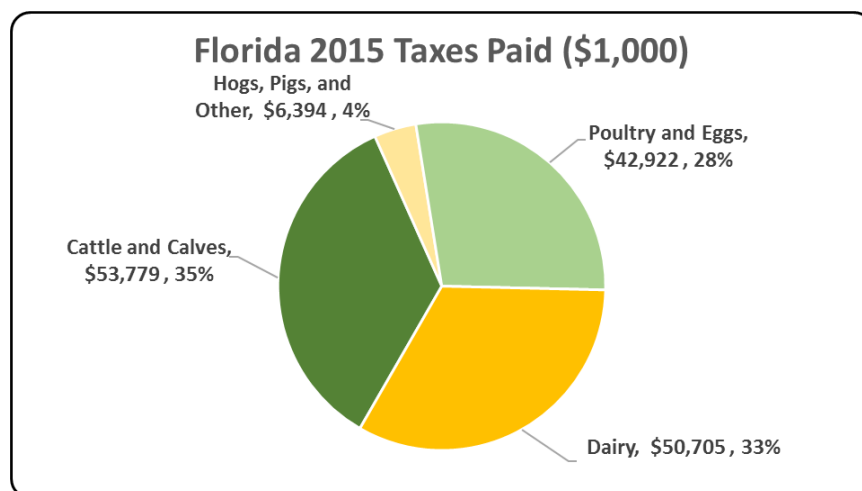
Florida Earnings

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 Florida economy in terms of earnings. Florida’s animal agriculture contributed about \$756.5 million to household earnings in 2015.



Florida Taxes Paid by Animal Agriculture

Florida’s animal agriculture is also a source of tax revenue. In 2015, the state’s animal agriculture industry paid about \$153.8 million in income taxes at local, state, and federal levels. Plus the 2012 Census of Agriculture estimated \$189.3 million in property taxes paid by all of Florida agriculture during 2012. Estimates of income taxes paid by animal agriculture are shown in the following chart.



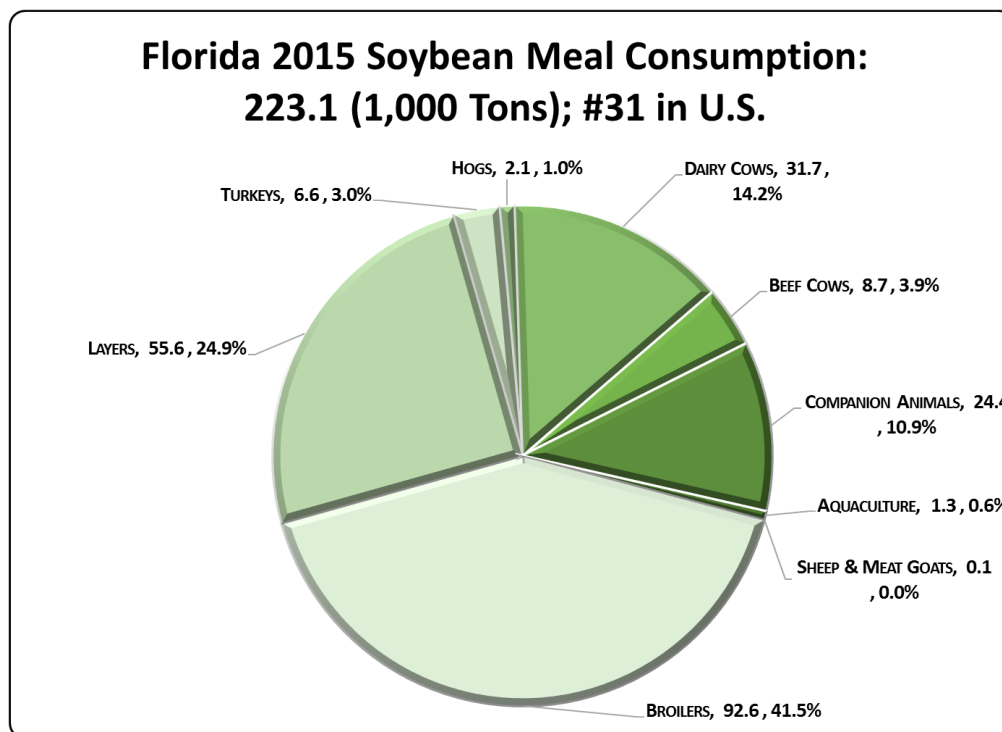
Florida Animal Agriculture Soybean Meal Consumption

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.

Florida’s animal agriculture consumed almost 223.1 thousand tons of soybean meal in 2015 placing the state as #31 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 (92.6 thousand tons)
- Egg-Laying Hens (55.6 thousand tons)
- Dairy Cows (31.7 thousand tons)

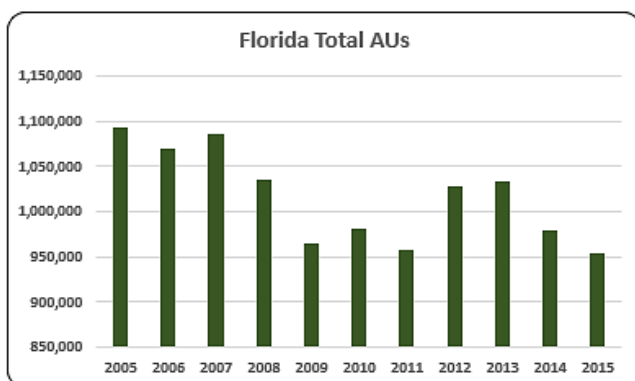
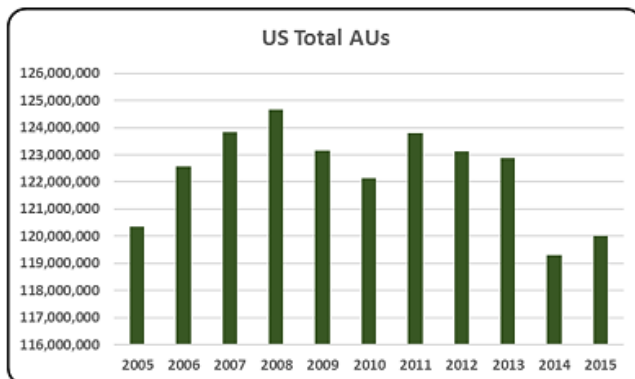


Florida Animal Unit (AU) Trends

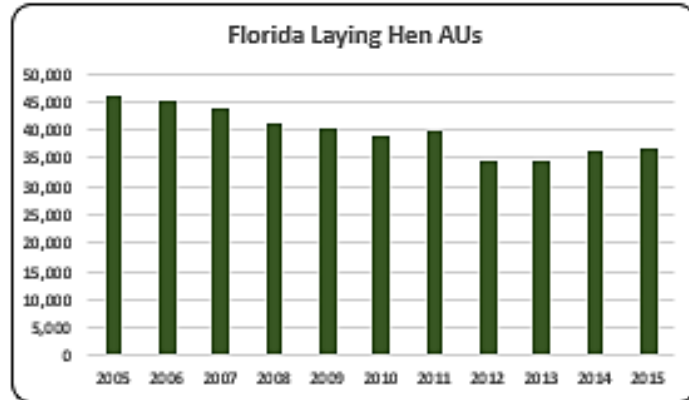
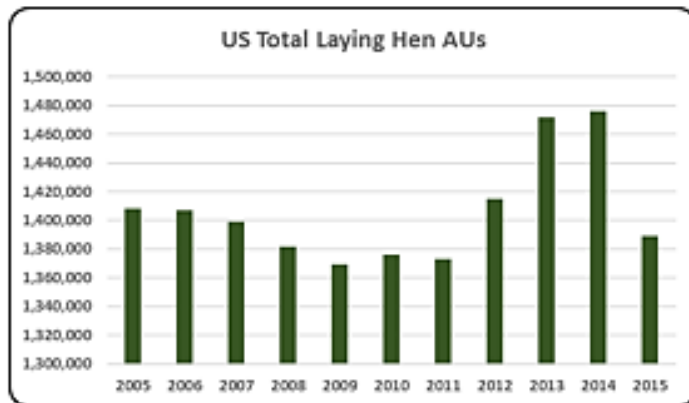
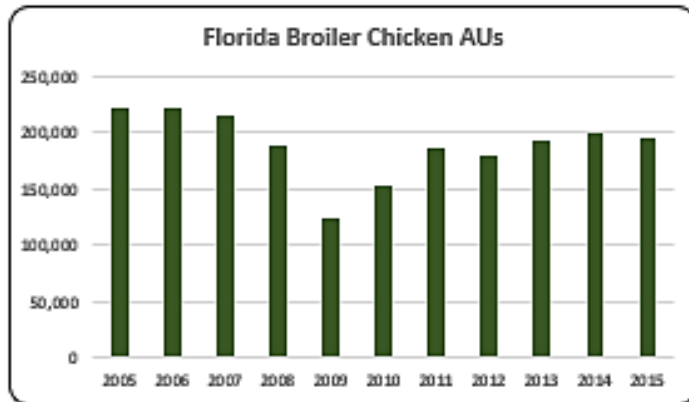
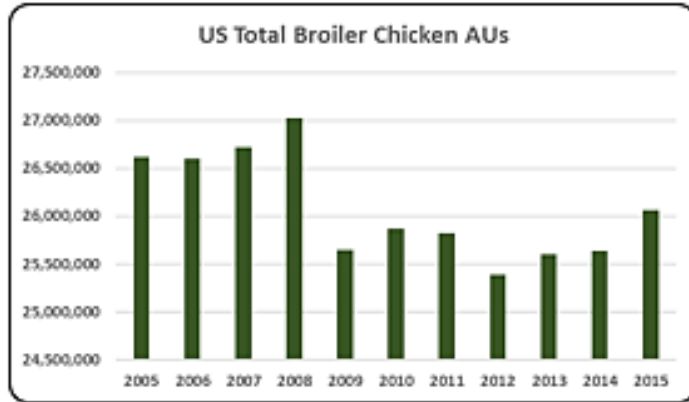
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the United States and abroad have an impact on the size of animal agriculture in the State of Florida. Due to this reality, using a single year as a measure of the presence and strength of a sector can be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

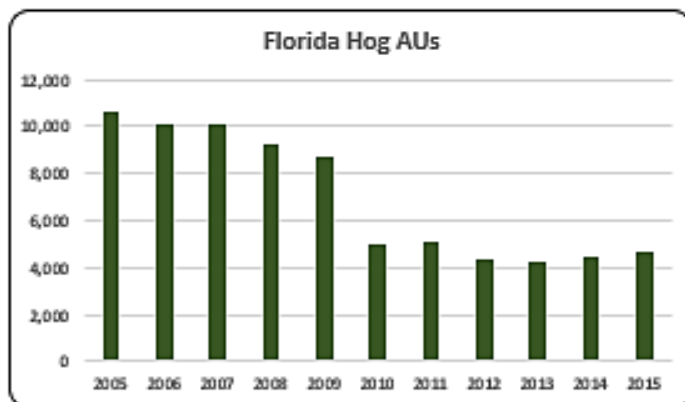
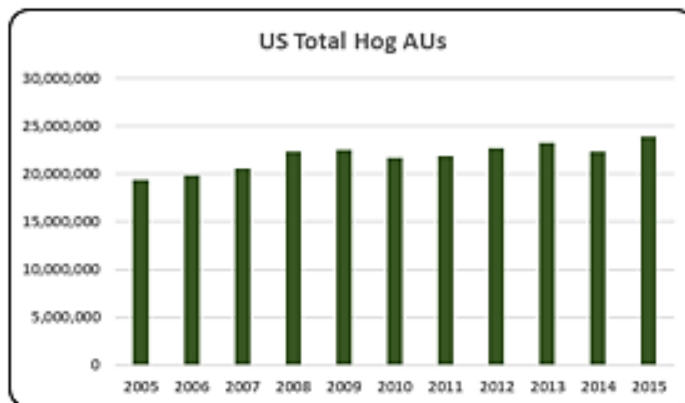
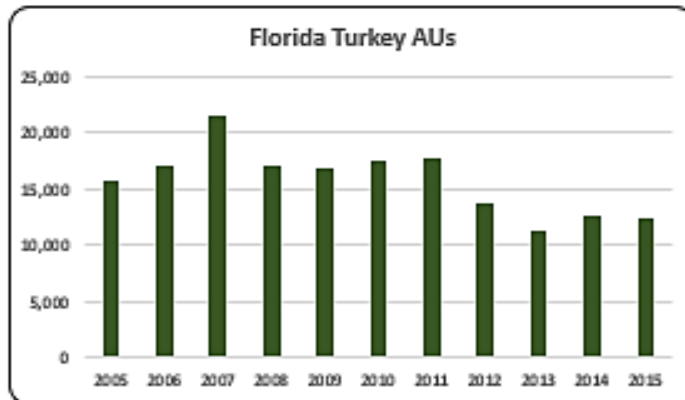
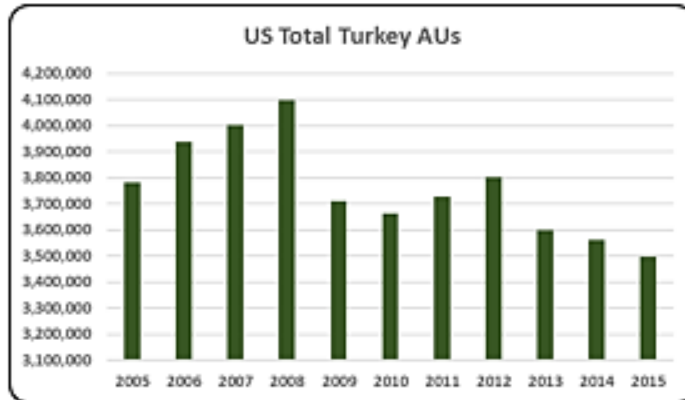
As shown in the accompanying charts and written commentary, certain components of animal agriculture are more present, and therefore more dominant than others. This is due primarily to geography (i.e., weather patterns and access to certain transportation hubs), proximity to high quality, relevant feed ingredients, and the local animal agriculture regulatory framework. In Florida, the largest three segments of animal agriculture in terms of AUs during 2015 were: Beef Cows (530,925 AUs), Broilers (195,663 AUs), and Dairy Cows (173,600 AUs). Total animal units in Florida during 2015 were 953,721 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 2005-15 time period, total AUs in the nation peaked in 2008.
- In 2015 there were 953,721 AUs in Florida; 55.7% (530,925) of which were beef cow AUs.



- 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).
- In 2015 there were 195,663 broiler AUs in the state. Florida’s broiler sector has mounted a recovery since 2009.
- 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.
- The average layer AUs in Florida during the 2005-2015 decade was 39,798 but layer AUs fell from the 2005 highest layer AUs (45,924) in the state when compared to the 2015 (36,529) AUs.

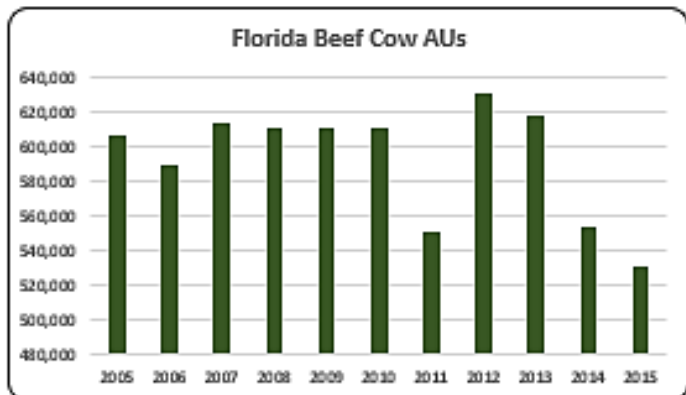
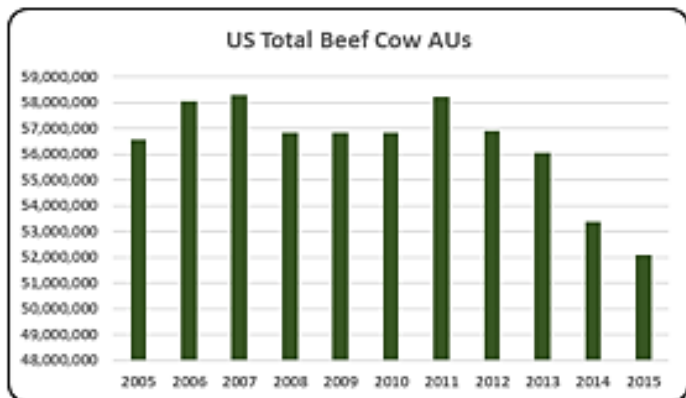
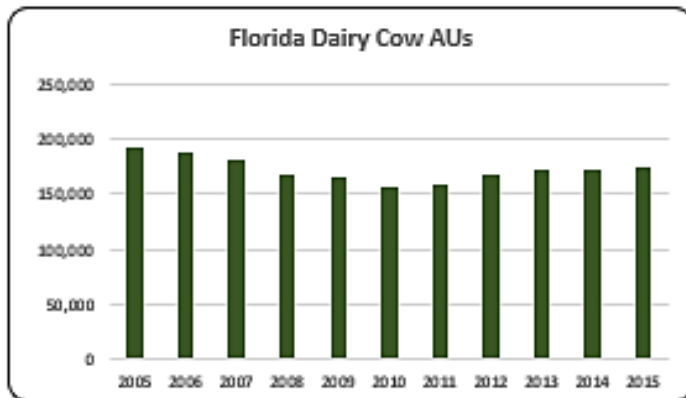
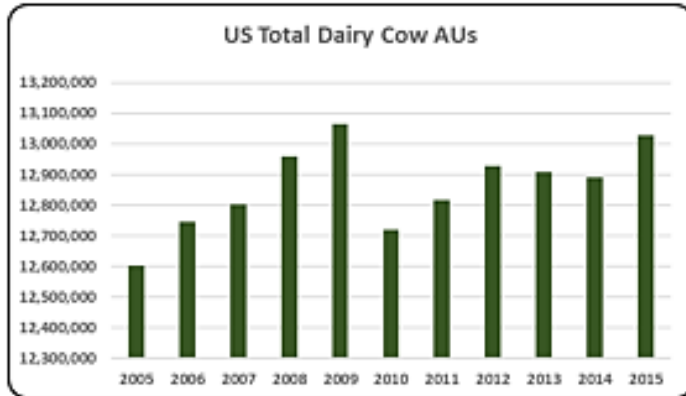


- In 2015 turkey AUs were the lowest of the decade at 3.5 million, decreasing 15% compared to 2008 (4.1 million turkey AUs) the largest turkey AUs of the decade. The most recent contributor to this decline has been avian influenza.

- In 2015 turkey AUs declined 45% relative to the 2007 record turkey AUs of decade 2005 to 2015 (21,463). In 2015 turkey AUs reported at 12,306 AUs in the state of Florida.

- 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.

- In 2015, hog production in Florida was the smallest (4,635) animal sector in the state. Overall hog numbers have been declining, and since 2008 hog AUs have been below 10,000.



- 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.
- Dairy cow animal inventory makes up 173,600 of all AUs in the state. Dairy cow AUs have started to gradually recover from the low in 2010 (156,800).
- 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.
- Beef is the most important animal sector in the state. On average, from 2005 to 2015 there were 593,039 beef cow AUs in the state.

Florida Additional Information and Methodology

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

Florida 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 Florida’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 Florida, \$1.52 to \$1.86 million in total economic activity, \$0.34 to \$0.45 in household wages and 9 to 13 additional jobs are generated in the economy at large.

	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)
RIMS II Multipliers	Cattle and Calves	\$ 1.597	\$ 0.337	8.9
	Hogs, Pigs, and Other	\$ 1.520	\$ 0.366	10.3
	Poultry and Eggs	\$ 1.736	\$ 0.391	9.8
	Dairy	\$ 1.856	\$ 0.454	12.7

Appendix

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Animal Units (AUs)	Beef Cattle AUs	606,600	589,050	613,650	610,650	610,650	610,650	550,350	629,700	617,550	553,650	530,925
	Hog and Pig AUs	10,650	10,050	10,050	9,300	8,700	4,950	5,100	4,350	4,260	4,410	4,635
	Broiler AUs	221,282	220,930	215,580	188,120	123,581	152,143	185,680	178,844	193,564	200,469	195,663
	Turkey AUs	15,748	17,112	21,463	17,156	16,805	17,504	17,816	13,658	11,393	12,578	12,306
	Egg Layer AUs	45,924	45,084	43,792	41,360	40,508	39,176	40,012	34,391	34,509	36,426	36,592
	Dairy AUs	193,200	187,600	182,000	168,000	165,200	156,800	159,600	168,000	172,200	172,200	173,600
	Total Animal Units	1,093,404	1,069,826	1,086,535	1,034,586	965,444	981,223	958,558	1,028,943	1,033,476	979,733	953,721
Value of Production (\$1,000)	Cattle and Calves (\$1,000)	\$ 450,871	\$ 442,250	\$ 380,746	\$ 333,654	\$ 311,595	\$ 395,161	\$ 451,169	\$ 532,525	\$ 533,592	\$ 818,405	\$ 786,127
	Hogs and Pigs (\$1,000)	\$ 4,019	\$ 3,244	\$ 3,013	\$ 2,813	\$ 3,274	\$ 2,297	\$ 2,759	\$ 2,318	\$ 2,293	\$ 3,114	\$ 2,292
	Broilers (\$1,000)	\$ 201,564	\$ 159,300	\$ 179,654	\$ 173,144	\$ 115,164	\$ 151,493	\$ 175,889	\$ 178,500	\$ 238,430	\$ 246,455	\$ 203,149
	Turkeys (\$1,000)	\$ 14,959	\$ 17,685	\$ 24,412	\$ 21,069	\$ 19,189	\$ 24,146	\$ 26,856	\$ 22,369	\$ 17,712	\$ 20,042	\$ 21,341
	Eggs (\$1,000)	\$ 100,723	\$ 119,687	\$ 186,471	\$ 234,515	\$ 152,616	\$ 150,746	\$ 177,861	\$ 183,258	\$ 167,335	\$ 219,087	\$ 315,615
	Milk (\$1,000)	\$ 422,778	\$ 345,189	\$ 460,776	\$ 465,786	\$ 351,520	\$ 441,531	\$ 549,098	\$ 521,820	\$ 569,537	\$ 707,256	\$ 549,966
	Other	\$ 57,406	\$ 59,974	\$ 62,542	\$ 65,109	\$ 67,677	\$ 70,245	\$ 72,813	\$ 75,380	\$ 77,948	\$ 80,516	\$ 83,084
	Sheep and Lambs (\$1,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Aquaculture (\$1,000)	\$ 57,406	\$ 59,974	\$ 62,542	\$ 65,109	\$ 67,677	\$ 70,245	\$ 72,813	\$ 75,380	\$ 77,948	\$ 80,516	\$ 83,084
	Total (\$1,000)	\$ 1,252,320	\$ 1,147,329	\$ 1,297,613	\$ 1,296,090	\$ 1,021,035	\$ 1,235,619	\$ 1,456,444	\$ 1,516,171	\$ 1,606,847	\$ 2,094,874	\$ 1,961,574

Ag Census Data Category	Animal Type	1997	2002	2007	2012	
Number of Farms by NAICS	Beef cattle ranching and farming (112111)	12,040	15,304	16,819	17,351	
	Cattle feedlots (112112)	309	-	240	-	
	Dairy cattle and milk production (11212)	296	517	210	187	
	Hog and pig farming (1122)	468	601	594	581	
	Poultry and egg production (1123)	560	739	1,185	1,106	
	Sheep and goat farming (1124)	272	608	1,260	1,796	
	Animal aquaculture and other animal production (1125,1129)	3,202	8,281	8,531	7,904	
Value of Sales (\$1,000)	Cattle and Calves	310,548	328,820	436,193	531,869	
	Hogs and Pigs	9,670	3,154	2,220	2,158	
	Poultry and Eggs	403,366	336,295	410,148	378,453	
	Milk and Other Dairy Products	383,616	371,691	412,211	508,847	
	Aquaculture	76,696	56,949	61,340	88,463	
	Other (calculated)	100,489	103,930	206,888	60,021	
	Total	1,284,385	1,200,839	1,529,000	1,569,811	
Input Purchases	Livestock and poultry purchased	(Farms) 6,697	8,931	8,322	9,474	
		\$1,000	145,770	147,080	175,186	163,843
	Breeding livestock purchased	(Farms) <i>n/a</i>	5,337	5,111	5,623	
		\$1,000	<i>n/a</i>	49,880	59,350	61,772
	Other livestock and poultry purchased	(Farms) <i>n/a</i>	4,919	4,460	5,138	
		\$1,000	<i>n/a</i>	97,200	115,836	102,071
	Feed purchased	(Farms)	14,829	26,515	27,297	30,765
	\$1,000	446,861	410,603	547,947	750,800	

	Animal Type	Output (\$1,000)	Earnings (\$1,000)	Employment (Jobs)	Taxes Paid (\$1,000)
2015 Animal Agriculture	Cattle and Calves	\$ 1,255,288	\$ 264,532	7,018	\$ 53,779
	Hogs, Pigs, and Other	\$ 130,556	\$ 31,451	883	\$ 6,394
	Poultry and Eggs	\$ 937,406	\$ 211,127	5,268	\$ 42,922
	Dairy	\$ 1,020,792	\$ 249,410	6,959	\$ 50,705
	Total	\$ 3,344,041	\$ 756,520	20,129	\$ 153,800
Change from 2005 to 2015	Cattle and Calves	\$ 381,552	\$ 80,406	2,133	\$ 16,347
	Hogs, Pigs, and Other	\$ 16,767	\$ 4,039	113	\$ 821
	Poultry and Eggs	\$ 269,181	\$ 60,626	1,513	\$ 12,325
	Dairy	\$ 68,454	\$ 16,725	467	\$ 3,400
	Total	\$ 735,954	\$ 161,797	4,226	\$ 32,893
RIMS II Multipliers	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)	
	Cattle and Calves	\$ 1.597	\$ 0.337	8.9	
	Hogs, Pigs, and Other	\$ 1.520	\$ 0.366	10.3	
	Poultry and Eggs	\$ 1.736	\$ 0.391	9.8	
	Dairy	\$ 1.856	\$ 0.454	12.7	
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.