



# **Animal Agriculture Economic Analysis: 2000-2010**

**A report prepared for  
United Soybean Board**

July 2011

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## **EXECUTIVE SUMMARY**

US livestock and poultry industries are in a state of flux. Globalization, trade liberalization, and environmental regulation have increased competitive pressures on the farmers and ranchers that supply meat, milk, eggs, and other animal products in many parts of the country. Awareness of animal welfare and food safety issues is growing among consumers, but not necessarily accompanied by knowledge of modern animal agriculture production methods.

Domestic animal agriculture is by far the major source of demand for US soybean meal, and future soybean demand is tightly linked to the health of those industries. In 2010, animals consumed 30 million tons of soybean meal. This was the principal driver of soybean processing, which also produces the soybean oil that is essential for the US food industry. Actions to maintain and expand animal agriculture in the United States by supporting its long-term competitiveness are of critical importance to the soybean sector.

In order to take effective action at the state and local levels in support of animal agriculture, one needs data and analysis on the economic importance of the industry at those levels. The United Soybean Board contracted with Promar International to provide current estimates of the economic impacts of animal agriculture.

The most recent data on livestock, poultry, and aquaculture output covers 2010 and is summarized in this report along with the economic impacts.

Animal agriculture encompasses mainly beef cattle, hogs, broilers, turkeys, eggs, sheep, dairy, and aquaculture. In 2010, it had the following positive national economic impacts:

1,853,013	»	Job impact throughout the economy
\$289 billion	»	Impact on total output in the economy
\$51 billion	»	Impact on household incomes
\$13 billion	»	Impact on income taxes paid
\$6 billion	»	Impact on property taxes paid.

## **SECTION I: INTRODUCTION**

US livestock and poultry industries are in a state of flux. Globalization, trade liberalization, and environmental regulation have increased competitive pressures on the farmers and ranchers that supply meat, milk, eggs, and other animal products in many parts of the country. Awareness of animal welfare and food safety issues is growing among consumers, but not necessarily accompanied by knowledge of modern animal agriculture production methods. Domestic livestock industries are by far the major source of demand for US soybean meal, and future soybean demand is tightly linked to the health of those industries.

The scale of domestic animal product output is one of the major constraints on US soybean production and profitability. Actions to maintain and expand animal agriculture in the United States by supporting its long-term competitiveness are of critical importance to the soybean industry. In order to act at the state and local levels, one needs data and analysis on the economic importance of animal agriculture at those levels. This report addresses that constraint.

The United Soybean Board has set itself the objective of protecting the interests of US soybean farmers by supporting the long-term competitiveness of the domestic livestock and poultry industries. Beginning in 2004 with the 23 states that lead in production of these products, the annual Animal Agriculture Economic Analysis Report gradually expanded to cover all 50 states by 2007. This year we analyze the 2010 data that USDA published in April 2011.

Beyond this introduction,

- **Section 2** reviews and **describes the economic and animal product database** for each state, which serves as a basis for the associated analysis and graphic presentations. The database itself is in the form of a menu-driven Excel file.
- **Section 3 highlights trends** that have cropped up in our research, those we found to be high on the radar of the animal agriculture industry over the past year.
- **Section 4** provides a quick review, with **data maps of long-term changes** across the country (2000-2010) in each major SBM-using category.
- **Section 5** details our **estimates of soybean meal use by species** in each state for 2010.
- **Section 6** presents the **impacts of animal agriculture** on output, earnings, employment, and tax revenue at the state, regional and national levels based on multiplier analysis.
- **Section 7** analyzes the state **economic impacts of relocation of animal agriculture**.

## **SECTION 2: ECONOMIC AND ANIMAL PRODUCT DATABASE**

This year we have developed a menu-driven Excel file which contains the databases for all 50 states and the nation as a whole. Each state database contains information such as: livestock production and value data, economic impact calculations, taxation data, and computation of meal use by livestock and poultry. The information is presented in both table and chart form. The tables on the following pages display examples of the data types that we gathered. One sheet in each state file contains information on state income tax structure. Others calculate production indexes by species and soybean meal use by species. This section describes the database, using Ohio as an example.

Annually released publications from USDA's National Agricultural Statistics Service (NASS) served as the sole source for inventory, quantity of output, and value of production data in the first table.

The first of the tables on the next page shows animal agriculture output, by volume and value, in a time series format. The "Trend Analysis" sheet in each state database contains charts of both the linear trend in volume and the three-year moving average using this data. The "Index Tables" sheet in the database provides charts that enable one to see how the various species are faring relative to one another, using 2000 as the base year. Examples of a linear trend chart and an index chart are shown on page 5.

Calculated economic impacts are presented in the second table, along with the multipliers we obtained from the Bureau of Economic Analysis in the Department of Commerce. These multipliers were applied to the value of production to calculate output and earnings measured in dollars, and employment measured in number of jobs. Tax revenue effects were calculated separately using methods described in Section 6. The change in economic impact from 2000 to 2010 was computed by applying the multipliers and tax factors to the change over that period in the value of production.

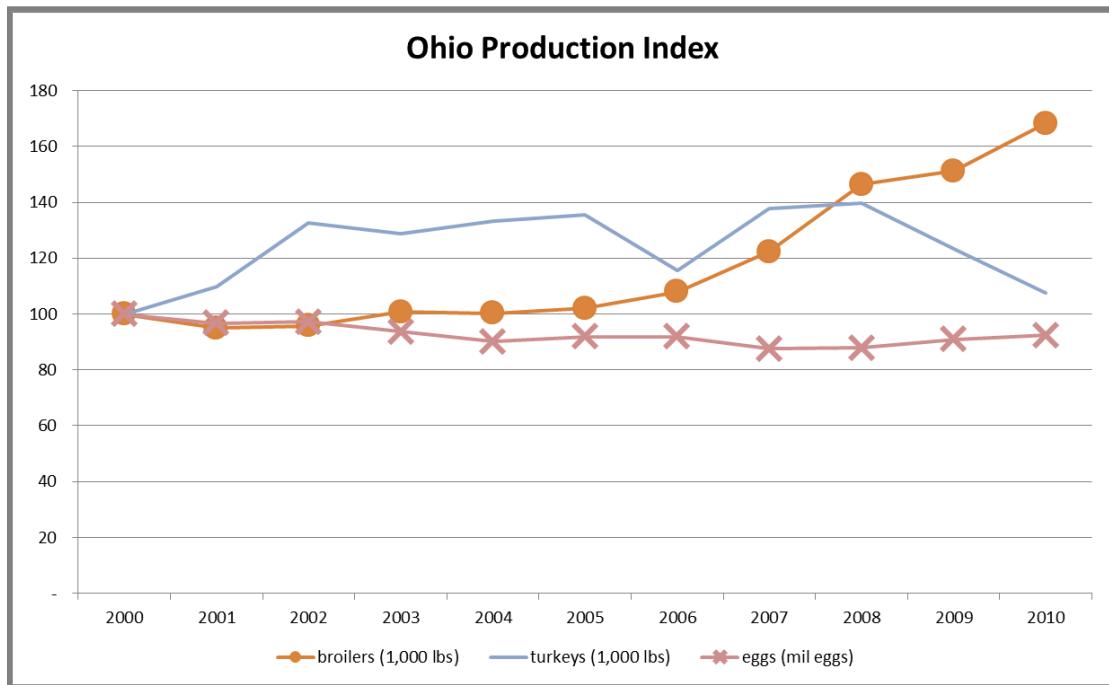
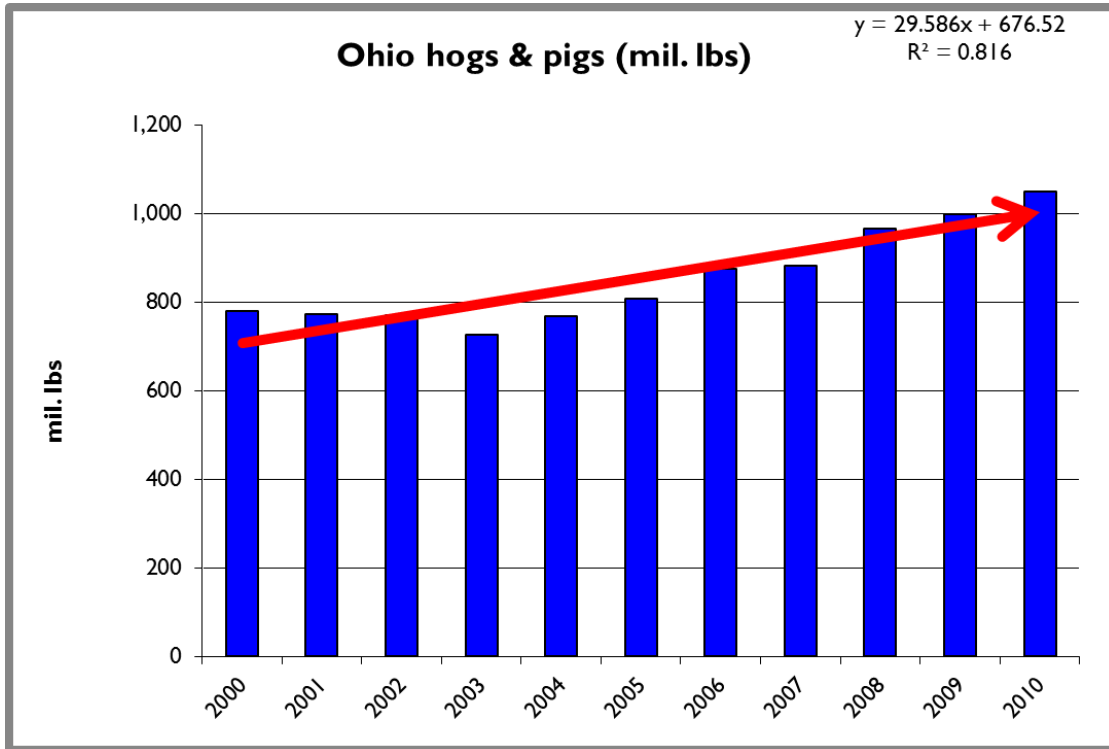
**Basic Livestock and Economic Impact Data**

<b>NASS DATA</b>		<b>Ohio</b>										
		<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b>Inventories</b>	<b>OH</b>											
	Jan 1 ('98 - '11)	cattle & calves (1,000 head)	1,240	1,250	1,220	1,230	1,300	1,280	1,280	1,230	1,280	1,280
	Dec 1 ('97 - '10)	hogs & pigs (1,000 head)	1,490	1,430	1,440	1,520	1,450	1,550	1,680	1,830	1,940	2,010
<b>Quantity of output</b>		cattle & calves (1,000 lbs)	462,830	427,488	432,339	454,660	402,673	434,191	438,755	444,604	447,220	392,698
		hogs & pigs (1,000 lbs)	779,960	773,625	770,158	725,882	767,521	807,466	874,033	881,315	965,679	999,093
		broilers (1,000 lbs)	223,900	212,500	214,500	225,500	224,600	228,400	241,700	273,900	327,800	338,400
		turkeys (1,000 lbs)	165,000	181,440	218,880	212,300	219,820	223,800	190,740	227,400	230,400	203,320
		eggs (mil eggs)	8,163	7,900	7,940	7,642	7,355	7,506	7,507	7,151	7,168	7,426
		milk (mil lbs)	4,461	4,295	4,475	4,490	4,560	4,743	4,860	4,980	5,192	5,162
<b>Value of production (\$1,000)</b>		cattle & calves (\$1,000)	321,471	305,018	271,097	336,612	316,374	369,900	374,089	380,827	372,826	304,910
		hogs & pigs (\$1,000)	316,885	333,321	251,856	270,392	372,171	393,142	383,445	390,400	421,083	391,721
		broilers (\$1,000)	73,887	82,875	64,350	78,925	101,070	100,496	87,012	117,777	150,788	154,649
		turkeys (\$1,000)	59,400	63,504	76,608	82,797	92,324	93,548	87,740	104,604	133,632	105,726
		eggs (\$1,000)	342,150	323,157	295,597	374,458	333,750	228,182	287,198	483,441	585,477	403,793
		milk (\$1,000)	562,086	652,840	563,850	588,190	756,960	749,394	670,680	991,020	1,010,610	732,072
		other	9,253	8,352	7,876	12,812	12,328	14,224	12,545	10,471	13,372	14,346
		sheep & lambs (\$1,000)	7,264	6,459	5,939	10,286	9,012	13,106	11,642	9,229	10,069	9,926
		catfish (\$1,000)										
		trout (\$1,000)										
		mink (\$1,000)	1,989	1,893	1,937	2,526	3,316	1,118	903	1,242	3,303	4,420
		<b>Total</b>	1,685,132	1,769,067	1,531,234	1,744,186	1,984,977	1,948,886	1,902,709	2,478,540	2,687,788	2,107,217

<b>Economic impacts</b>		<b>Output (\$1,000)</b>	<b>Earnings (\$1,000)</b>	<b>Employment (jobs)</b>	<b>Tax (\$1,000)</b>
<b>2010 Animal Ag</b>	cattle & calves (\$1,000)	\$ 743,149	\$ 126,897	6,296	\$ 31,012
	hogs & pigs (\$1,000)	\$ 1,093,204	\$ 194,968	8,936	\$ 47,648
	broilers (\$1,000)	\$ 3,008,572	\$ 539,217	21,626	\$ 131,779
	dairy (\$1,000)	\$ 2,038,311	\$ 379,445	18,207	\$ 92,733
	<b>Total impact</b>	<b>\$ 6,883,235</b>	<b>\$ 1,240,526</b>	<b>55,066</b>	<b>\$ 303,172</b>
<b>Change 2000 - 2010</b>	cattle & calves	\$ (54,518)	\$ (9,309)	(462)	\$ (2,275)
	hogs, pigs, & oth	\$ 272,962	\$ 48,681	2,231	\$ 11,897
	poultry & eggs	\$ 882,565	\$ 158,179	6,344	\$ 38,657
	dairy	\$ 303,024	\$ 56,410	2,707	\$ 13,786
	<b>Total impact</b>	<b>\$ 1,404,033</b>	<b>\$ 253,961</b>	<b>10,820</b>	<b>\$ 62,066</b>
<b>RIMS II</b>		<b>Output (\$)</b>	<b>Earnings (\$)</b>	<b>Employment (jobs)</b>	
<b>Multipliers</b>	cattle & calves	1.9484	0.3327	16.5072	
	dairy	2.1729	0.4045	19.4091	
	poultry & eggs	2.9047	0.5206	20.8797	
	hogs & pigs and other	1.9109	0.3408	15.6203	

<b>Tax rates</b>		
	Federal effective income tax rate	12.7%
	Federal Social Security tax rate	7.7%
	National average effective income tax rate	0.0%
	<b>Total</b>	<b>20.3%</b>

Average effective tax rate, Best available data 2007 Sources: Tax Policy Institute, <http://www.taxpolicycenter.org/taxfacts/displayfact.cfm?Docid=533> and Self Employed and Employee/Employer combined rate. Source: Tax Foundation <http://www.taxfoundation.org/taxdata/show/24682.html>  
Promar estimated income tax rate/ Tax Foundation



### **SECTION 3: CURRENT ISSUES**

During the course of research for this project, a number of issues emerged repeatedly, across multiple states. Some may present little in the way of short-term implication for changes in production volumes; nevertheless, they are the issues with which state animal agriculture organizations are grappling – and will likely continue to face – in the years ahead.

**Raw milk legislation** – Just over half the states allow the sale of raw milk, and consumption of raw milk is legal in all 50 states. Interstate sales of raw milk are illegal. However, on May 12, 2011 a bill was proposed to repeal this ban.

**Animal welfare legislation** – The Humane Society of the US (HSUS) and other animal rights groups have been pushing legislation in legislatures nationally to put rules in place intended to improve animal welfare. Voters in California, Florida, and Arizona have approved measures that require more space for farm animals, and lawmakers in Colorado, Maine, Michigan and Oregon have passed similar laws. The consequences of these new laws are likely to significantly impact livestock and/or poultry operations, as they will in many cases require changes in the housing for these animals (and thus drive up capital and likely feed costs as well).

In recent years, several states have set up livestock care standards boards to provide multiple stakeholder groups with input on setting animal welfare standards.

In early July 2011, the HSUS and the United Egg Producers announced an agreement to work together toward the enactment of new federal legislation for hens involved in egg production. The legislation would require the replacement of conventional cages by enriched housing systems over the next 15-18 years, providing nearly double the space currently allocated to each hen. The proposed legislation, if passed, would supersede state laws; however, it might defer to California's 2015 conventional cage phase-out deadline and require that all eggs sold in the state come from facilities compliant with California's Proposition 2.

**Livestock marketing** – Proposed rules affecting livestock and poultry marketing and contracting were published by the Grain Inspection, Packers and Stockyards Administration (GIPSA) in June 2010. This was in response to a requirement in the 2008 farm bill. The proposed regulations are aimed at providing new protections for producers against unfair, fraudulent, or retaliatory practices but have been controversial within the industry due to the likelihood of unintended consequences. The National Cattlemen's Beef Association, National Pork Producers, National Chicken Council, and National Turkey Federation have all criticized the proposed regulations as unnecessarily raising costs. On the other side, the American Farm Bureau Federation has supported USDA's regulatory effort. In early 2011, Secretary Vilsack agreed to conduct an economic impact analysis, which is currently underway. Ongoing

Congressional budget deliberations have included a proposed ban on USDA spending any money to implement the GIPSA regulations.

**Action on climate change / pollution** – Another major theme over the past few years has been the trend toward trying to understand, as a precursor to possibly limit, the environmental impact of animal agriculture, particularly greenhouse gas emissions and pollution. For instance, the EPA reached a settlement with environmental groups and will launch an initiative to track down unlicensed concentrated animal feeding operations (CAFOs) to identify polluters; it may also set new standards for these operations (after a comment period). Other prominent areas are dairy industry research into reducing gas production by cows (or possibly capturing it for re-use).

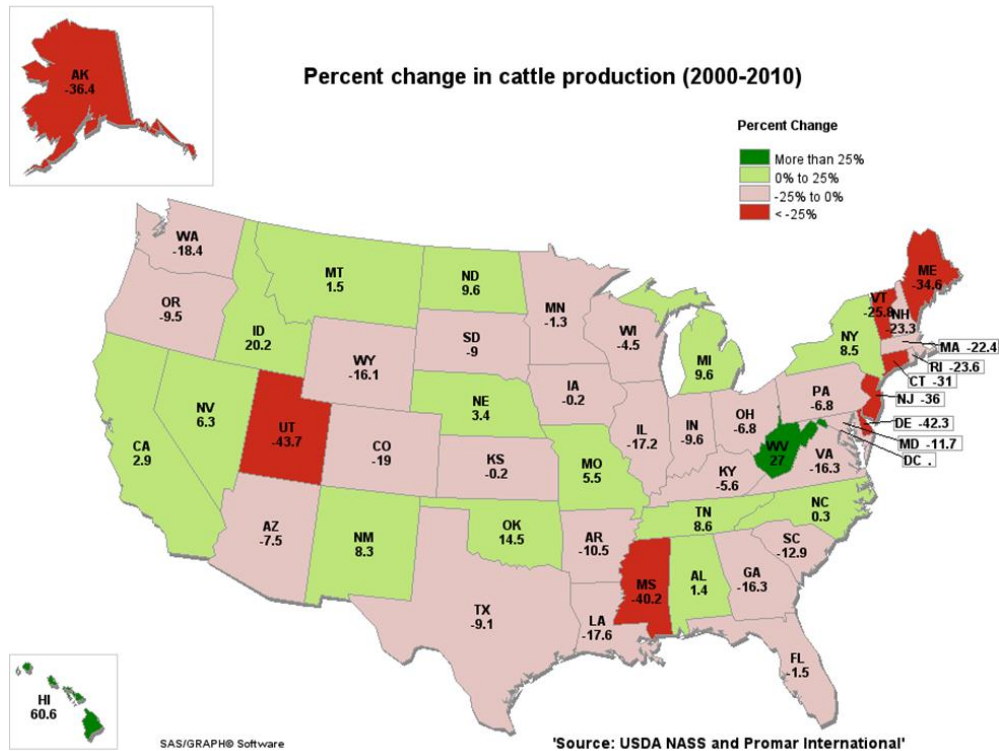
On April 22, 2011 the EPA announced its final *Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standards*. These recommendations have yet to be reviewed by the EPA Administrator, at which point a final determination will be made and announced in August of this year. Suggestions within this assessment call for either retaining current standards, or for a reduction in the acceptable amount of particulate matter.

**Illegal immigration / labor issues** - Post-9/11 security concerns and the economic downturn have led to increased pressure for action on illegal immigration. New laws are being passed and agencies have been targeting companies that hire illegal immigrants. There is no cap on the number of H-2A visas, which are temporary visas for hiring crop workers. Dairy farms, however, operate year-round, and thus cannot benefit from the visa program, leaving them particularly vulnerable to audits and fines.

**SECTION 4: LONG TERM CHANGES**

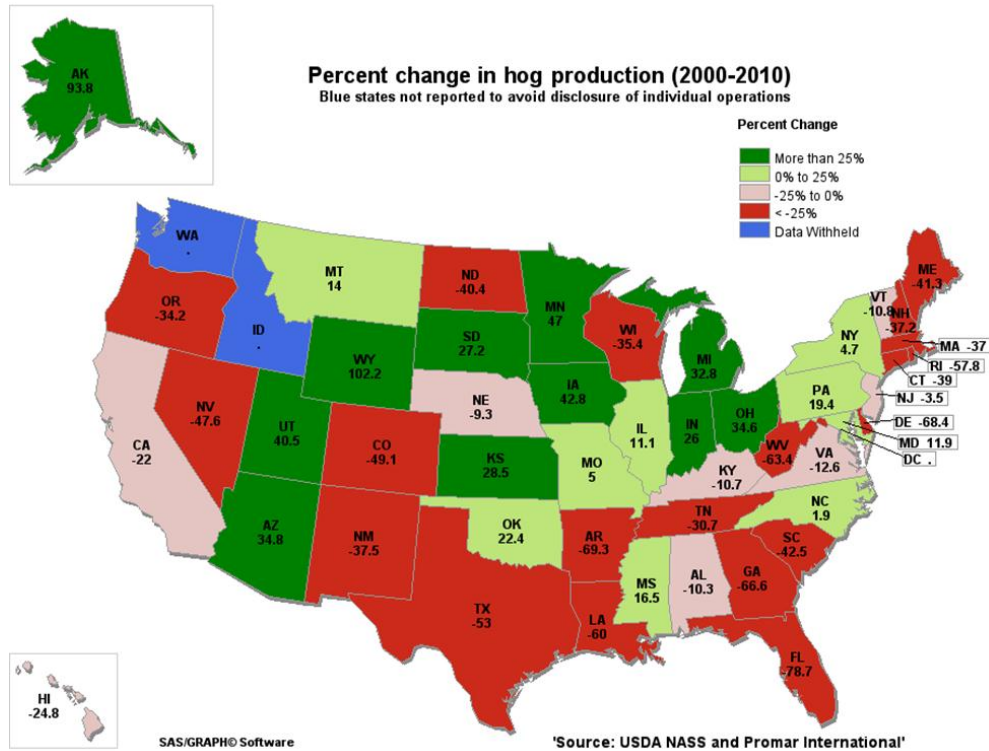
The following pages contain graphs and information documenting the shifts in animal agriculture across the country over the past decade (2000-2010). In the pages that follow, green indicates growth and red shows decline; the darker the color, the greater the change. For those who may only see this report in black-and-white, the percentage change is also shown numerically.

**4.1.1 Cattle and calves**



Much of the country has seen either moderate losses or small gains in cattle production over the past decade, i.e. less than 20 percent growth or decline. The main exceptions are states with small herds such as Alaska, Hawaii, West Virginia and most of the Northeastern states.

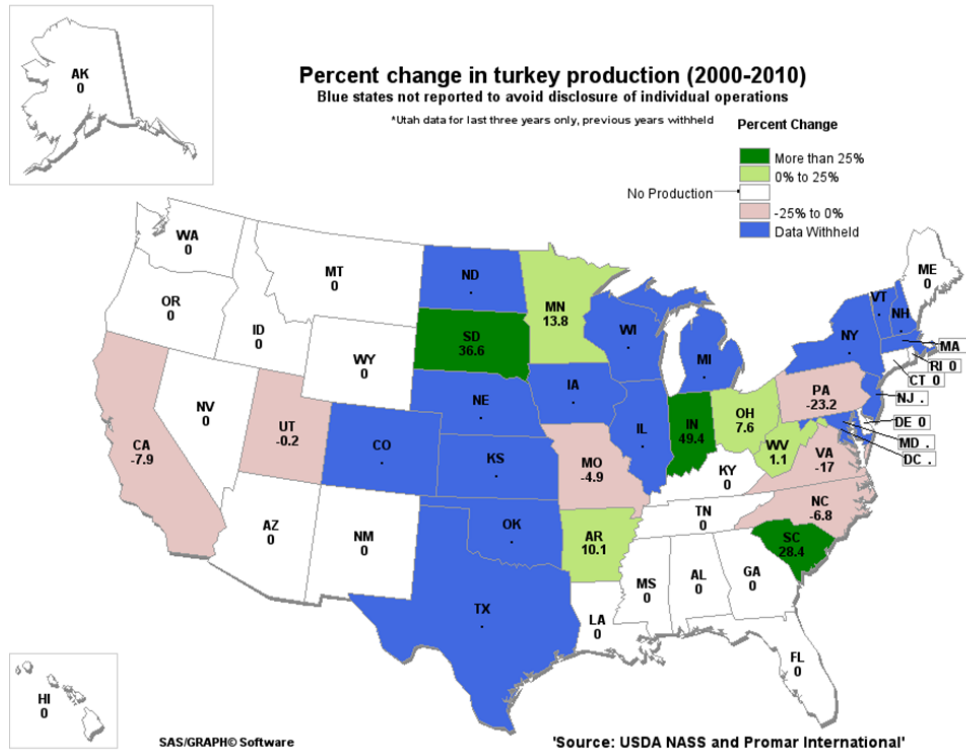
**4.1.2 Hogs and pigs**



Pork production has generally shifted from the periphery of the country, particularly from coastal states, and moved toward the Midwest.



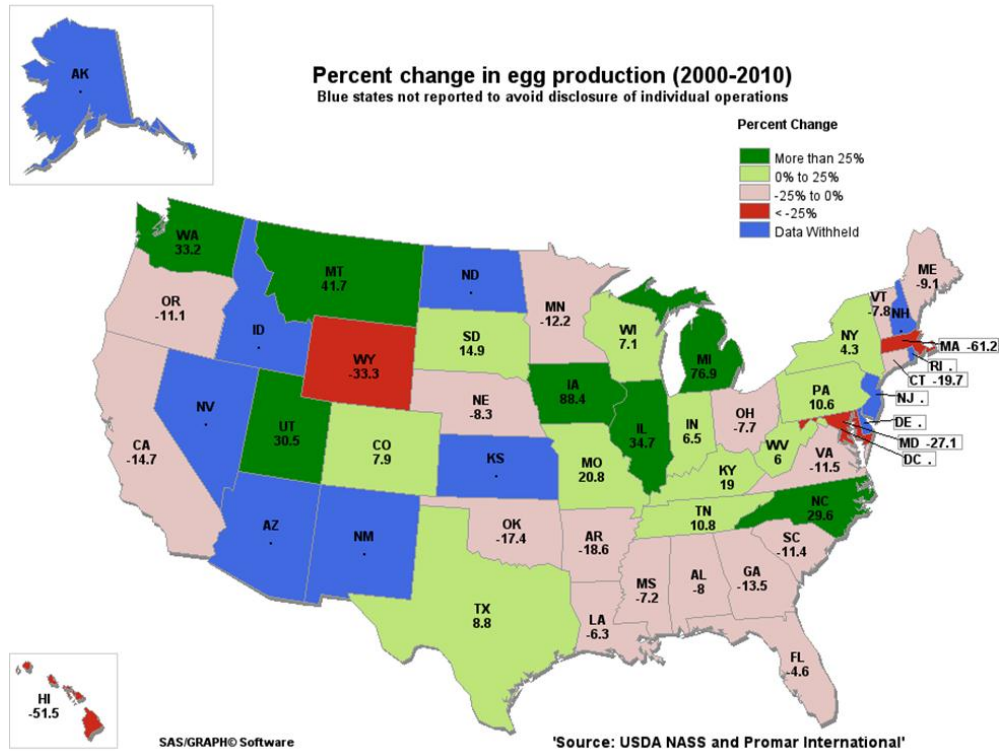
### 4.1.4 Turkeys



The data from the two largest turkey producing states, Minnesota and Iowa, was withheld for the first time in 2009 because some facilities were closed and the change was made to avoid disclosing individual operations. Reporting resumed for Minnesota in 2010 but Iowa is still withheld.

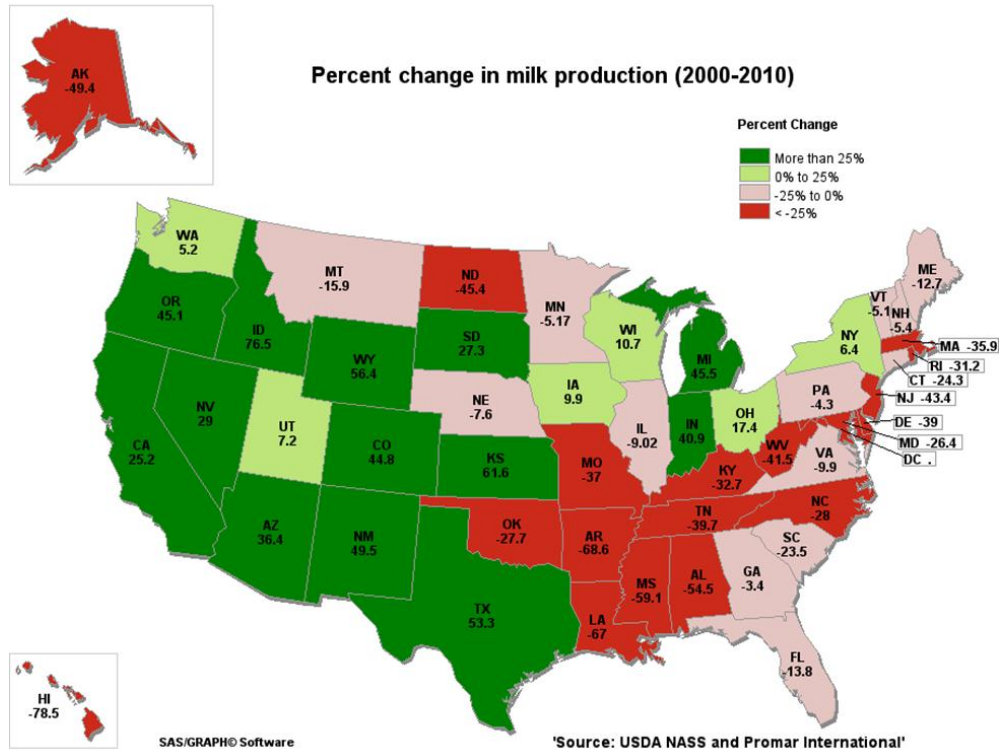
To the extent that a pattern can be found in incomplete data, production seems to be declining in the east and increasing in the Midwest where feed is generally cheaper.

4.1.5 Eggs



Despite overall growth in national egg production, there have been declines across the south and east, and along most of the west coast. Egg production has shifted much closer to the corn and soybean producing regions; the most prominent growth has been in the Midwest.

**4.1.6 Milk**



Nationally, there has been a dramatic shift in milk production, with declines across the southern and eastern states, and growth – much of it substantial – in the cornbelt and most states west of Missouri.

## **SECTION 5: SOYBEAN MEAL USE BY STATE**

The reason for soybean growers to be concerned about the future of animal agriculture in the United States is that domestic consumption of soybean meal by livestock, poultry, and other species is the single largest source of demand for US soybeans.

To calculate soybean meal use by species in 2009/10 in each state, we began with the 2010 animal production data published by NASS. For some states, data is withheld to maintain the confidentiality of individual firms' data. Normally there have to be three or more firms for NASS to be able to publish a state estimate. This mostly affects the broiler, turkey and egg production numbers. For eleven states, we made our own estimates of production (and soybean meal use) based on animal numbers shown in the Census of Agriculture. These estimates are shown in italics in the table below. The shaded cells are the other cases of data being withheld for confidentiality reasons.

Since most animals are fed for prolonged periods before they are slaughtered, fiscal year meal disappearance should roughly correspond to calendar year production or marketings. Comparing the live/slaughter weight production data for beef, pork and poultry to carcass/ready-to-consume production data in USDA's World Agricultural Supply and Demand Estimates, we calculated a three-year average (2007-2009) product yield per pound of animal production for each livestock product (except for eggs and milk, which we assigned a yield ratio of 1.00).

Using the new product yield estimates, we then applied feed conversion ratios to estimate protein meal used in feed per unit of meat, egg or milk production. The factors usually cited for the number of pounds of meal needed to produce a pound of chicken or some other meat assume a ration built around corn and soybean meal. However, there is an increasing amount of other protein sources going into the national feed mix including meat and blood meal, fish meal, urea, synthetic amino acids, corn gluten feed and meal, other oilseed meals, and increasingly, distillers dried grains (DDG).

As in earlier reports, we attempted to reconcile our soybean meal estimates to that total disappearance of protein feeds by adjusting downwards the calculated amount of soybean meal. For pork and egg production, consumption in 2009/10 is estimated at 78% of the amount calculated for a straight corn-SBM ration. For broilers and turkeys we also used a factor of 78%. For beef cattle, we used a factor of 14% and for dairy 33% because of the increasing use of gluten feed and distillers' grains to meet cattle protein requirements.

In addition to the main species, other outlets for soybean meal as feed include aquaculture and pet food, plus much smaller markets like mink, goats, sheep, horses, ducks, geese, etc. In the past, we have estimated that this "other" category accounts for about 5% of total soybean meal

used nationally in domestic feeding. We have used the same figure in our state estimates, but one should be aware that this will under- or over-estimate such use for certain states. For example, it may underestimate use of soybean meal in aquaculture in states like Louisiana.

The table on the next page presents the results of these calculations. In total, the state estimates add up to 29.5 million tons of SBM consumption for feed in 2009/10. Applying the factors to the national data that includes the data for certain states withheld for purposes of confidentiality shows use of 30.0 million tons of SBM. This is quite close to USDA's 30.6 million ton estimate of total domestic meal disappearance, which also includes production of soy flour, concentrate and isolate for human and animal consumption.

Broilers accounted for 11.3 million tons of soybean meal use, hogs and pigs 8.7 million, and beef cattle 1.8 million. Usage of SBM in the production of milk and eggs was 2.5 and 2.3 million tons, respectively.

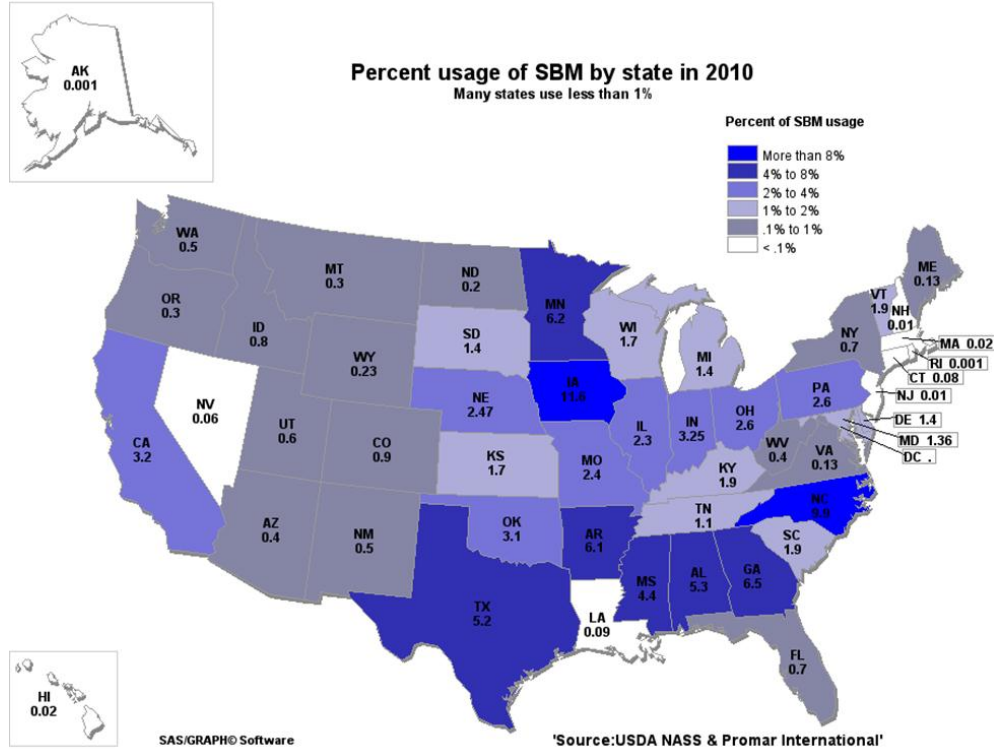
By state, Iowa was the leading user of soybean meal in animal agriculture, at 3.4 million tons, followed closely by North Carolina with 2.8 million, and then Georgia and Arkansas at 1.8 million tons. Within each state, it is easy to see which animal production sectors are responsible for most of the local demand for soybean meal.

**Soybean Meal Use by Species in 2009/10 (1,000 short tons)**

State	Beef	Pork	Broilers	Turkeys	Eggs	Milk	Other	State Total
Alabama	22	19	1,335	0	54	2	75	1,507
Alaska	0	0	0	0	0	0	0	0
Arizona	24	23	0	0	0	55	5	107
Arkansas	22	25	1,370	147	71	2	86	1,722
California	85	16	314	108	133	533	63	1,252
Colorado	74	85	0	0	26	37	12	234
Connecticut	0	0	0	0	17	5	1	24
Delaware	0	1	376	0	0	1	20	399
Florida	19	1	72	0	64	28	10	195
Georgia	15	22	1,588	0	109	18	92	1,844
Hawaii	2	1	0	0	2	0	0	5
Idaho	51	0	0	0	0	168	12	231
Illinois	22	554	0	0	31	25	33	665
Indiana	11	501	39	153	160	45	48	957
Iowa	78	2,642	13	71	361	57	170	3,393
Kansas	177	252	0	0	0	33	24	486
Kentucky	26	53	386	0	28	15	27	534
Louisiana	8	1	0	0	11	3	1	24
Maine	1	1	0	0	26	8	2	37
Maryland	3	4	331	0	15	13	19	385
Massachusetts	0	1	0	0	1	3	0	5
Michigan	19	176	0	0	72	110	20	397
Minnesota	49	1,056	53	323	71	119	88	1,759
Mississippi	8	43	1,099	0	36	3	63	1,253
Missouri	54	364	330	157	48	19	51	1,023
Montana	48	23	0	0	3	4	4	82
Nebraska	197	386	0	0	68	15	35	701
Nevada	8	1	0	0	0	8	1	17
New Hampshire	0	0	0	0	1	4	0	6
New Jersey	0	0	0	0	10	2	1	14
New Mexico	34	0	0	0	0	103	7	144
New York	11	7	0	0	29	167	11	225
North Carolina	14	1,078	1,250	257	80	11	142	2,833
North Dakota	30	17	0	0	1	5	1	55
Ohio	19	300	87	47	186	69	37	745
Oklahoma	96	370	347	0	19	13	44	888
Oregon	23	2	28	0	18	31	5	107
Pennsylvania	22	134	194	43	172	141	37	741
Rhode Island	0	0	0	0	0	0	0	0
South Carolina	7	15	359	115	27	4	28	555
South Dakota	64	211	0	52	17	25	19	387
Tennessee	26	26	228	0	8	11	16	315
Texas	293	44	841	35	119	116	76	1,524
Utah	10	86	0	27	23	24	4	174
Vermont	2	0	0	0	1	33	0	37
Virginia	18	32	298	123	18	23	27	539
Washington	25	33	0	0	43	78	9	188
West Virginia	6	0	80	24	7	2	6	125
Wisconsin	50	49	46	65	32	340	31	613
Wyoming	21	39	0	0	0	2	2	64
Withheld data*	0	-20	272	139	38	0	33	463
<b>National</b>	<b>1,796</b>	<b>8,677</b>	<b>11,334</b>	<b>1,886</b>	<b>2,258</b>	<b>2,532</b>	<b>1,498</b>	<b>29,980</b>

\* Shaded cells signify data withheld. Italic signifies calculation based on Promar production estimate.

### 5.1.1 Soybean meal usage map



This graphic offers a visual representation of the percentage share of soybean meal used in each state in 2010. Since there are 50 states, “average” usage would be 2%. Higher usage states are darker in color.

The graphic thus makes visible the main “pockets of usage;” for instance, there is below average usage in New England, the Pacific Northwest, and much of the west. By contrast, usage is much higher in the Midwest and Deep South, and particularly strong in Iowa and North Carolina.

In fact, if you look at the darkest shaded states – 8 of them account for 55% of the country’s soybean meal usage.

## **SECTION 6: ECONOMIC IMPACTS OF ANIMAL AGRICULTURE**

### **6.1 Output, earnings and employment multipliers**

To estimate the impact of livestock production on the overall economy of any given geographic area, it is necessary to quantify the relationship between the livestock industry and each of the other major components of the area's economy. So-called input-output (I-O) models are commonly used for this purpose. Given the great amount of detailed information that is required to build and maintain a national I-O model, there are comparatively few of them in operation. One of the most elaborate of these models is the Regional Industrial Modeling System (RIMS II) operated by the Bureau of Economic Analysis (BEA) in the US Department of Commerce. This is the model used in this analysis.

RIMS II is based on BEA's 2002 benchmark I-O table and 2007 regional data. It is comprised of approximately 500 industries. The model traces the interactions among these industries so that the effect of a given level of output in one industry on all other industries can be measured. These measures take the form of multipliers or factors that can be applied to output measured in dollars. They indicate the total economic activity in the state associated with a dollar of sales in that industry. In addition to measuring the value of output, multipliers are also derived for measuring impacts on earnings and employment.

The employment multiplier is the number of total jobs in the state associated with one million dollars of sales in that industry. This includes jobs not just in the cattle industry, for example, but jobs in feed, finance, insurance, grocery stores, retailing, transportation, housing, etc..

Given the complexity of tracing these effects throughout the economy, some simplification in methodology was required to keep the task manageable. The first simplifying step in constructing RIMS II was to collapse the nearly 1,200 industries identified in the Census Bureau's North American Industry Classification System (NAICS) to a smaller number of industries. (NAICS replaced the old Standard Industrial Classification system). For purposes of this analysis, unique multipliers are now available for four industries that include all livestock and poultry production:

- Cattle ranching and farming
- Dairy cattle and milk production
- Poultry and egg production
- Swine, aquaculture, and other animal production

A second important step in estimating multipliers is in defining the geographic region of interest. The RIMS II model permits the region of examination to be as small as an individual county or as

large as a set of contiguous states (multipliers are no longer available for the nation as a whole). The choice of region can have an important effect on the outcome, depending on whether the associated industries are located within the region. As a general rule, the more broadly the region is defined the greater the likelihood that associated industries are represented within the region and the larger the multipliers. For this analysis, we have defined individual states as the regions of principal interest. While there are variations in the degree to which associated industries are represented (and, correspondingly, in the size of the multipliers), states are generally of sufficient size to capture most of the impact of livestock production.

The first table that follows presents the multipliers for beef cattle. Leaving aside Alaska, Hawaii, and the northeast and mid-Atlantic states, which have low multipliers due to either small size or low state output, multipliers ranged from about 1.9 in several states to almost 3.2 in Texas. Earnings multipliers were mostly within the 0.3-0.5 range. Employment multipliers were as low as 6.5 in Delaware and around 25 in Texas, Montana, and Kansas.

The second table presents the multipliers for dairy cattle and milk production. The highest output multipliers for dairy are around 2.4 and the lowest is 1.4 for Alaska. The average is 2.0, slightly below the average of 2.2 for beef cattle. The average employment multiplier is 15, the same as for beef, but is as high as 20 for some states.

The third table presents the RIMS-II multipliers for poultry and egg production. Output multipliers range from 1.4 for several states to 2.8 for Missouri, Indiana, and Illinois. The earnings multipliers are marginally lower than those for cattle. The average employment multiplier is the same 15 as for cattle, ranging from 6.8 in Delaware to 23.2 in Indiana.

Finally, the multipliers for Industry 112A00, “animal production, except cattle, poultry and eggs” (i.e. hogs and pigs and smaller sectors like aquaculture) are shown in the fourth table. They are slightly lower than the poultry multipliers – averaging 1.8 for output, 0.3 for income, and 12 for employment.

Beef Cattle			
State	Output (\$)	Earnings (\$)	Employment (jobs)
Alabama	2.2735	0.3922	19.0445
Alaska	1.4478	0.2040	8.1846
Arkansas	2.3295	0.4067	12.5922
Arizona	2.7500	0.4528	18.1386
California	2.2527	0.4078	11.2537
Colorado	2.9976	0.5365	23.2668
Connecticut	1.4540	0.2277	8.7853
Delaware	1.5298	0.2155	6.4856
Florida	1.9120	0.3359	12.8079
Georgia	2.1143	0.3751	12.6636
Hawaii	1.8399	0.3053	12.7307
Idaho	2.6275	0.4280	14.4599
Illinois	2.0150	0.3525	10.2473
Indiana	1.9919	0.3260	14.0747
Iowa	2.5936	0.4209	13.4371
Kansas	2.8215	0.4481	24.5277
Kentucky	2.9258	0.4912	19.7962
Louisiana	2.1279	0.3609	15.8342
Maine	1.8048	0.3100	12.8760
Maryland	1.5826	0.2519	9.9011
Massachusetts	1.5146	0.2461	8.7655
Michigan	1.9799	0.3428	16.2864
Minnesota	3.0078	0.5200	18.7157
Mississippi	2.3481	0.3833	17.4540
Missouri	2.9305	0.4840	18.9629
Montana	2.8251	0.4769	25.4029
Nebraska	2.6217	0.4156	13.4633
Nevada	1.8994	0.2992	15.9865
New Hampshire	1.5467	0.2411	9.6765
New Jersey	1.5968	0.2581	9.8256
New Mexico	2.6324	0.4329	16.4947
New York	1.5699	0.2431	8.8194
North Carolina	1.8716	0.3225	12.0136
North Dakota	2.7093	0.4287	13.7240
Ohio	1.9484	0.3327	16.5072
Oklahoma	2.8957	0.4930	19.9435
Oregon	2.7360	0.4647	20.4037
Pennsylvania	1.9530	0.3343	13.5063
Rhode Island	1.4401	0.2201	8.8000
South Carolina	1.8400	0.3109	12.8601
South Dakota	2.5716	0.4078	12.8499
Tennessee	2.0988	0.3501	13.1766
Texas	3.1793	0.5795	25.2899
Utah	2.6279	0.4646	20.0367
Vermont	2.0546	0.3315	11.0638
Virginia	1.8476	0.2950	11.4089
Washington	2.4763	0.4308	13.3518
West Virginia	2.0003	0.3088	13.1671
Wisconsin	2.6549	0.4539	20.3480
Wyoming	2.3955	0.3533	14.7935

Source: RIMS-II, BEA, Department of Commerce

Dairy Cattle			
State	Output (\$)	Earnings (\$)	Employment (jobs)
Alabama	2.1227	0.3937	19.6610
Alaska	1.4311	0.2209	9.5036
Arkansas	1.8482	0.3509	11.1471
Arizona	2.2270	0.3947	16.8070
California	2.1527	0.4172	11.8649
Colorado	2.2373	0.4301	19.1984
Connecticut	1.5101	0.2627	14.0217
Delaware	1.6305	0.2516	7.8830
Florida	1.8497	0.3530	14.0121
Georgia	2.2744	0.4338	13.6233
Hawaii	1.6809	0.3036	13.7743
Idaho	2.0407	0.3598	12.1288
Illinois	2.2768	0.4307	13.2107
Indiana	2.1565	0.3861	15.3726
Iowa	2.1134	0.3682	11.9110
Kansas	2.2362	0.3798	20.0120
Kentucky	2.3550	0.4221	16.9259
Louisiana	2.0804	0.3807	15.0324
Maine	1.8877	0.3488	18.5377
Maryland	1.6471	0.2879	12.7035
Massachusetts	1.5377	0.2749	10.6053
Michigan	1.8503	0.3480	16.4428
Minnesota	2.3861	0.4401	15.6794
Mississippi	2.1184	0.3728	17.9892
Missouri	2.4005	0.4242	16.4998
Montana	2.1761	0.3922	20.9075
Nebraska	2.0742	0.3522	11.7138
Nevada	1.6081	0.2769	12.7047
New Hampshire	1.6130	0.2779	11.3993
New Jersey	1.6719	0.2956	14.8259
New Mexico	1.9221	0.3408	12.7964
New York	1.6158	0.2754	9.9732
North Carolina	2.0894	0.3905	13.3513
North Dakota	2.1396	0.3611	11.8711
Ohio	2.1729	0.4045	19.4091
Oklahoma	2.2786	0.4146	16.8982
Oregon	2.0595	0.3780	15.3809
Pennsylvania	2.0661	0.3838	16.8626
Rhode Island	1.4503	0.2456	10.5717
South Carolina	1.7917	0.3298	14.0968
South Dakota	2.0092	0.3381	10.9782
Tennessee	1.8974	0.3460	13.3527
Texas	2.3773	0.4617	16.8223
Utah	2.2393	0.4250	17.7499
Vermont	1.8441	0.3192	11.7288
Virginia	1.8426	0.3239	12.6802
Washington	2.1938	0.4096	12.4346
West Virginia	1.6046	0.2716	12.1919
Wisconsin	2.1469	0.3971	17.6708
Wyoming	1.6289	0.2614	11.5420

Source: RIMS-II, BEA, Department of Commerce

Poultry and eggs			
State	Output (\$)	Earnings (\$)	Employment (jobs)
Alabama	2.3463	0.3801	12.6526
Alaska	1.3325	0.1789	8.4723
Arkansas	1.5895	0.2550	8.3844
Arizona	2.6342	0.4108	15.2152
California	2.1264	0.3615	10.5563
Colorado	2.2180	0.3791	17.5724
Connecticut	1.5898	0.2359	8.9749
Delaware	1.5784	0.2007	6.7699
Florida	1.6362	0.2634	10.0960
Georgia	2.5434	0.4301	12.7842
Hawaii	1.3921	0.2106	12.8619
Idaho	2.1769	0.3479	16.4217
Illinois	2.7937	0.4720	21.5382
Indiana	2.7638	0.4373	23.1837
Iowa	2.5382	0.3973	15.6111
Kansas	2.4765	0.3760	18.9436
Kentucky	2.6496	0.4095	21.0871
Louisiana	2.1491	0.3421	16.9898
Maine	1.9928	0.3190	15.2699
Maryland	2.2269	0.3359	12.2748
Massachusetts	1.5008	0.2257	14.3698
Michigan	1.7752	0.2888	13.4954
Minnesota	2.7420	0.4487	16.5978
Mississippi	2.4368	0.3748	15.6683
Missouri	2.8255	0.4340	16.8284
Montana	2.1415	0.3369	20.9984
Nebraska	2.4975	0.3913	15.9034
Nevada	1.3755	0.1998	9.1441
New Hampshire	1.5996	0.2347	15.5137
New Jersey	1.7422	0.2656	11.2672
New Mexico	1.7798	0.2680	12.3039
New York	1.6612	0.2388	10.4107
North Carolina	2.5100	0.4146	13.1750
North Dakota	2.1452	0.3168	13.9017
Ohio	2.6980	0.4444	21.4628
Oklahoma	2.5034	0.4017	16.2329
Oregon	2.0359	0.3219	11.6240
Pennsylvania	2.4606	0.4033	15.0790
Rhode Island	1.4073	0.2014	15.8744
South Carolina	1.8290	0.2894	12.8139
South Dakota	2.2851	0.3443	18.5363
Tennessee	2.2268	0.3561	14.0263
Texas	2.3136	0.3950	15.0860
Utah	2.3571	0.3969	19.6623
Vermont	1.7793	0.2568	16.3978
Virginia	2.1080	0.3247	19.7116
Washington	2.2331	0.3672	11.5704
West Virginia	1.5114	0.2142	10.4061
Wisconsin	2.2995	0.3771	15.2948
Wyoming	1.4131	0.2016	9.6898

Source: RIMS-II, BEA, Department of Commerce

Swine and other			
State	Output (\$)	Earnings (\$)	Employment (jobs)
Alabama	1.8510	0.3303	15.2110
Alaska	1.4161	0.2093	10.5335
Arkansas	1.6585	0.3003	9.5584
Arizona	1.9744	0.3373	12.7880
California	1.8221	0.3392	9.8011
Colorado	2.0059	0.3693	16.3813
Connecticut	1.4037	0.2320	9.6439
Delaware	1.4765	0.2202	6.9010
Florida	1.6525	0.3012	11.9596
Georgia	1.8678	0.3416	11.4509
Hawaii	1.5652	0.2709	10.5998
Idaho	1.8451	0.3135	11.8100
Illinois	2.0368	0.3699	11.3234
Indiana	1.9370	0.3336	13.4360
Iowa	1.8971	0.3205	10.5083
Kansas	1.9790	0.3253	13.6766
Kentucky	2.0816	0.3617	14.4150
Louisiana	1.8234	0.3212	12.9790
Maine	1.7340	0.3083	15.2847
Maryland	1.5020	0.2512	9.8294
Massachusetts	1.4400	0.2444	9.0613
Michigan	1.7285	0.3100	13.8166
Minnesota	2.0894	0.3697	12.1654
Mississippi	1.9208	0.3283	15.9506
Missouri	2.1045	0.3596	13.9379
Montana	1.9577	0.3412	14.5650
Nebraska	1.8591	0.3057	10.2042
Nevada	1.4665	0.2414	10.6887
New Hampshire	1.4670	0.2408	9.5061
New Jersey	1.5355	0.2596	11.8066
New Mexico	1.6875	0.2895	11.1534
New York	1.4623	0.2382	7.0522
North Carolina	1.8915	0.3389	10.9886
North Dakota	1.9097	0.3122	10.3057
Ohio	1.9109	0.3408	15.6203
Oklahoma	2.0271	0.3556	14.3107
Oregon	1.7817	0.3142	12.6901
Pennsylvania	1.8119	0.3221	12.2488
Rhode Island	1.3734	0.2223	11.3512
South Carolina	1.6526	0.2913	14.3997
South Dakota	1.8131	0.2959	9.6684
Tennessee	1.6875	0.2944	11.1508
Texas	2.0146	0.3766	13.6284
Utah	2.0093	0.3653	14.9940
Vermont	1.6146	0.2708	10.5841
Virginia	1.6286	0.2744	10.5906
Washington	1.8997	0.3408	10.4684
West Virginia	1.4840	0.2411	10.3103
Wisconsin	1.9061	0.3390	14.1202
Wyoming	1.6068	0.2473	10.4537

Source: RIMS-II, BEA, Department of Commerce

## 6.2 Impact estimates for output and earnings

The multipliers above can be used to estimate the economic impacts of animal agriculture:

- **Output impacts** were calculated by taking the value of production values for each of the four livestock categories (i.e. beef cattle, dairy cattle, broilers/turkeys/eggs, and hogs/other), and applying the respective output multiplier to each one to yield the dollar value impact of that sector on each state's economy. The sums of the four category impacts represent the overall impact of animal agriculture on each state's economy.
- To calculate the impact on **earnings**, the value of production estimate for each category was multiplied by its respective earnings multiplier. The resulting value represents the dollar value of earnings of households, employed by all industries throughout the state, associated with the production of each category of livestock.
- To calculate the impact on **employment**, employment multipliers were also applied to production figures. The resulting estimate represents the number of direct and indirect jobs in each state attributable to livestock production.

Across all states, the total output impact of animal agriculture in 2010 was \$289 billion. The effect on household earnings was \$51 billion, and the sector creates over 1.8 million jobs. The employment impact exceeds 10,000 jobs in 36 of the states, reaches about 100,000 jobs in California, Iowa, Kansas and Wisconsin, and tops 220,000 jobs in Texas.

**Economic impact of 2010 Animal Agriculture**

State	Output (\$000)	Earnings (\$000)	Employment (jobs)	Income Tax (\$000)	2007 Property Taxes (\$000)
Alabama	9,016,269	1,578,113	58,942	399,736	43,059
Alaska	6,720	986	42	200	1,312
Arizona	2,181,362	400,055	12,587	99,494	32,745
Arkansas	12,056,084	2,020,128	69,023	552,101	76,778
California	19,196,492	3,643,498	101,178	1,088,677	638,682
Colorado	6,998,117	1,269,672	55,303	316,910	89,405
Connecticut	230,571	38,435	1,690	9,736	23,053
Delaware	1,610,574	232,600	6,307	63,453	4,524
Florida	2,100,666	381,579	14,621	77,575	180,155
Georgia	11,736,940	2,137,288	58,584	562,748	139,812
Hawaii	84,183	14,229	611	4,067	10,873
Idaho	6,724,751	1,148,528	38,843	323,081	62,915
Illinois	4,470,220	811,550	24,236	189,335	245,586
Indiana	6,095,403	1,054,459	40,770	250,223	207,559
Iowa	19,285,299	3,212,995	101,674	941,729	353,029
Kansas	11,570,180	1,853,114	99,251	496,264	191,132
Kentucky	5,171,592	880,197	32,688	229,996	102,439
Louisiana	583,017	100,623	4,242	26,494	26,956
Maine	347,947	62,788	3,139	17,066	24,156
Maryland	1,864,031	308,829	11,223	77,454	41,361
Massachusetts	83,747	14,747	559	3,780	32,509
Michigan	4,468,828	819,501	37,629	202,253	188,916
Minnesota	11,714,323	2,086,258	71,233	571,217	241,383
Mississippi	8,144,450	1,361,768	55,498	344,936	78,158
Missouri	9,148,578	1,539,634	56,886	405,386	172,858
Montana	3,198,792	541,942	28,605	147,571	115,971
Nebraska	13,169,276	2,101,570	68,510	570,996	316,430
Nevada	500,012	81,272	4,116	16,523	13,189
New Hampshire	94,950	16,208	664	4,105	19,974
New Jersey	48,412	8,428	406	2,179	54,754
New Mexico	4,265,578	732,313	27,668	184,763	29,117
New York	4,066,656	686,232	24,675	186,518	188,015
North Carolina	13,886,535	2,483,950	75,118	697,493	127,148
North Dakota	2,030,564	323,259	10,382	76,839	110,963
Ohio	6,883,235	1,240,526	55,066	303,172	164,687
Oklahoma	10,433,120	1,795,094	70,557	463,673	106,592
Oregon	2,384,754	417,556	17,595	122,469	101,411
Pennsylvania	8,349,546	1,514,757	59,683	354,453	211,603
Rhode Island	5,929	985	42	269	6,421
South Carolina	2,204,297	380,784	14,426	104,068	37,423
South Dakota	5,648,266	904,959	28,706	183,978	148,940
Tennessee	2,672,627	458,691	16,291	120,773	97,014
Texas	28,831,676	5,318,826	214,147	1,081,317	489,194
Utah	1,889,154	345,879	14,305	87,611	28,431
Vermont	1,589,617	266,127	9,378	77,922	30,579
Virginia	2,549,662	432,715	15,047	112,852	96,068
Washington	3,806,664	689,831	20,988	140,243	161,799
West Virginia	670,475	105,798	4,243	27,857	19,612
Wisconsin	12,079,534	2,196,134	97,069	589,223	307,453
Wyoming	1,389,170	206,386	8,664	41,958	30,904
<b>National</b>	<b>289,215,517</b>	<b>50,525,940</b>	<b>1,853,013</b>	<b>13,020,021</b>	<b>6,223,047</b>

### **6.3 Tax Effects**

As shown in the preceding table, we estimate that animal agriculture results in \$13.0 billion in federal and state income and employment tax payments, plus \$6.2 billion in property tax payments. The methodology behind these estimates is described below.

The economic activity associated with the production of livestock also generates tax revenue for local, state, and federal governments. These taxes are applied in many different forms, depending on jurisdiction. Nationally, about 60 percent of all tax revenues are collected at the federal level with the remaining 40 percent spread among the several thousand state and local jurisdictions.

The USDA's Economic Research Service reports that farm households paid \$42.5 billion in taxes in 2004, the most recent year for which this information is available. Of this total, most was paid in the form of federal income taxes (49 percent), federal Social Security/self-employment taxes (25 percent), local property taxes (11.5 percent), state and local income taxes (12 percent) and estate taxes (2.1 percent). For this analysis, we focused on income taxes, Social Security/self-employment taxes, and property taxes.

In calculating federal income taxes, farm households include income from all sources (farm and non-farm). Given the recent adjustments, deductions, and exemptions that are allowed for farming enterprises, the average effective tax paid on farm income is lower now than it was in 2004. In 1996, (the most recent year for which information is available), the combined reported income of the 2.2 million farm households was entirely from non-farm sources. That is, farm income losses more than matched farm income gains when netted out across all farm households. Even among farms with annual sales in excess of \$250,000, two-thirds of reported income was from non-farm sources.

Based on the distribution of farm households with sales above \$250,000 among the federal tax brackets in 1996, adjusted for the lower tax rates adopted in 2001 and 2002, we estimate an average federal income tax rate of about 14 percent for these households. This should be considered an upper bound, however, since much of the income generated through the farming enterprises of these households is either taxed at a low rate or not taxed at all.

The other important federal tax is the self-employment (Social Security) tax. This tax has two components: the old age, survivor, and disability (OASDI) portion and the Medicare hospital insurance (HI) portion. While self-employed farmers are required to pay both the employer and employee shares of this tax (15.3 percent of net farm profit), they also receive an income tax deduction for one-half of the tax as well as a 7.65 percent exclusion of self-employment income. The Economic Research Service (ERS) reports that the average effective Social Security tax rate for all farmers was 10 percent in 1994. As with the estimate of the federal income tax rate, this

should probably be considered an upper bound. According to ERS, a combination of higher self-employment taxes and reduced retirement benefits has provided farmers with an incentive to adopt changes in farm business operations designed to minimize their self-employment taxes. Thus, the effective rate could be lower than 10 percent, though we have no basis on which to estimate it.

While the incomes of livestock and crop producers are most directly impacted by the economic activity associated with livestock production, the earnings of workers in many other industries are impacted too, though to a lesser extent. Since the workers in these industries also pay taxes, the indirect impact of the livestock industry on the tax revenues originating in these industries should also be considered. This includes workers across a diversified array of input, service, manufacturing, and distribution industries. Given the diversity of industries and occupations represented, we have used a composite of estimated average effective federal tax rates for all households. The latest CBO estimate is that the average individual federal income tax rate was 14.3 percent in 2007 and that the average social insurance tax rate was 9.5 percent the same year.<sup>1</sup> We opted to use a slightly better estimate with effective average tax rates available from the Tax Policy Institute as they are slightly lower and closer to the actual tax rates farmers as a group pay.

State and local income tax rates are highly variable ranging from no tax in several states to as high as 12 percent for the highest income bracket in one state. Typically, they are in the 4 to 7 percent range. Most state income taxes are progressive, though a few are flat. ERS estimates the average rate for farm households at 4 percent. We have used that rate in estimating the state and local tax effects with two exceptions. First, a value of zero has been assigned to the states that have no state income tax. Second, for those states that have a flat tax, their actual rates have been used.

In estimating tax impacts, we have opted to use Tax Policy Institute's estimated average effective rates for federal taxes and to apply these rates across the board to earnings in all industries. While this yields a somewhat lower estimate than that derived from using the average rates estimated by CBO, TPI's estimates are closer to the actual tax rates farmers pay and, if anything, are probably still higher than the rates currently in use for farm production. The estimates are calculated by multiplying the sum of the federal and state tax rates by the total earnings impact estimate for each state.

In the case of property taxes, we have used the figures collected in the most recent Census of Agriculture. These were for 2007. The property taxes paid in each state by each type of livestock operation are shown in the database.

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<sup>1</sup> Congressional Budget Office, *Average Federal Tax Rates: 1979 – 2007*, June 2010.

## **6.4 Reasonableness of estimates**

In order to test whether the estimates of output impact are plausible, we compared them to the total economic output for each state. The Department of Commerce periodically estimates not just the national gross domestic product (GDP) but also the gross state product (GSP) for each state. The 2010 data are shown in the table that follows, along with the output impact estimates calculated above, and the ratio of the impact estimate to gross state product.

We find the estimates to be quite plausible. For most states the impact of totally eliminating animal agriculture in the state as a percentage of total economic activity is in the single digits – typically 1-6 percent. However, in states where livestock and poultry industries are a bigger part of the state economy, the impacts are in the 12-15 percent range, which seems reasonable.

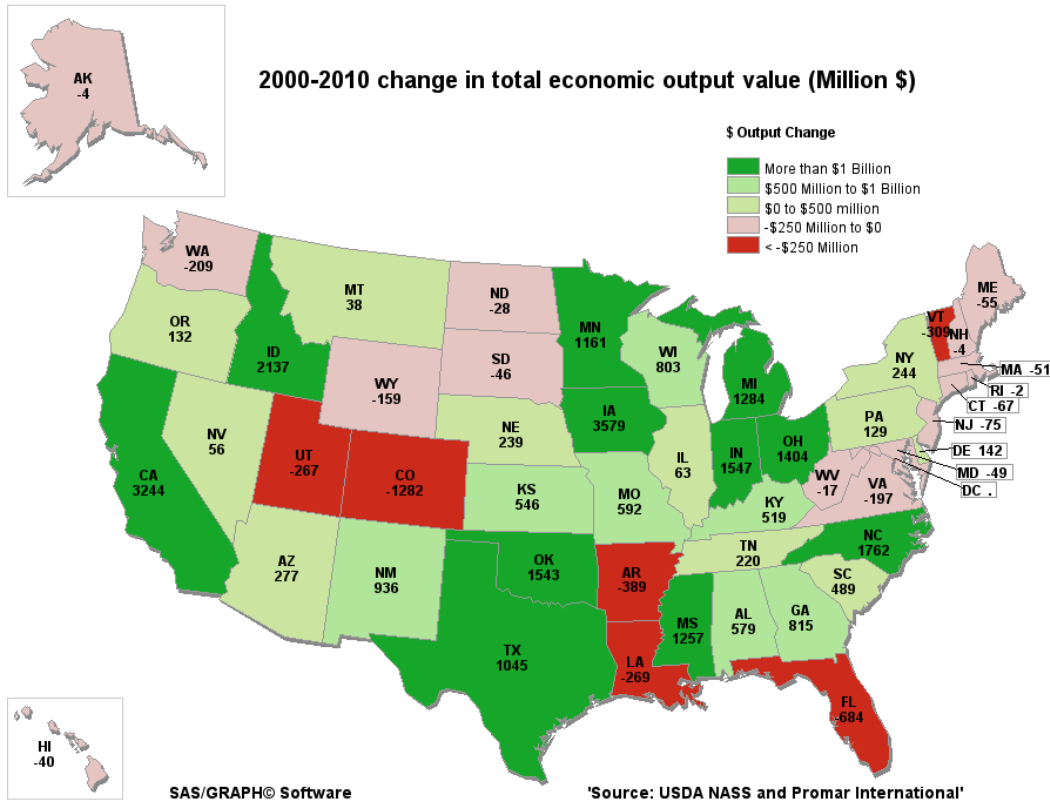
**Output Impact Share of Gross State Product, 2010**

State	GSP (\$million)	Output (\$million)	Share (percent)
Alabama	172,567	9,016	5.2%
Alaska	49,120	7	0.0%
Arizona	253,609	2,181	0.9%
Arkansas	102,566	12,056	11.8%
California	1,901,088	19,196	1.0%
Colorado	257,641	6,998	2.7%
Connecticut	237,261	231	0.1%
Delaware	62,280	1,611	2.6%
Florida	747,735	2,101	0.3%
Georgia	403,070	11,737	2.9%
Hawaii	66,760	84	0.1%
Idaho	55,435	6,725	12.1%
Illinois	651,518	4,470	0.7%
Indiana	275,676	6,095	2.2%
Iowa	142,698	19,285	13.5%
Kansas	127,170	11,570	9.1%
Kentucky	163,269	5,172	3.2%
Louisiana	218,853	583	0.3%
Maine	51,643	348	0.7%
Maryland	295,304	1,864	0.6%
Massachusetts	378,729	84	0.0%
Michigan	384,171	4,469	1.2%
Minnesota	270,039	11,714	4.3%
Mississippi	97,461	8,144	8.4%
Missouri	244,016	9,149	3.7%
Montana	36,067	3,199	8.9%
Nebraska	89,786	13,169	14.7%
Nevada	125,650	500	0.4%
New Hampshire	60,283	95	0.2%
New Jersey	487,335	48	0.0%
New Mexico	79,678	4,266	5.4%
New York	1,159,540	4,067	0.4%
North Carolina	424,935	13,887	3.3%
North Dakota	34,685	2,020	5.8%
Ohio	477,699	6,883	1.4%
Oklahoma	147,543	10,433	7.1%
Oregon	174,151	2,385	1.4%
Pennsylvania	569,679	8,350	1.5%
Rhode Island	49,234	6	0.0%
South Carolina	164,445	2,204	1.3%
South Dakota	39,893	5,648	14.2%
Tennessee	254,806	2,673	1.0%
Texas	1,207,494	28,832	2.4%
Utah	114,538	1,889	1.6%
Vermont	25,620	1,590	6.2%
Virginia	423,860	2,550	0.6%
Washington	340,460	3,807	1.1%
West Virginia	64,642	670	1.0%
Wisconsin	248,265	12,080	4.9%
Wyoming	38,527	1,389	3.6%
National Total	14,448,494	289,216	2.0%

**SECTION 7: EFFECTS OF RELOCATION OF ANIMAL AGRICULTURE**

In addition to calculating the importance of animal agriculture in each state, it is also instructive to examine the magnitude of changes that can occur in a state economy over time. In the database for each state, we also calculate the economic impacts of the change in output between 2000 and 2010. This could in principle be misleading, because dollar sales figures are influenced by price changes as well as by animal numbers. We therefore used unit values to calculate the output changes, applying our multipliers to the change in production volumes between 2000 and 2010. Note also that our multipliers are for categories that aggregate products (e.g., poultry and egg production, and hogs and pigs and “other”). Thus, for example, a decline in aquaculture or sheep can be masked by an increase in hogs. The table on the next page shows the total impact for each state. (The impact for each separate livestock segment is shown in the menu-driven Excel database for all the states.)

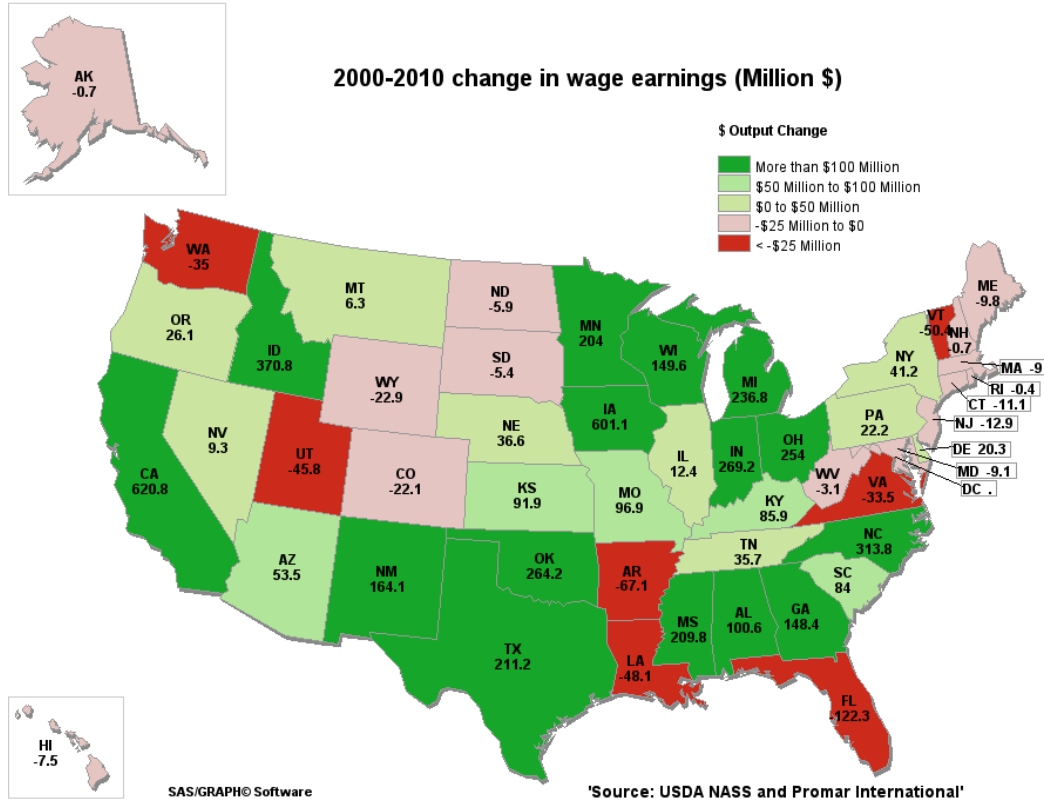
Overall, the increased value of animal agriculture production in the 50 states resulted in more than \$22 billion in total economic output when one sums up the state numbers. This produced a \$4 billion increase in household incomes and 129,000 jobs. About 70% of this growth was in states west of or bordering the eastern shore of the Mississippi, but growth now looks to be more evenly distributed around the country. The main areas of decline have been New England and some of the mountain and northern plains states, as illustrated in the maps below.



**Economic Impact of Change from 2000 to 2010**

State	Output (\$000)	Earnings (\$000)	Employment (jobs)	Income Tax (\$000)
Alabama	579,420	100,593	3,382	25,480
Alaska	-4,394	-652	-27	-132
Arizona	277,125	53,492	1,709	13,303
Arkansas	-388,553	-67,078	-2,882	-18,332
California	3,244,117	620,836	17,271	185,506
Colorado	-1,282,066	-227,068	-9,845	-56,676
Connecticut	-66,595	-11,133	-500	-2,820
Delaware	141,515	20,257	534	5,526
Florida	-683,534	-122,338	-4,527	-24,871
Georgia	815,094	148,424	3,610	39,080
Hawaii	-40,368	-7,494	-359	-2,142
Idaho	2,137,373	370,756	12,504	104,294
Illinois	62,839	12,373	342	2,887
Indiana	1,546,857	269,216	10,202	63,885
Iowa	3,579,406	601,059	19,157	176,170
Kansas	545,959	91,846	4,495	24,596
Kentucky	519,064	85,909	2,613	22,448
Louisiana	-269,130	-48,100	-1,958	-12,665
Maine	-54,644	-9,818	-483	-2,668
Maryland	-48,615	-9,073	-509	-2,275
Massachusetts	-51,012	-8,950	-334	-2,294
Michigan	1,283,856	236,784	10,745	58,438
Minnesota	1,160,877	204,015	6,521	55,859
Mississippi	1,257,076	209,756	7,970	53,131
Missouri	592,020	96,902	3,160	25,514
Montana	38,231	6,287	309	1,712
Nebraska	131,009	19,452	589	5,285
Nevada	55,788	9,334	451	1,898
New Hampshire	-4,121	-705	-33	-179
New Jersey	-75,203	-12,873	-586	-3,328
New Mexico	936,040	164,123	6,176	41,408
New York	243,958	41,148	1,483	11,184
North Carolina	1,761,497	313,785	8,930	88,111
North Dakota	-27,812	-5,895	-213	-1,401
Ohio	1,404,033	253,961	10,820	62,066
Oklahoma	1,542,771	264,147	10,114	68,229
Oregon	132,061	26,080	967	7,649
Pennsylvania	128,993	22,183	358	5,191
Rhode Island	-2,383	-398	-17	-109
South Carolina	488,751	83,949	2,951	22,943
South Dakota	-46,108	-5,413	-136	-1,100
Tennessee	219,729	35,675	1,006	9,393
Texas	1,044,824	211,193	3,412	42,936
Utah	-266,558	-45,820	-2,087	-11,606
Vermont	-308,867	-50,348	-1,708	-14,742
Virginia	-196,862	-33,496	-1,201	-8,736
Washington	-208,515	-34,939	-1,098	-7,103
West Virginia	-16,707	-3,111	-132	-819
Wisconsin	802,865	149,596	6,502	40,137
Wyoming	-158,616	-22,871	-950	-4,650
<b>National</b>	<b>22,472,484</b>	<b>3,995,559</b>	<b>128,700</b>	<b>817,267</b>

As far as change in total economic impact from animal agriculture goes, the big winners are Iowa, California, Idaho, North Carolina, Oklahoma, Indiana, Ohio, Mississippi, and Minnesota. States with substantial declines include Colorado, Florida, Vermont, Louisiana and Utah. The earnings,



employment, and tax effects are similar.

In terms of employment, growth states due to animal agriculture include Iowa, California, Idaho, Indiana, Michigan, Ohio and Oklahoma with gains of more than 10,000 (top chart on next page). States losing a significant number of jobs due to contraction in animal agriculture include Arkansas, Colorado, Florida and Utah.

The long-term impacts of animal agriculture changes on taxes are shown in the bottom chart. Most states show an increase in tax receipts; California, Iowa, North Carolina, and Idaho show the largest growth. Colorado, Arkansas, Florida, Louisiana, and Vermont showed the largest absolute declines.

