

# Economic Analysis of Animal Agriculture 2005-2015

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## *CONNECTICUT*

**A Report for  
United Soybean Board**



**September 2016**



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## Connecticut Executive Summary

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

- \$301.5 million in economic output
- 1,996 jobs
- \$63.7 million in earnings
- \$16.5 million in income taxes paid at local, state, and federal levels
- \$29.5 million in the form of property taxes

Plus, from 2005-2015 animal agriculture in Connecticut has increased economic output by over \$50.8 million, boosted household earnings by \$10.5 million, contributed 328 additional jobs and paid \$2.7 million in additional tax revenues.

Connecticut's animal agriculture consumed almost 16.3 thousand tons of soybean meal in 2015. This soybean meal was fed primarily to:

- Turkeys (6.4 thousand tons)
- Companion Animals (4.1 thousand tons)
- Dairy Cows (3.2 thousand tons)

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

## Connecticut Economic Impact of Animal Agriculture

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

- About \$301.5 million in economic output
- \$63.7 million in household earnings
- 1,996 jobs
- \$16.5 million in income taxes

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

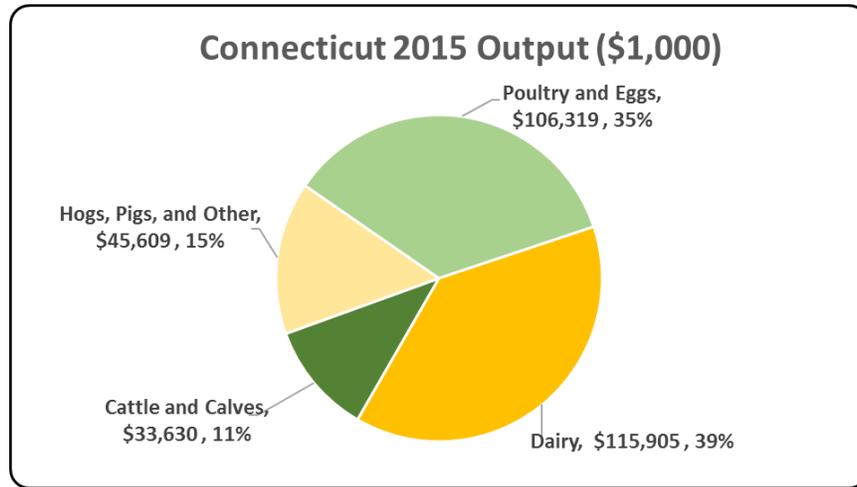
- Increased economic output by \$50.8 million
- Boosted household earnings by \$10.5 million
- Added 328 jobs
- Paid an additional \$2.7 million in income taxes

Below is a table which demonstrates this decade of change.

Measure	2015	Change 2005-2015	% Change 2005-2015
Output (\$1,000)	\$ 301,463	\$ 50,759	20.25%
Earnings (\$1,000)	\$ 63,746	\$ 10,456	19.62%
Employment (Jobs)	1,996	328	19.63%
Income Taxes Paid (\$1,000)	\$ 16,466	\$ 2,701	19.62%
Property Taxes Paid in 2012 (\$1,000)	\$ 29,547		

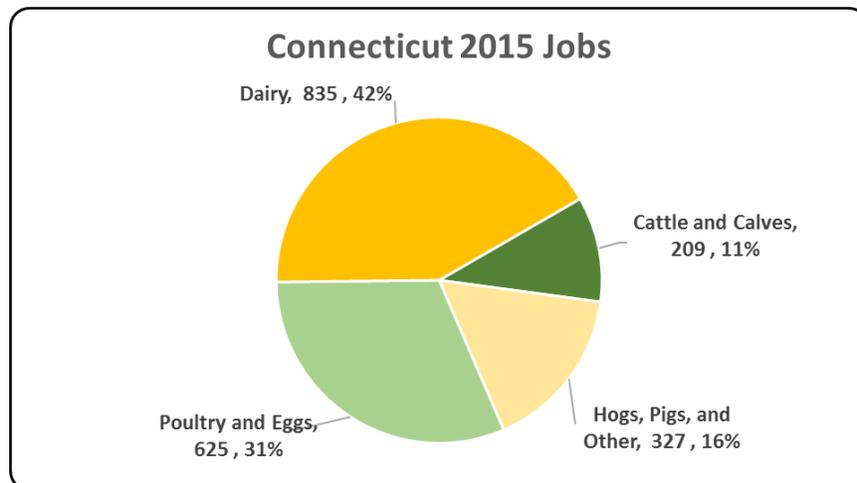
### Connecticut Output

“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 Connecticut economy. Animal agriculture’s impact on Connecticut total economic output is about \$301.5 million.



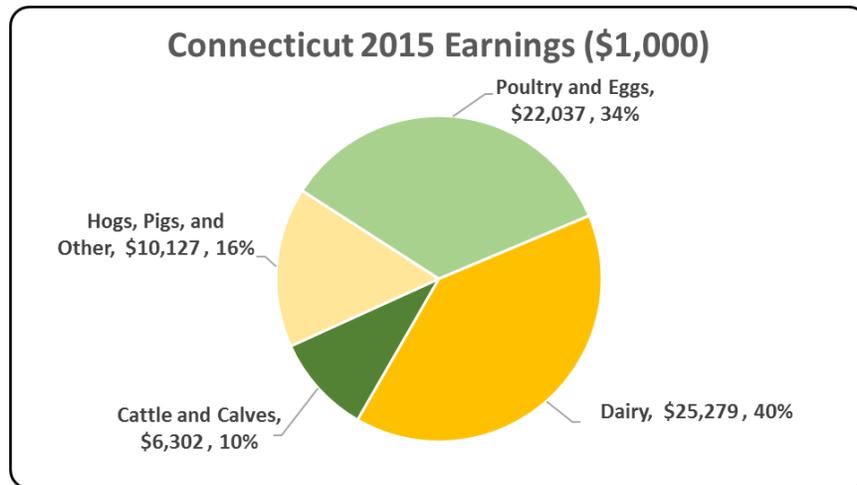
### Connecticut Jobs

“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 Connecticut in terms of animal agriculture jobs. As shown, animal agriculture contributes about 1,996 jobs within and outside of animal agriculture.



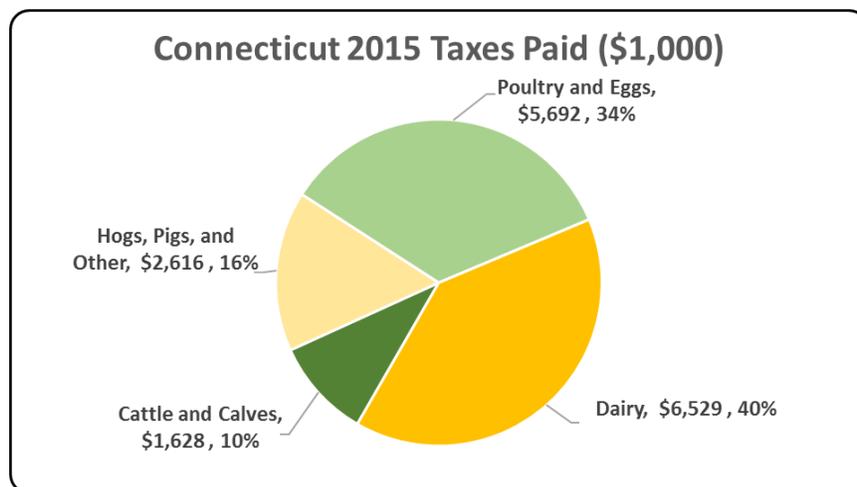
### Connecticut Earnings

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 Connecticut economy in terms of earnings. Connecticut’s animal agriculture contributed about \$63.7 million to household earnings in 2015.



### Connecticut Taxes Paid by Animal Agriculture

Connecticut’s animal agriculture is also a source of tax revenue. In 2015, the state’s animal agriculture industry paid about \$16.5 million in income taxes at local, state, and federal levels. Plus the 2012 Census of Agriculture estimated \$29.5 million in property taxes paid by all of Connecticut agriculture during 2012. Estimates of income taxes paid by animal agriculture are shown in the following chart.



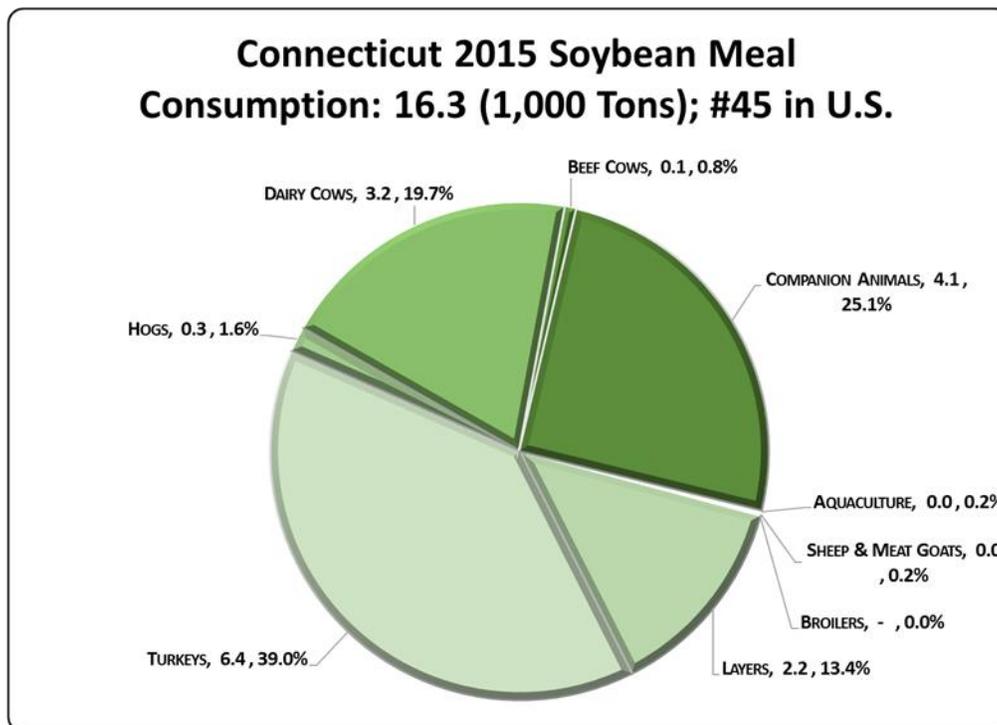
### Connecticut Animal Agriculture Soybean Meal Consumption

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.

Connecticut’s animal agriculture consumed almost 16.3 thousand tons of soybean meal in 2015, placing the state as #45 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 (6.4 thousand tons)
- Companion Animals (4.1 thousand tons)
- Dairy Cows (3.2 thousand tons)

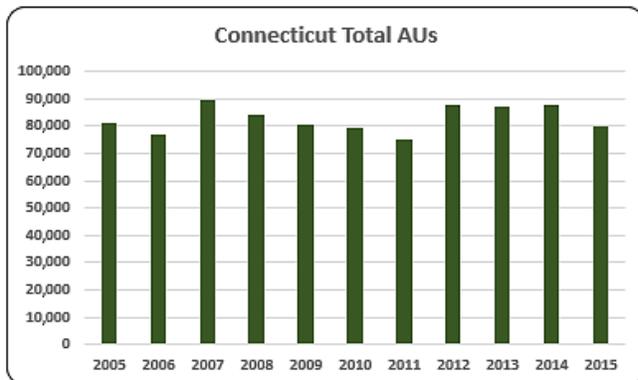
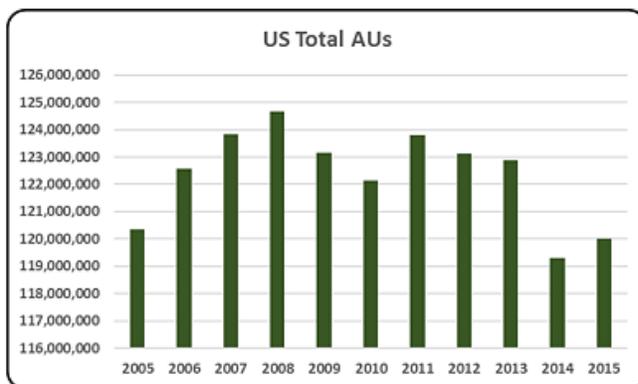


### Connecticut Animal Unit (AU) Trends

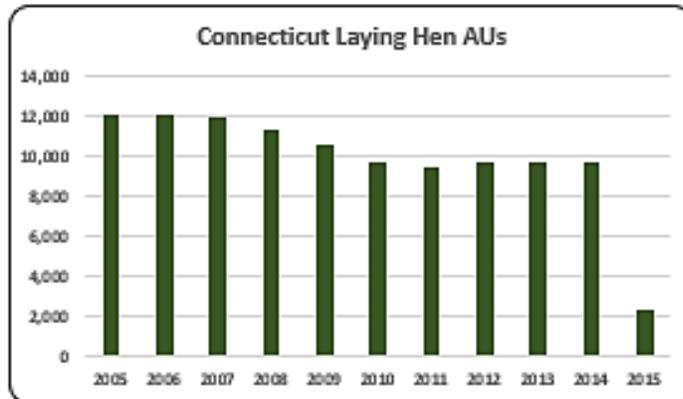
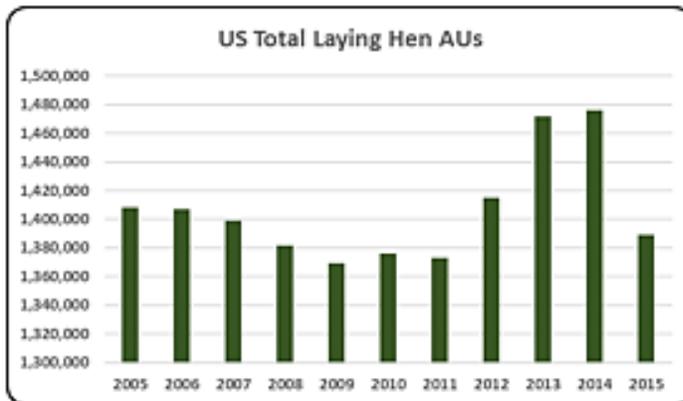
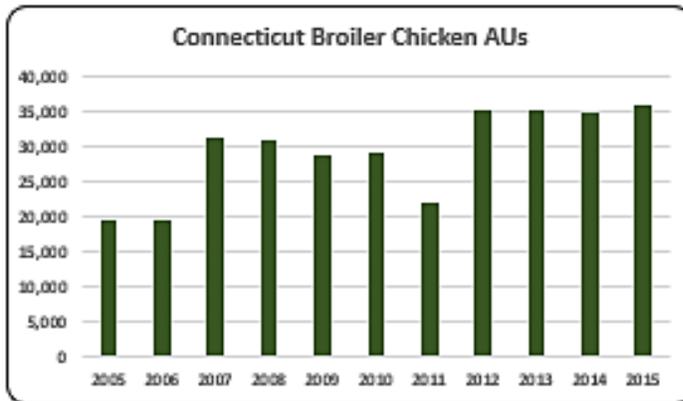
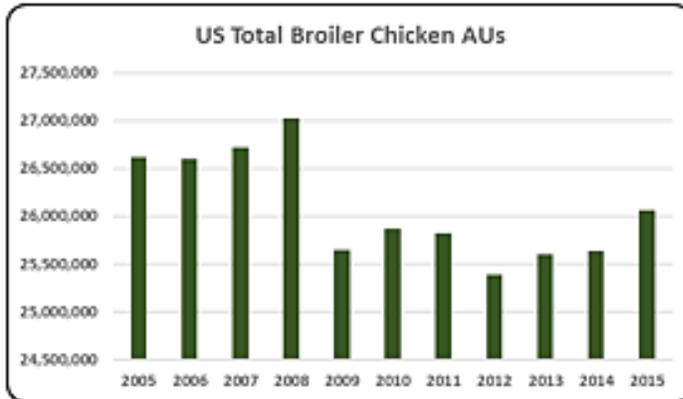
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the United States and abroad have an impact on the size of animal agriculture in the State of Connecticut. Due to this reality, using a single year as a measure of the presence and strength of a sector can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

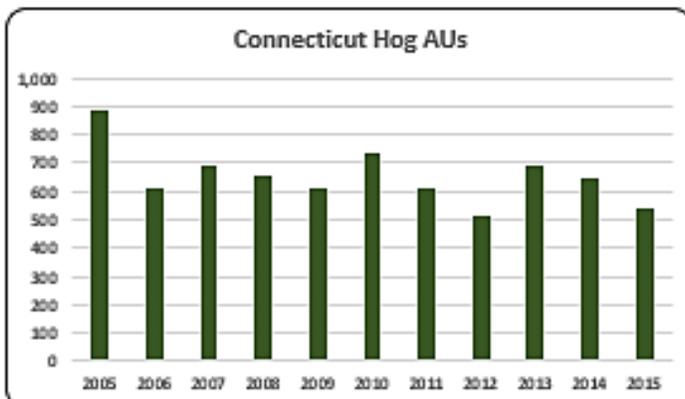
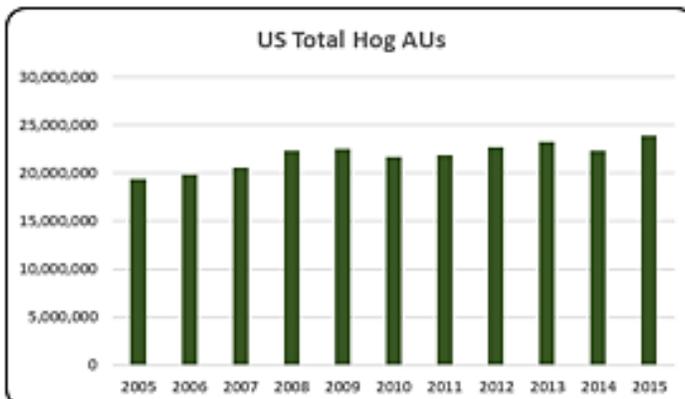
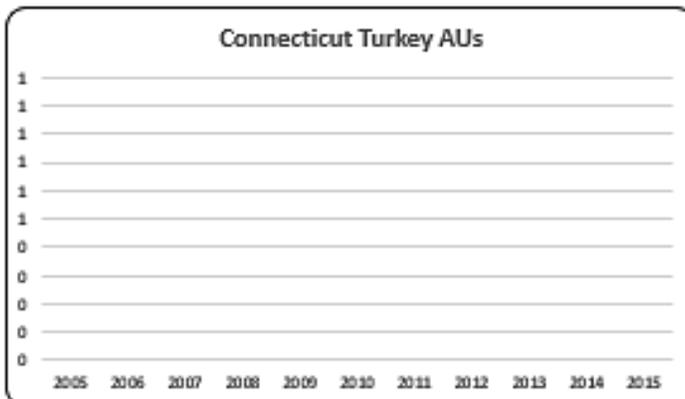
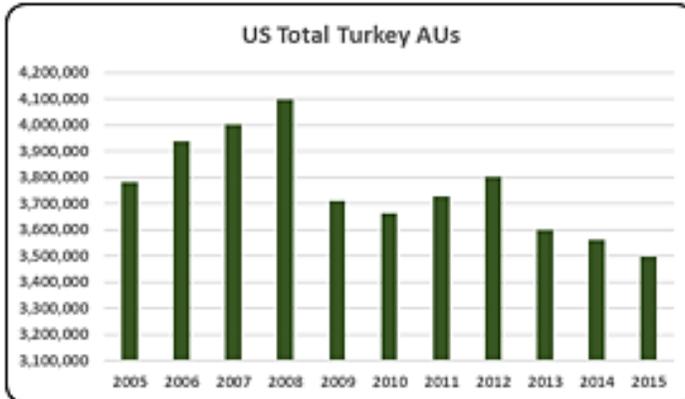
As shown in the accompanying charts and written commentary, certain components of animal agriculture are more present, and therefore more dominant than others. This is due primarily to geography (i.e., weather patterns and access to certain transportation hubs), proximity to high quality, relevant feed ingredients, and the local animal agriculture regulatory framework. In Connecticut, the largest three segments of animal agriculture in terms of AUs during 2015 were: Broilers (35,786 AUs), Dairy Cows (26,600 AUs), and Beef Cows (14,445 AUs). Total animal units in Connecticut during 2015 were 79,708 AUs.



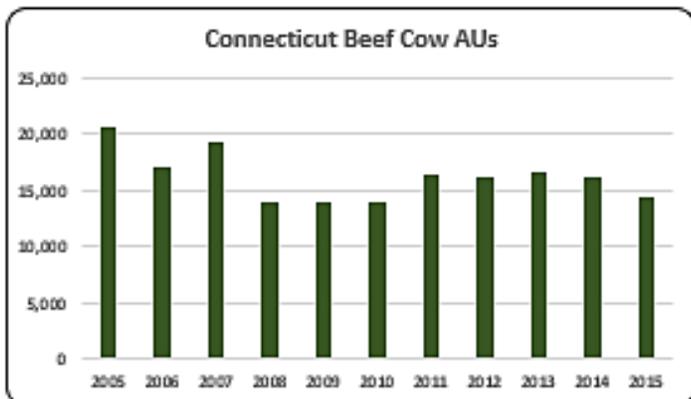
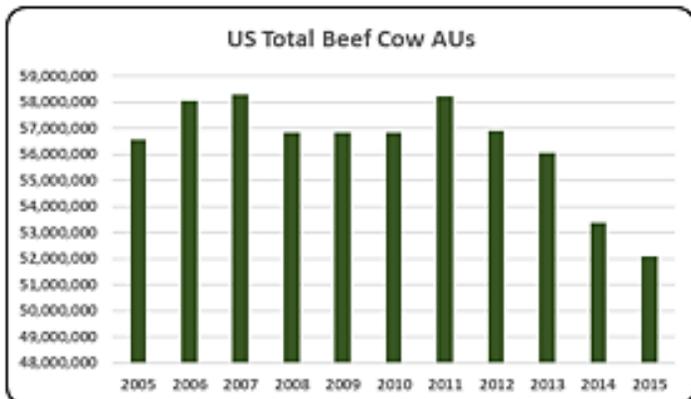
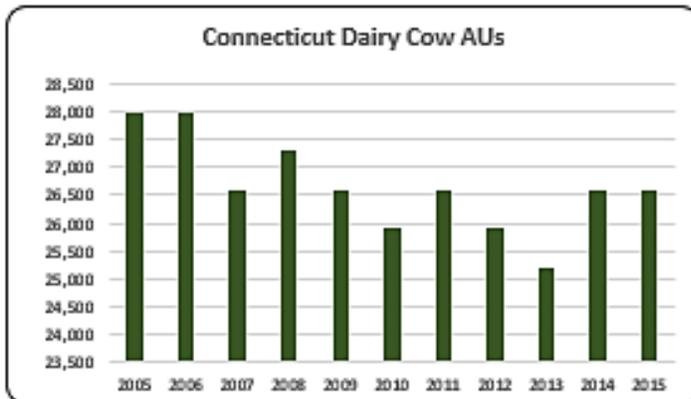
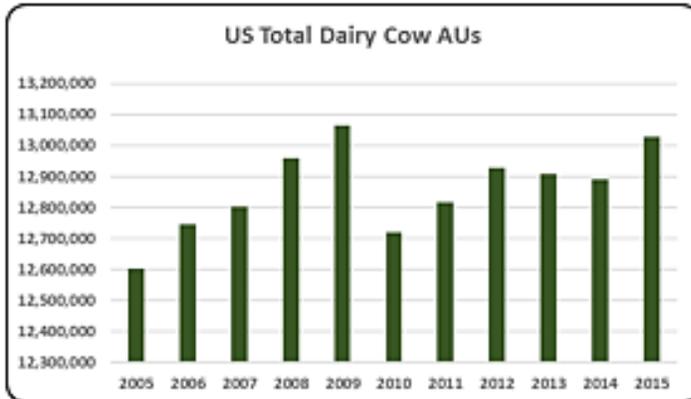
- Overall U.S. total AUs have varied from 2005 to 2015. In 2014 AUs were at an all-time low reflecting, in part, the impact of severe weather on cattle production in some parts of country. During the 2005-15 time period, total AUs in the nation peaked in 2008.
- There were 79,708 total AUs in Connecticut in 2015. On average, there were 82,630 AUs in the state from 2005 to 2015.



- 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).
- Broiler chickens are the largest animal sector in Connecticut with 35,786 broiler AUs in 2015. The number of broiler AUs in the state increased 63% from the low levels in 2011 (21,919).
- 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.
- On average (2005 to 2015) 9,845 AUs in the state were layer AUs and layer AUs have stayed below 10,000 AUs since 2009.



- 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.
- Turkey production is practically nonexistent in Connecticut.
- 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 AUs represented only 0.68% (540) of all AUs in Connecticut in 2015.



- 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 average number of dairy cow AUs in Connecticut during last decade was 26,664 which represented 32.2% of the average number of all AUs in the state.
- 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.
- On average there were 16,204 beef cow AUs from 2005 to 2015. The AUs numbers have managed to stay higher than 2008 to 2010 levels (13,890 beef cow AUs).

## Connecticut Additional Information and Methodology

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

### Connecticut 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 Connecticut’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 Connecticut, \$1.37 to \$1.57 million in total economic activity, \$0.26 to \$0.34 in household wages and 9 to 11 additional jobs are generated in the economy at large.

	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)
RIMS II Multipliers	Cattle and Calves	\$ 1.391	\$ 0.261	8.6
	Hogs, Pigs, and Other	\$ 1.368	\$ 0.304	9.8
	Poultry and Eggs	\$ 1.512	\$ 0.313	8.9
	Dairy	\$ 1.574	\$ 0.343	11.3

## Appendix

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Animal Units (AUs)</b>	<b>Beef Cattle AUs</b>	20,670	16,950	19,200	13,890	13,890	13,890	16,305	16,230	16,650	16,125	14,445
	<b>Hog and Pig AUs</b>	885	615	690	660	615	735	615	510	690	645	540
	<b>Broiler AUs</b>	19,561	19,429	31,360	30,871	28,703	29,089	21,919	35,208	35,085	34,886	35,786
	<b>Turkey AUs</b>	-	-	-	-	-	-	-	-	-	-	-
	<b>Egg Layer AUs</b>	12,064	12,060	11,932	11,340	10,528	9,620	9,368	9,699	9,672	9,670	2,336
	<b>Dairy AUs</b>	28,000	28,000	26,600	27,300	26,600	25,900	26,600	25,900	25,200	26,600	26,600
	<b>Total Animal Units</b>	<b>81,180</b>	<b>77,054</b>	<b>89,782</b>	<b>84,061</b>	<b>80,336</b>	<b>79,234</b>	<b>74,807</b>	<b>87,547</b>	<b>87,297</b>	<b>87,926</b>	<b>79,708</b>
<b>Value of Production (\$1,000)</b>	<b>Cattle and Calves (\$1,000)</b>	\$ 9,366	\$ 10,439	\$ 9,044	\$ 8,858	\$ 8,552	\$ 8,626	\$ 14,205	\$ 14,451	\$ 13,008	\$ 21,330	\$ 24,175
	<b>Hogs and Pigs (\$1,000)</b>	\$ 430	\$ 294	\$ 346	\$ 280	\$ 324	\$ 565	\$ 450	\$ 453	\$ 864	\$ 736	\$ 483
	<b>Broilers (\$1,000)</b>	\$ 16,438	\$ 12,734	\$ 24,202	\$ 24,726	\$ 21,333	\$ 22,294	\$ 19,518	\$ 35,082	\$ 42,746	\$ 44,844	\$ 39,123
	<b>Turkeys (\$1,000)</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	<b>Eggs (\$1,000)</b>	\$ 33,458	\$ 33,840	\$ 51,938	\$ 60,116	\$ 41,686	\$ 39,566	\$ 41,948	\$ 46,588	\$ 52,024	\$ 20,232	\$ 31,194
	<b>Milk (\$1,000)</b>	\$ 63,360	\$ 52,848	\$ 76,285	\$ 73,528	\$ 50,479	\$ 65,520	\$ 79,059	\$ 70,526	\$ 79,920	\$ 99,963	\$ 73,656
	<b>Other</b>	\$ 12,902	\$ 14,874	\$ 16,846	\$ 18,817	\$ 20,789	\$ 22,761	\$ 24,733	\$ 26,704	\$ 28,676	\$ 30,648	\$ 32,620
	<b>Sheep and Lambs (\$1,000)</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	<b>Aquaculture (\$1,000)</b>	\$ 12,902	\$ 14,874	\$ 16,846	\$ 18,817	\$ 20,789	\$ 22,761	\$ 24,733	\$ 26,704	\$ 28,676	\$ 30,648	\$ 32,620
	<b>Total (\$1,000)</b>	<b>\$ 135,954</b>	<b>\$ 125,029</b>	<b>\$ 178,661</b>	<b>\$ 186,325</b>	<b>\$ 143,163</b>	<b>\$ 159,332</b>	<b>\$ 179,913</b>	<b>\$ 193,804</b>	<b>\$ 217,238</b>	<b>\$ 217,753</b>	<b>\$ 201,250</b>

Ag Census Data Category	Animal Type	1997	2002	2007	2012	
<b>Number of Farms by NAICS</b>	<b>Beef cattle ranching and farming (112111)</b>	420	342	490	693	
	Cattle feedlots (112112)	63	90	32	6	
	<b>Dairy cattle and milk production (11212)</b>	266	231	212	146	
	Hog and pig farming (1122)	46	47	69	160	
	<b>Poultry and egg production (1123)</b>	89	128	273	175	
	Sheep and goat farming (1124)	100	120	198	246	
	<b>Animal aquaculture and other animal production (1125,1129)</b>	419	792	820	1,507	
<b>Value of Sales (\$1,000)</b>	<b>Cattle and Calves</b>	6,777	7,025	9,405	9,751	
	Hogs and Pigs	1,189	-	616	1,259	
	<b>Poultry and Eggs</b>	72,500	62,411	45,274	48,859	
	<b>Milk and Other Dairy Products</b>	67,118	56,523	72,338	69,843	
	Aquaculture	n/a	12,848	15,142	19,665	
	<b>Other (calculated)</b>	13,338	4,303	7,406	4,018	
	<b>Total</b>	160,922	143,110	150,181	153,395	
<b>Input Purchases</b>	<b>Livestock and poultry purchased</b>	(Farms)	837	948	1,077	1,487
		\$1,000	8,740	8,644	7,164	6,536
	<b>Breeding livestock purchased</b>	(Farms)	n/a	361	392	527
		\$1,000	n/a	686	2,058	1,583
	<b>Other livestock and poultry purchased</b>	(Farms)	n/a	701	846	1,190
		\$1,000	n/a	7,957	5,106	4,953
	<b>Feed purchased</b>	(Farms)	1,446	2,372	2,458	3,617
	\$1,000	58,691	42,832	55,295	66,754	

	Animal Type		Output (\$1,000)	Earnings (\$1,000)	Employment (Jobs)	Taxes Paid (\$1,000)
<b>2015 Animal Agriculture</b>	Cattle and Calves		\$ 33,630	\$ 6,302	209	\$ 1,628
	Hogs, Pigs, and Other		\$ 45,609	\$ 10,127	327	\$ 2,616
	Poultry and Eggs		\$ 106,319	\$ 22,037	625	\$ 5,692
	Dairy		\$ 115,905	\$ 25,279	835	\$ 6,529
	<b>Total</b>		\$ 301,463	\$ 63,746	1,996	\$ 16,466
<b>Change from 2005 to 2015</b>	Cattle and Calves		\$ 17,818	\$ 3,339	111	\$ 863
	Hogs, Pigs, and Other		\$ 23,275	\$ 5,168	167	\$ 1,335
	Poultry and Eggs		\$ 14,761	\$ 3,060	87	\$ 790
	Dairy		\$ (5,095)	\$ (1,111)	(37)	\$ (287)
	<b>Total</b>		\$ 50,759	\$ 10,456	328	\$ 2,701
<b>RIMS II Multipliers</b>	Animal Type		Output(\$)	Earnings (\$)	Employment (Jobs)	
	Cattle and Calves		\$ 1.391	\$ 0.261	8.6	
	Hogs, Pigs, and Other		\$ 1.368	\$ 0.304	9.8	
	Poultry and Eggs		\$ 1.512	\$ 0.313	8.9	
	Dairy		\$ 1.574	\$ 0.343	11.3	
<b>Tax Rates</b>	Federal effective income tax rate				12.7%	
	Federal Social Security tax rate				7.7%	
	State Effective Rate				5.5%	
	<b>Total</b>				25.8%	

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.