Ethanol Production: Economic Impact on Meat and Poultry Consumption, Value, and Jobs

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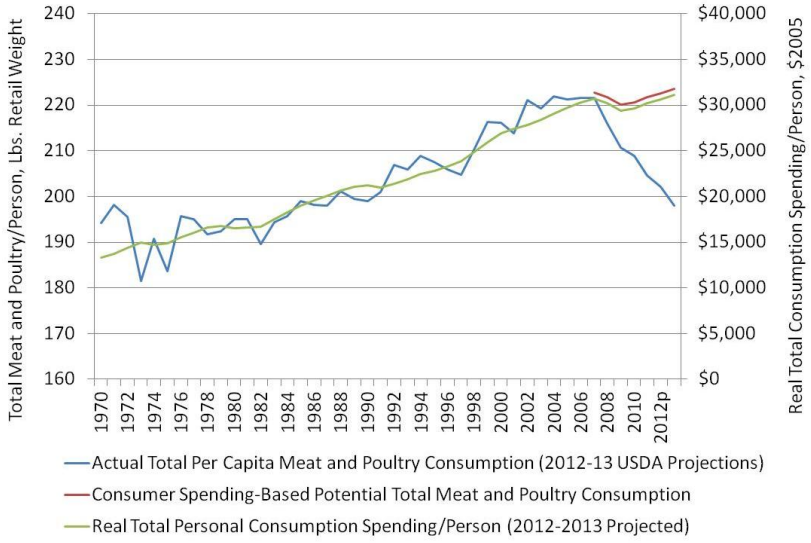
Background: The ongoing debate on "Food vs. Fuel" that has surrounded the implementation of the 2007 corn-based ethanol blending mandates (the RFS) has centered on the increasing cost of feedstuffs. The debate seems to assume that higher feed costs and food prices are simply passed along to consumers. Largely ignored in the debate has been the effect of increased use of corn for ethanol production on production, and consumption, of meat and poultry. The post-2006 record on U.S. meat and poultry consumption reveals that the economic impact of increased ethanol production goes far beyond higher feed costs and meat prices. In fact, the effects on value of lost meat and poultry production may be at least as great as feed cost increases, and has caused harm to the U.S. economy.

Measuring Lost Consumption: Effects of increased ethanol production on meat and poultry consumption are not as immediately obvious as the post-2006 tripling of corn prices, and resulting sharp increases in other feed commodity prices. To see the meat and poultry consumption effect you have to look at potential demand versus meat and poultry supplies that were actually produced and consumed. When potential and actual consumption are compared, a large gap emerges.

Measuring potential meat and poultry consumption is not difficult. One economic factor, per capita, constant-dollar (real), total consumer spending, is the major demand driver for per capita U.S. total meat and poultry consumption. The graph below shows the 1970-2007 relationship between per capita real total consumer spending and meat and poultry consumption, and the large, and growing, gap that emerges after 2006.

Potential and Actual Per Capita Meat and Poultry Consumption[1]



[1] Data Sources: U.S. Bureau of Economic Analysis, $2005 Per Capita Personal Consumption Expenditures; USDA: Per Capita Total Meat and Poultry Consumption. Latest data available are as of October 26, 2012.

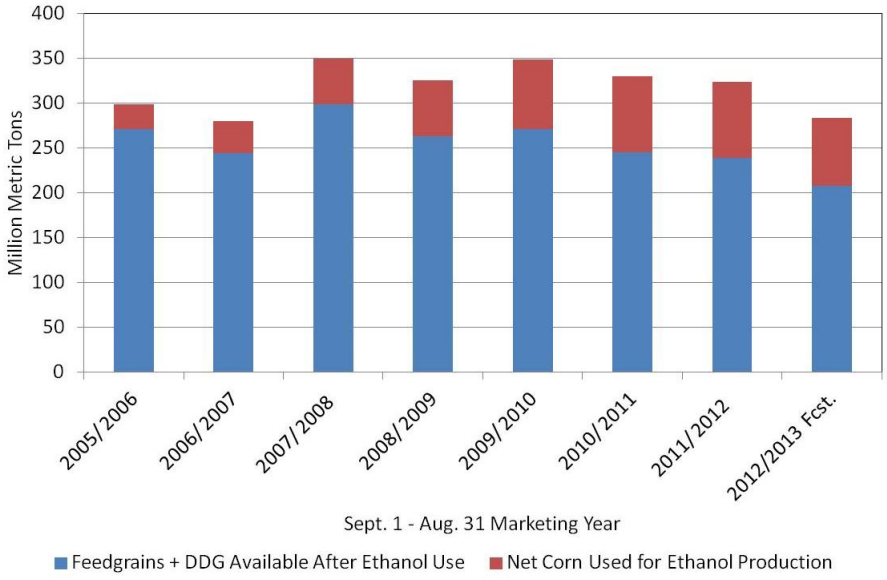
Real per capita consumer spending accounts for 88% of the variation in per capita meat and poultry consumption. On average, each $1,000 real spending increase was associated with a 2.0 pound increase in per capita total meat and poultry consumption.

The red line in the graph above is projected meat and poultry consumption based on real consumer spending for 2007 to 2013. By 2011, real consumer spending had fully recovered from the 2008-2009 recession. Meat and poultry consumption for 2012 and 2013 would be expected to be modestly above recession levels, and all time record highs. That obviously has not happened. Something has caused the long term relationship between real consumer spending and demand-driven meat and poultry consumption to depart very significantly from its long-standing historic pattern.

While there is some variability around the 1970-2006 "fit" between consumer spending and meat and poultry consumption, it is obvious that something changed dramatically after 2006. That change was the rapidly increasing demand for corn for ethanol production, partially driven by the Renewable Fuels Standard (RFS). The use of corn for ethanol production has increased much faster than corn and total feedgrain production. The result is that meat and poultry producers simply do not have enough feed available to fully supply potential demand, and the cost of that feed has more than doubled.

The Meat and Poultry Consumption Reduction Driver: The blue bar in the chart below shows total feedgrains (mainly corn, but also sorghum, barley and oats) plus dried distiller's grains (DDG) production, minus the net use of corn for ethanol production. The blue bar is the amount of feedgrains and DDG available for all other uses (mainly food production and exports) after ethanol production. Net ethanol use is total corn used for ethanol, minus DDG production, estimated at 18 pounds per bushel of corn used to produce ethanol. The combined blue and red bars are total U.S. feedgrains production.

Feedgrains and DDG Production, Net of Ethanol Corn Use[2]

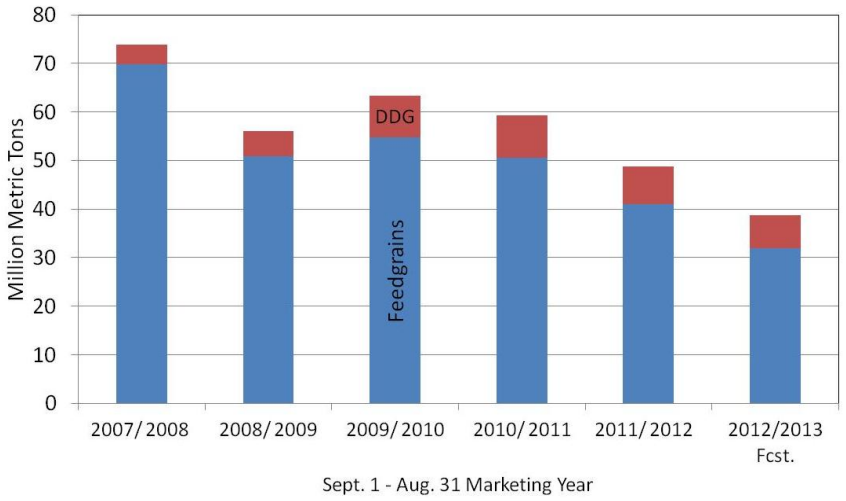


Total U.S. feedgrains production peaked in 2007, and again in 2009, and has been declining since. The availability of feedgrains production for uses other than ethanol peaked at about 300 million tons in the 2007/2008 marketing year, and will be only about 207 million tons in 2012/2013. Without sufficient feed supply, meeting potential meat and poultry demand has proven to be physically impossible.

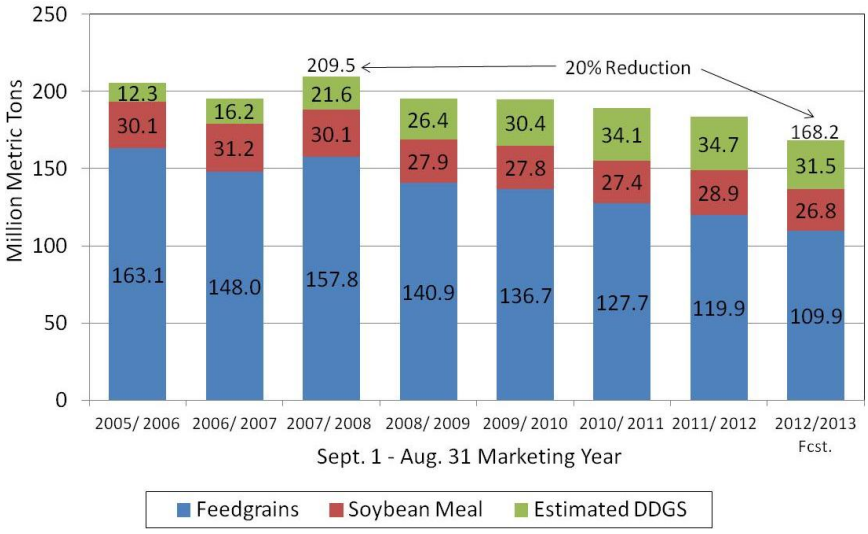
[2] Data Sources: USDA: Feedgrains production and total corn used for ethanol production; FarmEcon LLC estimate of DDG production.

Effects on Feed and Export Volumes and Prices: Forced by ethanol production increasing faster than feedgrain production, corn and other feedgrains used for both animal feed and export volumes have been squeezed down sharply since 2007. As shown in the next two graphs, feedgrain exports (including DDG exports) have declined from about 73 million metric tons in 2007/2008 to less than 40 million forecast by USDA for 2012/2013. Feed availability and use, including the three major ingredients of feedgrains, DDG and soybean meal, has declined 20% since 2007.[3]

Feedgrain and DDG Exports



Feedgrain, DDG and Soybean Meal Feeding

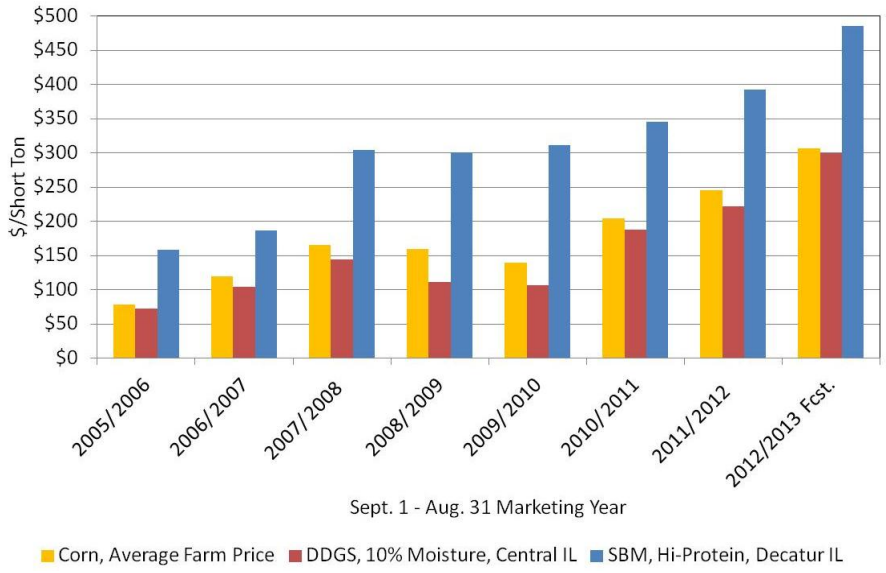


Along with the decline in feed ingredient availability, increased corn demand for higher ethanol production has also caused grain and other feed ingredient prices to increase dramatically since 2006. Higher prices simply reflect the lack of sufficient corn and other feedgrain production available to maintain feed and export volumes in the face of rapidly increasing ethanol production, spurred on by RFS mandates. Higher prices are needed to ration the increasingly limited feed supply. Increasing soybean meal (SBM) prices reflect increased acres needed for corn to produce ethanol have made it

[3] Data Source: USDA

difficult to produce more soybeans. Prices for all ingredients are forecast to be sharply higher for 2012/2013 due to this year's drought, and an increasing 2013 ethanol mandate.

Major Feed Ingredient Prices[4]



Net Value of Lost Production: In the face of combined declining feed supplies and rising feed costs, meat and poultry production had to fall far short of potential demand historically dictated by rising real total consumer spending. The table below shows the effect of the shortfall shown in the first graph, translated into economic value at each year's weighted average retail meat and poultry prices.

If corn and other feedgrain production had been sufficient to supply both food and ethanol use, the meat and poultry losses would not have occurred, or would have been negligible! In addition to these losses, the U.S. also lost substantial corn export volume, and value, as exports collapsed.

Net Value of Lost Meat and Poultry Consumption at Average Retail/Foodservice Value

Item	2007	2008	2009	2010	2011	2012	2013 Fcst
Actual Meat and Poultry Consumption, Lbs./Capita	221.7	216.0	210.8	208.9	204.6	202.2	198.0
Spending-Based Potential Consumption, Lbs./Capita	222.7	221.8	220.1	220.7	221.7	222.7	223.6
Potential-Actual Gap, Lbs./Capita	1.1	5.8	9.3	11.8	17.1	20.5	25.6
U.S. Population, Millions	301.7	304.5	307.2	309.8	312.0	314.5	316.0
Total Retail Weight Gap, Million Lbs.	322	1,775	2,852	3,649	5,339	6,434	8,087
Average Retail/Foodservice Value/Lb., 2007	$3.78	$3.78	$3.78	$3.78	$3.78	$3.78	$3.78
Average Retail/Foodservice Value/Lb., Actual	$3.78	$3.94	$3.93	$4.06	$4.38	$4.62	$4.89
Average Consumer Total Meat and Poultry Spending	$839	$817	$797	$790	$774	$765	$749
Retail/Foodservice Value Loss, $Million	-$1,217	-$6,716	-$10,791	-$13,808	-$20,201	-$24,341	-$30,599

The weighted average retail/foodservice value per pound is estimated based USDA and Bureau of Labor Statistics statistical reports. The average value was computed as estimated total retail and foodservice spending on meat and poultry divided by total retail weight consumption from USDA. Foodservice value includes both the value of meat and poultry and pro-rated value of the service component of foodservice value-added. For 2011 the retail average value was $3.17 per pound, the foodservice value, including a pro-rates service value, was $7.17 per pound. The 2013 weighted average price per pound is estimated at 6% higher than 2012.

[4] Data Source: USDA

In 2007 and 2008, while ethanol consumption and the RFS were at lower levels, and corn production was more sufficient, there were relatively small net losses in total retail value. However, since 2009, the increasing squeeze on corn supplies has resulted in much higher potential value losses for meat and poultry. If corn production had been sufficient to supply both ethanol and potential meat and poultry demand, up to $24.3 billion of 2012 meat and poultry value could have been created.

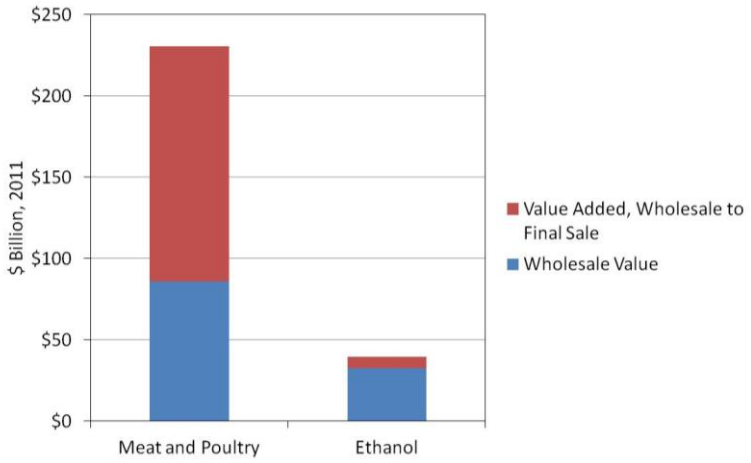
However, with corn in very short supply, from 2007 to 2013 the average consumer will see a 29% overall meat and poultry price increase, experience an 11% reduction in consumption, and pay 15% more for less of these foods. Paying more for less reduces the standard of living of American consumers.

Economic Value Creation - Meat and Poultry versus Ethanol: Meat and poultry production results in enormous value-added, jobs-producing, economic activity past the basic production and wholesale value stage. Ethanol, on the other hand, is sold at retail gas stations with little post-production value-added, mainly transportation and relatively minor marketing margins. The value-adding activity in meat and poultry directly and indirectly supports approximately 11.5 million direct-employment jobs in food processing, retailing and food service. Of that total, according to the Bureau of Economic Analysis GDP reports, about 524,500[5] are directly employed in meat and poultry production and processing alone. Tyson Foods and Smithfield alone have a combined 161,000 direct employees, and that does not include their approximately 9,000 independent contract growers.

According to a 2011 study funded by the Renewable Fuel Association, there were only 12,500 direct employees involved in ethanol production[6].

The chart below summarizes the vast difference between the value-added profiles of meat and poultry versus ethanol.

Wholesale Value and Total Direct Final Sales Value: Ethanol versus Meat and Poultry, 2011



Netting out ethanol's DDG production that is cycled back into meat and poultry feed, the ethanol industry still uses about 75% as much corn as is used to produce meat and poultry. From the 2011 corn crop the ethanol industry used a total of 127.0 million metric tons of corn. That total use produced about 42.5 million metric tons of DDG. Of the total DDG production, about 7.5 million tons was exported. Net DDG supply available for U.S. feed was 35.0 million tons. The net corn used for ethanol production was 84.5 million tons (127.0-42.5).

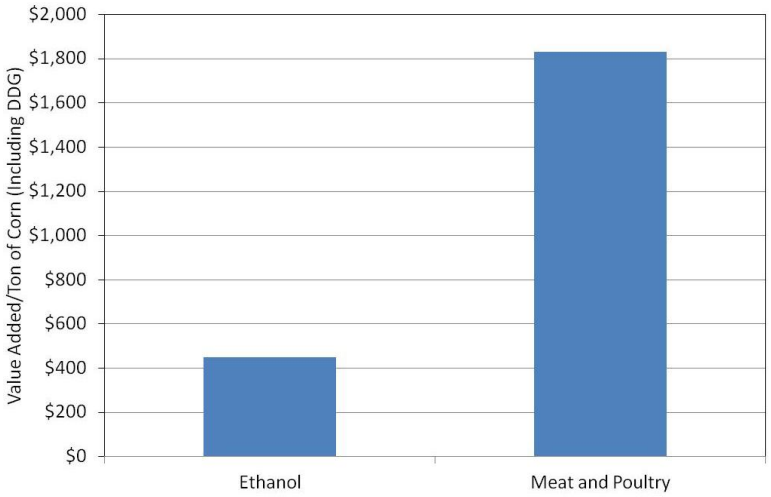
[5] Data Source: American Meat Institute, The Meat and Poultry Industry Economic Contribution Study: 2009
[6] Data Source: Renewable Fuels Association, Contribution of the Ethanol Industry to the Economy of the United States, 2011.

U.S. meat and poultry producers used about 100.8 million tons of corn and 25.0 million tons of DDG to produce beef, pork, broilers and turkeys; a total of 125.8 million tons. Additional corn and DDG was used for feeding dairy cows, layers and other minor feed users.

A metric ton of corn and DDG (2011 ex-farm/ethanol plant cost of about $250) employed to produce meat and poultry created a final product value of $1,832. A ton of corn used to produce ethanol created about $448 of final ethanol product value, about one-fourth the value of meat and poultry (next chart). Every ton of corn forced into ethanol production by the RFS reduced final product value (and thus GDP) by $1,384. The magnitude of the total reduction in value is indicated by the failure of meat and poultry production to meet the potential demand, as shown in the first graph on page 1.

2011 Value of End Product Produced per Ton of Corn[7]

(Includes Corn-Derived DDGs Fed to Livestock and Poultry)



The ethanol industry has also claimed DDG production as value-added to the ethanol industry[8]. This is not correct. In animal feeding, DDGs replace a small portion of the total corn consumed to produce ethanol. Absent ethanol production, the corn used to produce DDG would have gone to feed, not ethanol production. DDG is an intermediate, not a final, product. Its value is appropriately included in the meat and poultry value chain.

Given these vast differences in end product value, why has so much corn gone into ethanol production? Market forces played a role as the value of fuels increased relative to the value of food production. The RFS also played a significant role. One can argue the relative importance of market forces versus the RFS mandate as drivers of higher ethanol production. However, market economics on a level playing field do not permit this kind of gross misallocation of resources. Only a government law that mandates the use, and thus production, of ethanol makes possible the recent, large, diversions from high value to low end product value production. As corn production has fallen in recent years, the role of the RFS in forcing corn diversion to ethanol production has increased.

Absent the RFS program there would likely have been an increase in ethanol production, but at a slower, more sustainable, rate more in line with corn production. With the RFS continuing to increase in the face of limited corn production capacity further, and much larger, economic losses are certain. Given USDA

[7] Data Source: USDA

[8] Data Source: Renewable Fuels Association, Contribution of the Ethanol Industry to the Economy of the United States, 2011.

forecasts for 2013 meat and poultry production, the meat and poultry production value loss for next year will balloon to about $30.6 billion. Corn is in such short supply that 2013 ethanol production and corn exports are also expected to decline, and with it economic value, further increasing the net loss to the economy.

Direct versus Indirect and Induced Jobs: Economic activity in any sector will create activity in other sectors. Indirect jobs are created when, for example, a construction project in the meat processing sector creates jobs for the construction sector. For meat and poultry, indirect jobs are also created in the very large food wholesaling, retailing and foodservice sectors. Induced jobs are created when direct employees in a sector spend their income for goods and services in other sectors. For example, when an ethanol plant employee visits a doctor, jobs are supported in the medical care sector.

Drawing the line on what to count and not to count in indirect and induced jobs is always arbitrary. Direct jobs are the only ones we can count with a high degree of precision.

Impact on Direct Post-Farm Processing Jobs: If we examine corn use numbers in the context of post-farm processing sector direct jobs that are part of food versus fuel value-added chains, there is a dramatic difference. Each million tons of corn plus DDG used to produce meat and poultry supports 4,169 direct jobs in processing alone (524,500 ÷ 125.8). The same number for ethanol processing is 147.9 direct jobs (12,500 ÷ 84.5), only 3.5% as many per ton as meat and poultry processing.

Direct Jobs per Million Tons of Corn/DDG Use and Indirect/Induced Jobs Multipliers
Ethanol versus Meat and Poultry Processing

Item	Value
Direct Jobs in Ethanol Processing Sector	12,500
Direct Jobs in Meat and Poultry Processing Sector	524,500
Million Tons of Corn Used in Ethanol Production	84.5
Million Tons of Corn and DDG Used in Meat and Poultry Production	125.8
Direct Jobs per Million Tons of Corn and DDG Used in Ethanol Processing Sector	147.9
Direct Jobs per Million Tons of Corn and DDG Used in Meat and Poultry Processing Sector	4,169.3
Indirect and Induced Jobs in Ethanol Processing	388,900
Assumed Ethanol Processing Jobs Multiplier	31.1
Indirect and Induced Jobs in Meat and Poultry Processing	1,269,500
Assumed Meat and Poultry Processing Jobs Multiplier	2.4

Direct employment in meat and poultry processing is over 29 times the number directly employed in ethanol processing. Put another way, for every direct job at risk in the ethanol industry, there are more than 29 direct jobs at risk in meat and poultry value-added sectors. Or, put another way, corn used in meat and poultry production creates more than 29 times the number of direct jobs than the same amount of corn used in ethanol production. Unintended consequences of the RFS are putting large numbers of current and potential food sector jobs at risk in exchange for minimal job gains in ethanol production and value.

The ethanol study claimed 31.1 indirect and induced jobs per direct employment job in the ethanol industry. The meat and poultry study claimed a more modest 2.4 jobs. Given the vastly lower post-processing value added to ethanol versus meat and poultry, the higher jobs impact multiplier for ethanol is extremely dubious.

Impact on Indirect and Induced Post-Farm Jobs: As shown in the table above, both meat and poultry and ethanol production affect many jobs outside their direct value chains. Indirect jobs are those

that support the activities of the value adding process, but are defined as belonging to other economic sectors. These jobs include equipment and services suppliers, construction, hired transportation, travel, government employees, and a myriad of other occupations that support the direct employment sector. Induced jobs are those supported by the income earned by direct and indirect jobs holders. Induced jobs span the entire economy.

The methodology used to estimate the number of indirect and induced jobs is, by its nature, somewhat arbitrary. In theory, all economic activity has some degree of impact on all other economic activity. Some of those impacts are major, and easily observable. Construction work on a meat processing or ethanol plant obviously causes meaningful impact on the local construction sector, and its suppliers. A million gallons of ethanol produced in the U.S. has a theoretical, but not meaningful or measurable, impact on European grain production. Drawing the line between meaningful and negligible impacts will always involve judgment on where to stop counting. However, these impacts are very real.

Both meat and poultry groups and the ethanol industry have published recent indirect and induced job impact estimates. A 2011 study sponsored by the Renewable Fuels Association claimed 401,600 direct, indirect and induced jobs are associated with ethanol production[9]. The Renewable Fuels Association estimate implies that a million tons of corn used in ethanol production affects 4,750 jobs (401,400 ÷ 84.5).

According the 2009 American Meat Institute (AMI) study, 1,794,000 direct, indirect and induced jobs are involved in meat and poultry production and processing[10]. Meat and poultry production and processing system touches 14,256 jobs per million tons (1,794,000 ÷ 125.8), or 3.0 times the number of ethanol jobs. Even accepting very dubious ethanol industry indirect and induced jobs claims, corn used to produce meat and poultry creates significantly more employment.

A 2012 study for the U.S. poultry (broilers, turkeys and eggs) industry, using the same model employed by Renewable Fuels, estimated 327,400 direct jobs and a total of 1,337,030 direct and indirect jobs.[11] The total number of jobs affected is similar to the AMI study. Many of those jobs are in the processing, retailing and foodservice sectors that overlap both poultry and other meats. This study showed a direct economic impact of $102.5 billion, compared to the $230.5 billion of this study. The poultry industry impact estimate includes jobs and final value (over $11 billion) for table eggs, a product not included in this study.

Evidence of Economic Damage from Employment Statistics: One symptom of reduced meat and poultry consumption shows up in recent declines in food sector jobs. From 2002 to 2007 direct employment, on a full time equivalent (FTE) basis, in food production, processing, retailing and foodservice increased by 751,000. From 2007 to 2011, employment in the same area declined by 195,000 FTE jobs. The net swing in job creation was 941,000 jobs. This change in job creation is partially attributable to the declines in meat and poultry consumption in 2007-2011 versus 2002-2007. The total of 90,200 direct employment jobs in ethanol production do not even come close to the 2007-2011 food industry job losses.

[9] Data Source: Renewable Fuels Association, Contribution of the Ethanol Industry to the Economy of the United States, 2011.
[10] Data Source: American Meat Institute, The Meat and Poultry Industry Economic Contribution Study: 2009
[11] Data Source: The Poultry and Egg Industry Economic Contribution Study: 2012

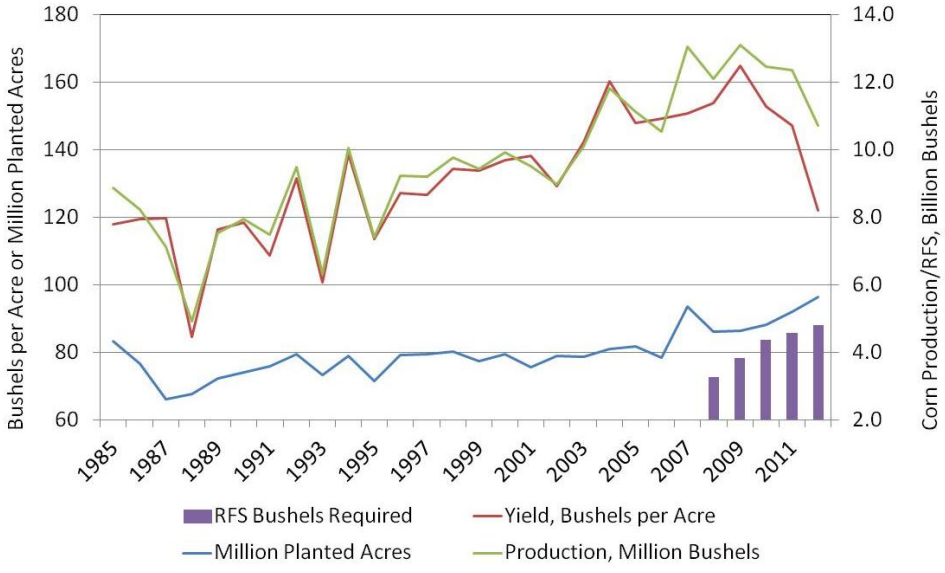
Full Time Equivalent Direct Employment in Food-Related Sectors (000s)[12]

Industry	2002	2007	2011
Agriculture, Farming	747	643	643
Food processing	1,689	1,622	1,575
Food stores	2,558	2,527	2,454
Food Service	6,718	7,671	7,596
Total Food Related FTE Employees	11,712	12,463	12,268
Net Change		**751**	**(195)**

Corn Production is Falling Far Short of Total Market Needs: As already implied, the fundamental issue in the 2007-2013 loss of value of meat and poultry consumption is the lack of feed supply required to meet potential feed, food, export and ethanol demand. The squeeze put on corn exports and the feed supply needed to produce meat and poultry is painfully obvious in the prior tables and graphs. The 2012 corn crop would have needed to be at least 14 billion bushels to supply the ethanol mandate, potential meat and poultry demand, and restore exports to the 2007 level. Instead, we only produced 10.7 billion bushels, almost a 25% shortfall. While it is true that the 2012 drought severely damaged the corn (and soybean) crop, even with average weather we would have fallen short of what was needed to supply all potential demand.

The chart below shows the 1985-2012 USDA record of corn acreage, yield and production. Two things are obvious from the graph; ethanol use is increasing while corn production has declined.

Corn: Acreage, Yield, Production, and RFS-Required Use



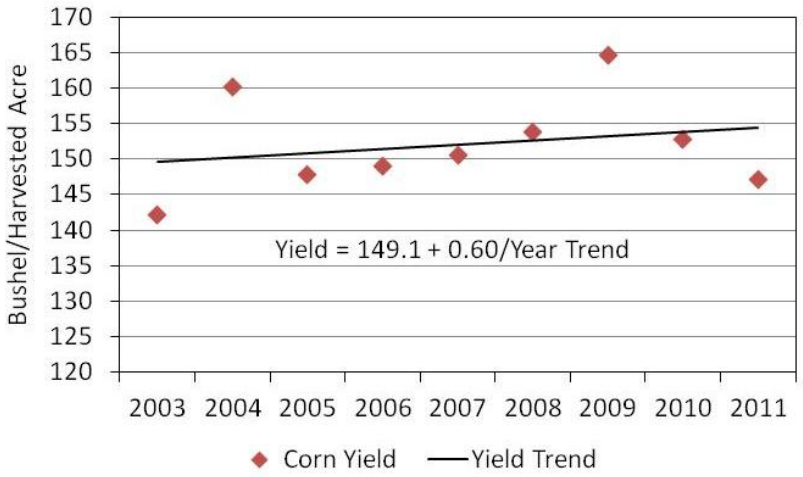
Corn production peaked at about 13 billion bushels in 2007 and 2009, and has fallen every year since 2009. The entire production decline has been due to yields. Weather has played a role, but as acreage has increased, corn is moving into less suitable areas, and more continuous corn is being planted. Both

[12] Data Source: Bureau of Economic Analysis: National Income and Product Accounts Tables

factors lower yield potential. The bottom line is that at the same time as the increasing RFS and ethanol use of corn has severely squeezed corn supplies available to all other users.

By 2015 it will take a corn crop of at least 15 billion bushels to supply ethanol mandate, potential meat and poultry demand, and restore exports to pre-2007 levels. We have never produced over 13 billion bushels, and in recent years only 10 to 12.5 billion. The trend in corn yields since 2003 is not encouraging. Ignoring the 2012 drought disaster, yields have only averaged a 0.6 bushel per acre increase. Also, that modest trend is not statistically different from zero. The actual yield has fallen below trend in 6 out of the last 9 years. Including 2012, actual yield is below trend 7 out of the last 10 years.

2003-2011 Corn Yields and Trend



The bottom line is that the corn-based ethanol RFS is arbitrarily set far above our ability to reliably produce its feedstock. Also, as shown above, corn yields are highly variable, but there is no offsetting flexibility in the RFS mandates on corn use for ethanol production. U.S. RFS policy is also fatally flawed in that it attempts to support increasingly high levels of corn use for ethanol, regardless of weather and the needs of other corn users.

The drought of 2012 only serves to bring short term issues of this wasteful policy further into the spotlight. Longer term issues of corn production potential and volatility go well past this year, and next.

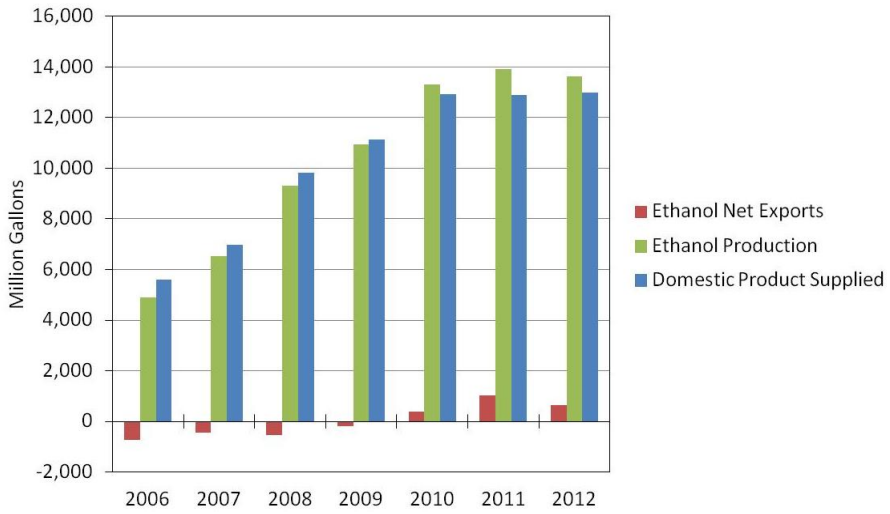
Ethanol Exports - Evidence of Over-Production, and Policy-Induced Damage to Meat and Poultry Producers: Increased ethanol production and the RFS were supposed work together to replace U.S. gasoline consumption and production. However, because ethanol has never been competitive with gasoline on a cost per-BTU basis, it has been essentially impossible to create a meaningful market for blends higher than E10.

Even the E15 market has been slow to develop. A combination of vehicle compatibility issues, and the high cost of ethanol, has prevented any significant adoption of this higher blend.

The situation where ethanol sales in blends higher than E10 are not economically feasible has been labeled the “blend wall” by the ethanol industry. Theoretically, with total finished gasoline sales of about 135 billion gallons per year, the blend wall should be reached at about 13.5 billion gallons of ethanol sales. that has already happened.

If we cannot effectively market ethanol above the E10 level in the U.S., the excess production has to be exported. Some industry analysts have predicted that the blend wall will not be reached until 2013 or 2014. However, the statistical evidence is that we effectively hit the blend wall as early as 2010 when we first became a net ethanol exporter (next chart).

U.S. Ethanol Production, Net Exports and Domestic Supply[13]



Net ethanol exports increased sharply in 2011. In 2012, the available January-July data extrapolated to the entire year show a small decline in production, a corresponding small decline in net exports, and essentially no change in ethanol supplied for domestic blending. This is precisely the pattern that is predicted when the blend wall is reached. As long as ethanol is non-competitive on a per BTU basis, any production increase in excess of the blend wall will largely be sold outside the U.S.

The RFS, at least for now, has reached its goal of saturating the available U.S. gasoline market. Ethanol use in both 2011 and 2012 will be about 13 billion gallons. RFS requirements in excess of that level will be exported. The corn that goes into excess ethanol production, and thus ethanol exports, will not be available to U.S. meat and poultry producers.

The end product value of that corn used for ethanol exports is much higher in meat and poultry production than it is in ethanol production. In 2011, the last year with complete data, we exported on a net basis 1.023 billion gallons of ethanol. Net of the DDG production that was supplied for animal feed, the ethanol exports consumed about 250 million bushels, or 6.3 million metric tons, of corn.

Transformed into meat and poultry products, 6.3 million tons of corn could have produced end products worth about $11.5 billion. The value of the ethanol net exports was about $2.8 billion. The difference, about $8.7 billion, is potential domestic meat and poultry product end value that was not created due to the export of corn in the form of ethanol.

Corn used for the 2011 net exports of ethanol are an important component of the $20.2 billion in lost meat and poultry production end value shown in the table on page 4. Absent the RFS mandate, it is highly likely that 2011 ethanol exports would have been smaller, and more corn would have been available to produce food for domestic use.

[13] Data Source: EIA Monthly Energy Review. 2012 is January-July monthly data extrapolated for the calendar year.

Past 2012, the RFS continues to increase. Unless there are dramatic ethanol cost and price reductions, essentially all of that increase in the RFS will have to be exported. Those exports will further reduce domestic and export corn availability, and cause further harm to the U.S. economy.

Ethanol's Food Price Effects are Global, Making the U.S. Less Secure: The biofuels policy and the RFS were supposed to make the U.S. more secure by partially insulating us from oil imports. Instead, the grain being used by the U.S. ethanol industry has been enough to significantly add to global food price instability and food insecurity, especially in less developed countries. Food price instability and insecurity has fueled political crises around the world, making the U.S. less secure, not more.

The New England Complex Systems Institute (NECSI) has published a recent paper that shows the relationship between global food prices and political instability[14]. The paper demonstrates the relationship between major political upheaval, the use of corn for U.S. ethanol production, and the speculative forces that were triggered by price instability. These political events are threatening U.S. interests in the Middle East, Africa and Asia.

According to their study:

> "In a paper published in September 2011, we built a quantitative model that, for the first time, was able to precisely match the monthly FAO food price index over the last 8 years. The model showed that, of all the factors proposed to be responsible for the recent dramatic spikes and fluctuations in global food prices, rapid increases in the amount of corn-to-ethanol conversion and speculation on futures markets were the only factors which could justifiably be held responsible. Each of these causes is due to particular acts of government intervention or deregulation. Thus, while the food supply and prices may be vulnerable to global population increases and environmental change, the existing price increases are due to specific governmental policies. In order to prevent further crises in the food market, we recommended the halting of government support for ethanol conversion and the reversal of commodities market deregulation, which enables unlimited financial speculation."

NECSI, international food aid agencies, and financial institutions, have all called on the U.S. to reduce or eliminate the RFS, and ethanol production, in order to cool overheated grain markets. Failure to take action may result in another round of political issues, and an even less secure future.

Summary: Studies from both the ethanol and food sectors, all using the same basic methods, show that the economic and jobs impact of the meat and poultry sector is many times that of ethanol production. When corn supplies decline, diverting an essential input such as corn from value-adding meat and poultry production, and into ethanol production, will reduce net economic activity, incomes and jobs. Recent evidence from per capita meat and poultry consumption and jobs data show that reduced supplies of feed have, in fact, damaged the U.S. economy. With corn supplies reduced by drought, economic damage will increase significantly in 2013.

The fundamental underlying cause is that corn production has fallen far short of potential food use, exports and the demands of the RFS mandate. The RFS mandate has artificially forced the adjustment to lower corn production onto food producers and export customers. Unless the RFS mandate is reduced or eliminated, economic damage will continue to grow as the RFS grows.

Unless there is a long term, unprecedented, and very unlikely, increase in corn production, and reduced corn production volatility as well, food and export users will continue to bear the brunt of limited and

[14] NECSI. The Food Crises: The US Drought. July 23, 2012

variable U.S. corn availability. Consumers will continue to pay artificially high food prices, job creation will suffer, and potential economic value will be lost.

Another alternative would be to use feedstocks other than corn to produce biofuels. Natural gas has been suggested, and deserves serious examination. Natural gas is abundant, produced in surplus within the U.S., and can be used to produce a variety of liquid fuels. Why are we damaging our food supply capacity and security interests when there we have the means within our borders to produce both more vehicle fuel, and more food?

Conclusions: Despite near-record 2011-2012 corn acreage, **c**orn production is falling well short of the potential use for meat and poultry production, exports and RFS demands. The RFS, by favoring access to corn of relatively low value-added ethanol production at the expense of meat and poultry, is reducing economic welfare, and economy-wide job creation potential.

Large net ethanol exports have shown that there is a limited domestic market for U.S. fuel ethanol. Those net exports have reduced the supply of corn need to support U.S. meat and poultry consumption, and resulted in large net losses in U.S. economic activity. Further scheduled increases in mandated ethanol production will likely lead to higher net ethanol exports, further reducing our ability to add value in meat and poultry production.

It is time to step back and take a hard look at the reality of the 2007 RFS schedule versus corn production capacity and the welfare of the country. By diverting increasingly limited corn production into low value-added ethanol production and exports, we have dramatically reduced the actual and potential volume of high value-adding, job producing, food production. The RFS policy is costing the country lost income, jobs, and tax revenues.

We need to eliminate or permanently lower the corn-based RFS, or find alternative feedstocks to produce, at much lower cost fully competitive with gasoline, the biofuels required by the RFS. If the RFS program is not eliminated, we need to put into place a mechanism to automatically adjust the RFS to accommodate natural disasters such as the 2012 drought.

As was the case with biofuels tax credits, the alternative of doing nothing will likely erode support for the entire RFS program to the point it will lose political backing, and be abandoned.