Economic Impacts of Agriculture in Eight Northeastern States

A Report for Farm Credit East

By

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EXECUTIVE SUMMARY

Scope and Methodology

At the request of Farm Credit East (FCE), the purpose of this report is to document and ascertain the significance of the agriculture sector in the economies of eight Northeastern states: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. [1] Agriculture is defined as encompassing agricultural production (i.e., crops, livestock, fisheries and forestry) and agricultural, forestry and fishery/seafood processing that is closely tied to the underlying production sectors.

The study excludes the landscape service sector from the main analysis, but because it is significant in the environmental horticulture industry, it is included separately as a special sector.[2] Also excluded are secondary processing sectors that do not use a state's agricultural and forestry production such as bakeries and soft drinks manufacturing, which are economically important but, if included, would overstate economic impacts attributable directly to a state's agriculture sector. Finally, this study does not include the value of ecosystem services, open space, and other non-market benefits derived from agriculture, which are significant but beyond the scope of this study.

Because the agriculture sector purchases goods and services from other industries in their states and hires local labor, its economic impact cascades throughout the entire state economy, resulting in a "multiplier" or economic stimulus effect when spillover effects on other industries are taken into account. Using 2012 data (the latest available) on direct sales (at farm or factory or fishery gate) of 35 agriculture sectors, this study estimates the total economic impact of agriculture through the use of an input-output IMPLAN model that converts a sector's direct

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[1] Other Northeastern states (Pennsylvania and Maryland) were not included in the request. Thus, the reported impacts underestimate the impacts for the entire Northeastern region.

[2] The landscape service sector is not classified as an agricultural industry by the North American Industry Code System but rather under "Building Services." Given the large size of this sector, its inclusion in the total impacts of agriculture would inflate the economic impact of agriculture.

sales into statewide sales, statewide value added and statewide jobs. Total impacts in the eight Northeastern states are simply the sum of impacts in each state.

Major Findings

In 2012 the total economic impact of agriculture in the eight Northeastern states was significant, as summarized in the following findings:

- Agriculture generated sales of $99.4 billion in the eight Northeastern states. Thus, the average contribution of agriculture to a state's economy was estimated at $5,678 per acre of farmland or $2,312 per resident.
- Agriculture generated $36.4 billion in value added, which is the difference between the value of sales and the cost of raw materials, i.e., the money left in the hands of residents plus business taxes, both of which stay in the respective states.
- Agriculture generated 474,482 jobs across the eight states, constituting an important contributor to employment in the region.

In 2012, the top five agriculture sectors in the eight states were: (1) fluid milk and butter manufacturing; (2) paper mills; (3) cheese manufacturing; (4) fruit and vegetable canning, picking and drying at the farm level, and (5) dairy cattle and milk production at the farm level. However, the structure of agriculture and therefore the sector-specific economic impacts across the eight states are quite diverse and reflect the value-added nature of agricultural enterprises in the region.

Zooming in on some state-specific result highlights:

- In Connecticut, agriculture contributed $4.5 billion to statewide sales, $1.8 billion in value added, and 24,842 jobs. Agricultural production and processing clearly characterize Connecticut's agriculture relative to forestry and fisheries, with dairy processing and greenhouse, nursery, and floriculture production playing pivotal roles.
- In Maine, agriculture contributed $13.8 billion to statewide sales, $5.1 billion in value added, and 78,656 jobs. The forestry industry clearly dominates Maine's agriculture, with nearly 64% of the sales impact and 50% of the jobs being generated from that sector.
- In Massachusetts, agriculture contributed $12.4 billion to statewide sales, $4.7 billion in value added, and 60,008 jobs. Although more than half of the sales impact came from

agricultural production and processing, forestry and fisheries have roughly similar direct sales and value added impacts.

- In New Hampshire, agriculture contributed $3.1 billion to statewide sales, $1.1 billion in value added, and 18,743 jobs. Although more than half of the sales impact came from agricultural, with fluid milk and butter manufacturing being clearly dominant, forestry is a strong second, and fisheries a distant third.
- In New Jersey, agriculture contributed $11.7 billion to statewide sales, $4.4 billion in value added, and 55,317 jobs. Agricultural production and processing accounted for 87% of the sales impact, with fruit and vegetable canning clearly being the largest sector in sales impact and the greenhouse, nursery, and floriculture production sector leading in jobs generated.
- In New York, agriculture contributed $46.3 billion to statewide sales, $16.9 billion in value added, and 193,497 jobs, the largest impacts among the states considered. The leading sectors in sales and job impacts were in the dairy industry, at either the farm or processing levels. Approximately 80% of the sales impact came from agricultural production, with forestry second and fisheries a distant third.
- In Rhode Island, agriculture contributed $1.1 billion to statewide sales, $363.4 million in value added, and 6,591 jobs, the smallest impacts among the states considered. Agricultural production and processing contributed slightly over half, with fluid milk and butter manufacturing providing the lion’s share and fisheries a rather modest impact.
- In Vermont, agriculture contributed $6.6 billion to statewide sales, $2.1 billion in value added, and 36,828 jobs. About 75% of the sales impact and over 78% of the jobs generated came from agricultural production and processing, with fluid milk and butter manufacturing being the leading sector.

Summary and Conclusions

Agriculture, defined as encompassing agricultural, forestry and fisheries production and related primary processing industries, makes a critical contribution to the economies of the Northeastern states. As measured in the eight states under study using data from 2012, **agriculture contributed $99.4 billion to regional total sales and generated 474,482 jobs.** To put this in perspective, **the regional impact of agriculture was a remarkable $5,678 per acre in farmland or $2,312 per resident.**

In addition, although not quantified in this study, agriculture provided significant open space for nearly 43 million residents via 12.1 million acres of land in farms and 46.5 million acres of land in forests, covering 80% of the land mass and providing significant environmental services that improve the quality of life.

Although there is great variability in the distribution of sales and job creation across the eight Northeastern states considered, which reflect primarily their relative sizes and natural endowments, the findings attest to the value added nature of agriculture, due in part to proximity to a large consumer base that creates opportunities for continued and sustainable economic growth as well as employment.

Economic Impacts of Agriculture in Eight Northeastern States

I. INTRODUCTION

The Northeastern region of the U.S. comprises a small geographic area but houses a large proportion of the U.S. population. According to the USDA, the Northeast constitutes 5% of the U.S. land mass but 20% of the population.[3] Even with this relatively small area, agriculture and forestry are important components at the household, state, and regional levels. At the request of Farm Credit East, the purpose of this study is to gain a better understanding of the economic impact of the agricultural, forestry, and fishery industries on state and Northeastern regional economies focusing on eight Northeastern states (CT, MA, ME, NH, NJ, NY, RI and VT), which represent 68% of the land area in the Northeast and 70% of the population.[4].

Notably this study provides an updated and enhanced economic impact evaluation to a previous Farm Credit East report when six Northeastern states (CT, MA, NH, NJ, NY and RI) were reported to have generated $71 billion in economic activity and approximately 379,000 jobs due to their agricultural and forestry industries in 2010 (Farm Credit East, 2012). For the same six states and common 29 NAICS industries[5] in the two reports, between 2010 and 2012 the aggregate economic impact decreased 0.6% in statewide sales in dollars and 7% in the number of jobs.[6]

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[3] U.S. Bureau of the Census interactive list of U.S. states, including their (2012) populations and land mass: http://quickfacts.census.gov/qfd//index.html. In the current report, Support for Agriculture and Forestry was split into two sectors rather than one as in the previous report.

[4] Pennsylvania and Maryland are not considered in this study. Their inclusion would further enhance the economic impacts claimed for the Northeastern region.

[5] Note that the North America Industrial Classification System (NAICS) codes used do not exactly correspond to the Agriculture Census classifications. They also include industries beyond the farm or fishery gates into processing and related services such as landscape services which are not included in this article. In the current report, Support Activities for Agriculture and Forestry was split into two sectors (Agriculture and Forestry, respectively), thus comparing 30 of the 35 industries included as Agriculture in the current report.

[6] Comparing 2010 and 2012 results from the two reports, sector specific trends in economic impacts include an 11% decrease in aggregate statewide sales of greenhouse, nursery and floriculture production, a 7% increase in dairy farming sales impact with large gains in fluid milk/butter manufacturing, which includes large increases in yogurt manufacturing. Additionally, forestry and fishery followed similar trends with reduction in the impact of commercial logging and fishing but increases in forest and fishery products processing, with the exception of an increase in aquaculture.

Across sectors, the results were mixed with general increases in the primary agriculture processing sectors, such as dairy manufacturing, and more common declines in agriculture production, with the exception of dairy farming.[7]

This report focuses on agriculture, defined as encompassing agricultural production (i.e., crops, livestock, fisheries and forestry) and agricultural, forestry and fishery/seafood processing closely tied to a state's agricultural, forestry and fisheries production. Also, this study includes two special subsectors (fertilizer manufacturing and pesticide manufacturing) that may be performed by agriculture and forestry production establishments or conducted independently as an alternative source of inputs required for the production process for a given crop, animal, or forestry industry. In addition, the landscape services sector is included in the special subsectors category due to its significant role in the impact of the environmental horticulture industry on the economies of these eight Northeastern states. The study excludes secondary processing sectors that do not use a state's agricultural and forestry production, such as bakeries and soft drinks manufacturing, which are economically important but, if included, would overstate economic impacts attributable directly to a state's agriculture and/or forestry. In addition, this study does not include the value of ecosystem services, open space, and other non-market benefits derived from the agricultural, forestry and fishery industries, which are significant but beyond the scope of this study.

Agricultural production in the eight Northeastern states is quite diverse. Farmers in these states produce everything from traditional field crops (e.g., corn and wheat) to livestock to specialty crops such as greenhouse and nursery plants/vegetables, maple syrup, sweet corn, and aquaculture. However, some of these sectors are small in terms of their overall impact. Dairy cattle/milk production, greenhouse/nursery/floriculture production, and vegetable/melon farming play a major role in the agricultural production sector with an aggregate sales impact of over $10.2 billion (Table 1). In contrast, tobacco farming generated only $124.0 million in sales impact during 2012. With respect to forestry, commercial logging generated $1.4 billion in sales impact, compared to $2.1 billion generated by commercial fishing.

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[7] Comparing 2010 and 2012 data from both reports, sector specific trends in economic impacts include an 11% decrease in aggregate statewide sales of greenhouse, nursery and floriculture production, a 7% increase in dairy farming sales impact and large gains in fluid milk/butter manufacturing, which include large increases in yogurt manufacturing. Additionally, forestry and fishery followed similar trends with reduction in the impact of commercial logging and fishing, but increases in forest and fishery products processing, with the exception of an increase in aquaculture. However, it is misleading to extrapolate from the comparison of data only two years apart.

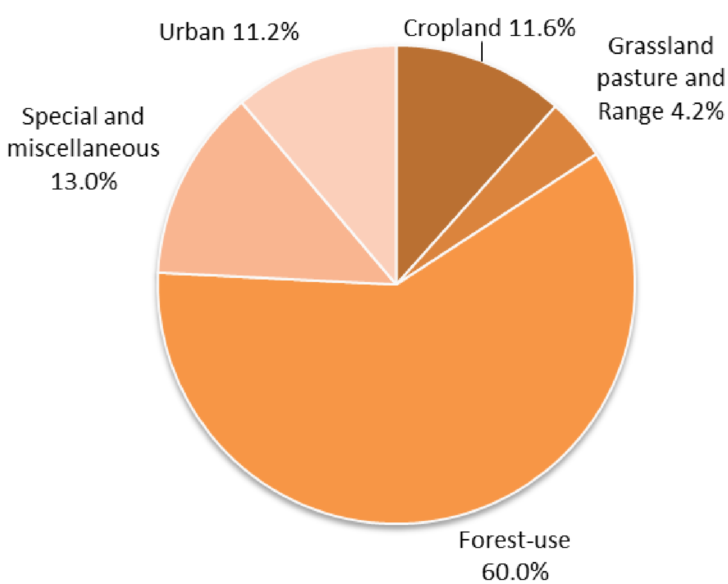
The economic impact of on-the-farm production of agricultural commodities is not limited to direct sales. Rather, their contribution extends in the form of worker wages and spills over into other industries (e.g., processing). Within the processing sector, fluid milk/butter manufacturing had the largest sales impact at $22.8 billion, with 57,783 jobs generated. Forestry processing at paper mills also generated considerable impact at $16.1 billion in sales and 51,725 jobs.

Because agriculture purchases goods and services from other industries in their states and hires local labor, its economic impacts cascade throughout the entire state economy. Using 2012 data (the latest available) on direct sales at the farm or factory or fishery gate of the 35 agriculture, forestry and fishery sectors, this study estimates the total economic impact of the agricultural, forestry and fishery industries through the use of an input-output IMPLAN model that translates direct sales into statewide sales, value added and jobs to account for agricultural, forestry and fisheries spillover effects on state economies.

II. NORTHEAST AGRICULTURE AT A GLANCE

Agriculture has been a critical component of the Northeast's economy since Colonial times. Today the importance of agriculture is highly visible through not only farms but also associated forests, agricultural and forest product processing, and fisheries. The Northeast has a land area of about 111.4 million acres or about 5% of the total land in the United States. About 11.6% of the land was cropland, 4.2% grassland pasture and range, and 60% forestland in 2007 (Figure 1). As farmland contains cropland, pastures and forestlands, 20% of the land area in the Northeast was devoted to agricultural production in 2012. For instance, Delaware had the highest percentage of land in agricultural production in 2012 at 41%, while Maine had the least at 7%. Remarkably, Massachusetts saw a 19% increase in land area devoted to agricultural production between 2002 and 2012, while most other states have seen no change or small decreases in the same period (USDA 2004, 2014).

Figure1. Total Land Cover in the Northeast (2007)



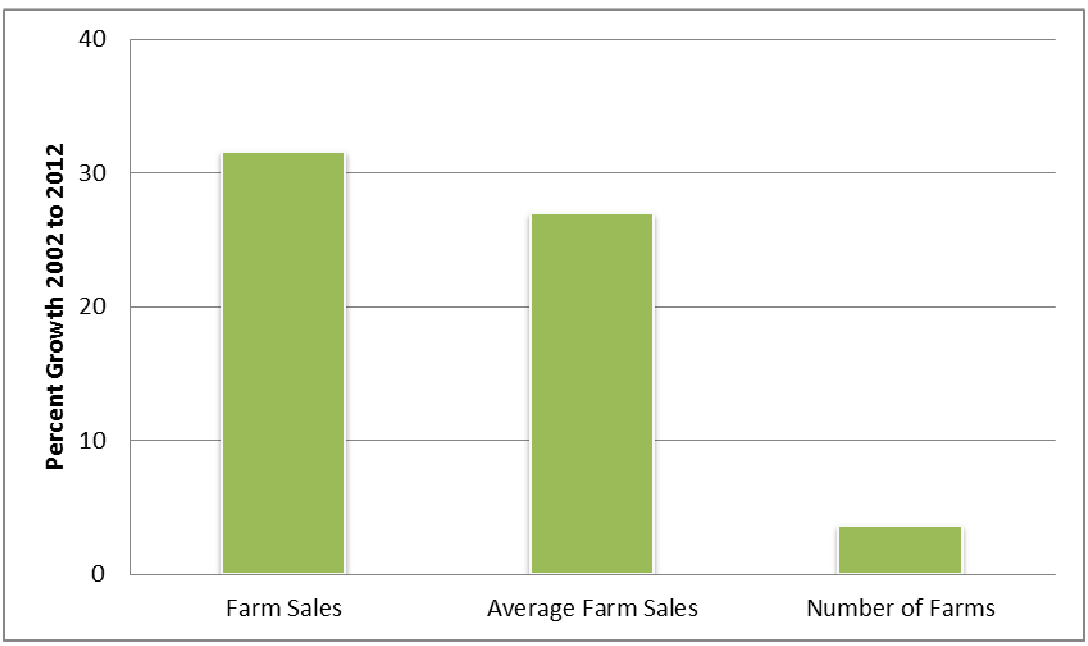
Total Land Area=111.4 million acres

Source: C. Nickerson, R. Ebel, A. Borchers, and F. Carriazo (2011).

AGRICULTURE SECTOR

An anticipated trend in agriculture has been increased numbers of small and very large farms. The expectation is that small farms are able to cater to niche markets, while larger farms are able to take advantage of scale efficiency in production and marketing. Examining the market value (in real or deflated values) of farm products sold in the Northeast indicates a 31.6% increase between 2002 and 2012 (Figure 2). The number of farms also increased but by only 3.6% in the same period. Based on these changes, average farm sales (in real values) increased by 27% between 2002 and 2012. A cursory interpretation of these numbers indicates that the growth in farm sales outpacing the growth in farm numbers implies that there is an undercurrent of change associated with the structure of agricultural production in the region. However, on average and in total, farms in the Northeast are selling more output.

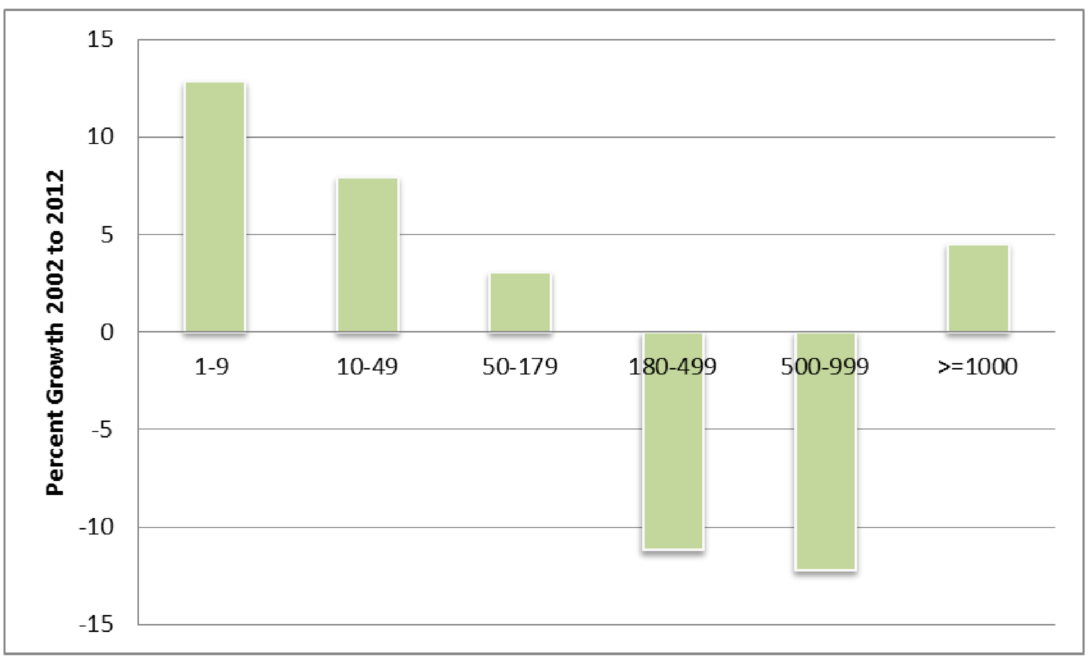
Figure 2. Percent Growth of Farm Sales and Number of Farms



Source: USDA (2004, 2014).

Figure 3 examines more closely the changing structure of farm sizes in the Northeast. Farms with sizes 1-9 and 10-49 acres have experienced a 12.8% and a 7.9% growth, respectively, between 2002 and 2012. At the same time, farms with 1000+ acres have seen a 4.5% increase in the same period. On the other hand, mid-sized acreage farms (i.e., those with 180-499 and 500-999 acres) have experienced an 11.2% and a 12.2% reduction in numbers. Further, the median farm size decreased from 69 acres in 2002 to 47 acres in 2012. In other words, median farm size decreased by 22 acres from 2002 to 2012, implying a shift to smaller farms (USDA 2004, 2014). Overall, these statistics indicate that the Northeast's farm structure is changing as the number of mid-sized farms is being reduced. In contrast, as small farms are emerging to capture markets that are looking for niche or locally grown products, simultaneously the number of large farms of over 1,000 acres continues to increase to exploit scale economics and remain nationally competitive in commodity markets.

Figure 3. Percent Growth of the Number of Farms by Size (Acres)

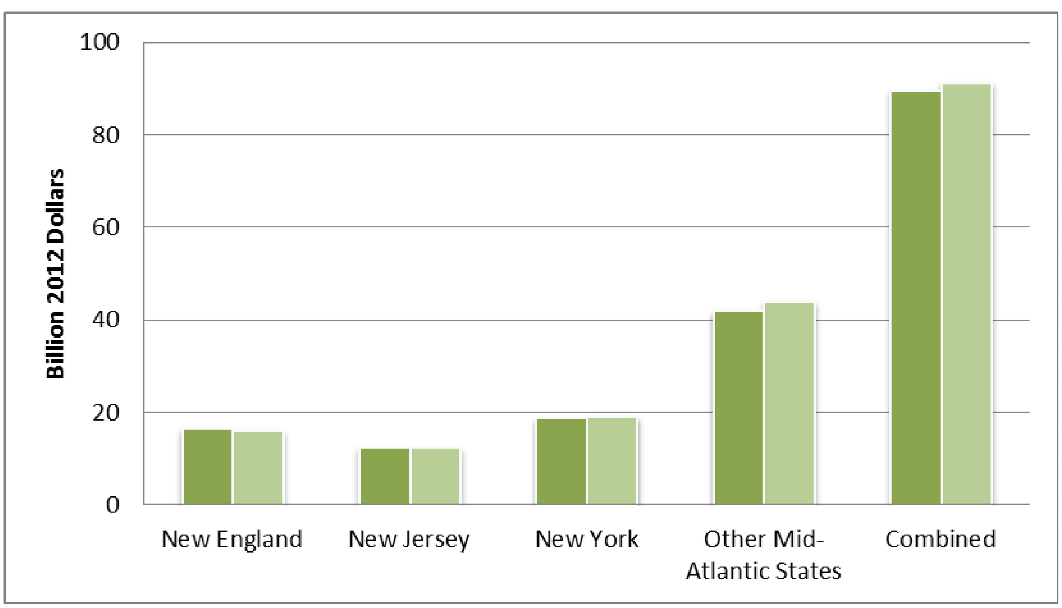


Source: USDA (2004, 2014).

AGRICULTURE PROCESSING

In terms of the Northeast's food manufacturing industry, not all of which is tied to local farm production as some (e.g., bakeries) use imported ingredients, the region experienced a rather modest increase in the rate of growth of output, below farm output growth. Between 2004 and 2011, total regional food manufacturing output grew by only 2%, as reflected in the deflated value of shipments. Intra-regional impacts, however, were mixed. In New England, total food manufacturing output actually fell by approximately 2.3% with the highest growth occurring in New Hampshire (64.5%) and the lowest in Rhode Island (-29.4%), Vermont being second with a 19.7% increase. In general, it appears that food manufacturing is shifting south, with the lower Mid-Atlantic region experiencing an average of 4.8% increase in output between 2004 and 2011. Remarkably, Delaware experienced a 28.6% increase in output. The apparent lack of growth in many states' food processing segment and the need to foster employment opportunities and economic growth for farmers and fishermen are lingering concerns.

Figure 4. Sales of Manufactured Food Products, 2004 and 2011

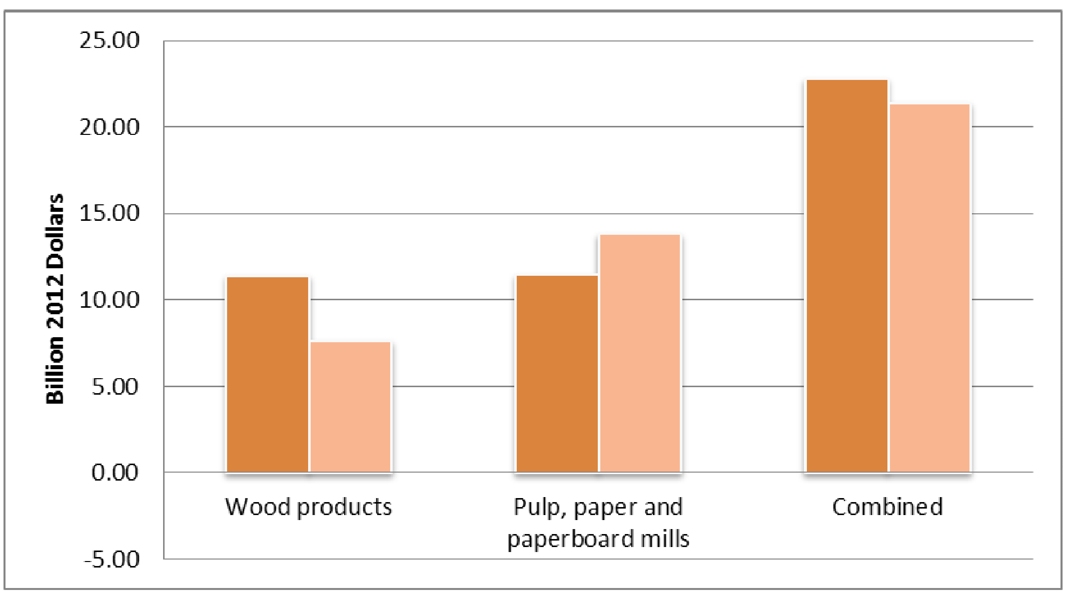


Note: New England: CT, ME, MA, NH, RI, and VT. Other Mid-Atlantic States: DE, MD, and PA
Source: U.S. Bureau of Census, *Annual Survey of Manufactures* (2011).

FORESTRY SECTOR

The Northeast has a higher percentage of land area in forestland than any other region in the United States. Approximately 60% of the land mass was in forests in 2007. Furthermore, approximately 93.5% of the total forestland is devoted to timber. In terms of forestry processing, the region experienced a 33% decline in wood pulp processing output (given as deflated sales or a decline of $3.8 billion in 2012 dollars) between 2004 and 2011. Thus, the industry output fell by one-third in a short period of time. On the other hand, pulp, paper and paperboard mills experienced an increase of nearly 21% in output. Thus, in spite of a trend of shifting towards value-added forest products, the region suffered a net loss of processed forest product output. This apparent loss of competitiveness has serious implications for the regional economy as well as employment. As a case in point, the recent closure of the Fusion Paperboard plant in Sprague, Connecticut, has resulted in rather serious local impact, including the loss of 140 jobs and a contenious political debate.[8]

Figure 5. Sales of Processed Forest Products, 2004 and 2011



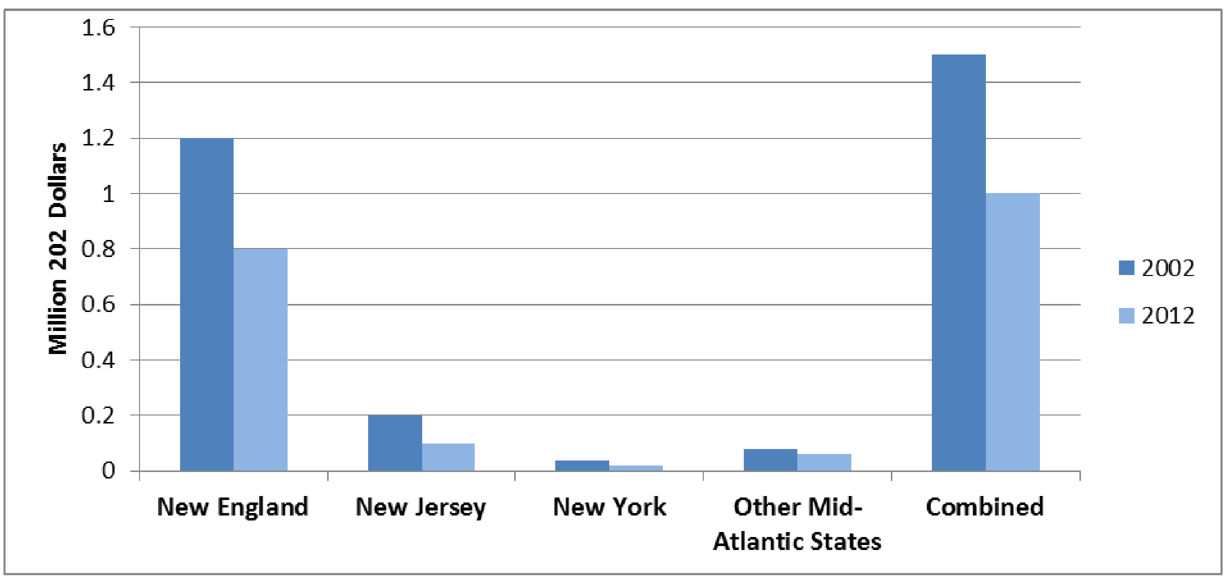
Source: U.S. Bureau of Census, *Annual Survey of Manufactures* (2011).

[8] Hartford Courant, August 15, 2014, "Foley's Comments at Fusion Paperboard Focus Of Continuing Debate."

FISHERIES SECTOR

As Figure 6 indicates, the value (in real terms to denote output) of Northeast commercial fishery landings has declined by 33% from 2002 to 2012. This is a dramatic collapse of the region's fishery industry and a trend that appears to be continuing. According to NOAA (2013), the New England commercial fishing industry has experienced the most drastic catch decreases ever in the history of New England, and it is unclear if the fish can make a comeback. In part the decrease is due to fewer federally licensed groundfishing boats working in the Northeast.[9] However, increased regulation imposed in part as a response to declining fishery stocks, which has been attributed to the warming of water temperatures that has introduced diseases as well as stunting fishery stock growth, was in part responsible. Catch limits[10] as well as other regulatory restrictions have been imposed over the past few years in an effort to increase stocks.

Figure 6. Commercial Fishery Landings in the Northeast, 2002 and 2012



Note: New England (CT, ME, MA, NH, and RI). Other Mid-Atlantic States: DE, MD, and PA.

Source: National Marine Fisheries Service (2002, 2012).

[9] There was a substantial decrease from 1,019 to 344 in the number of federally licensed groundfishing boats working in the Northeast from 2001 to 2011.

[10] In 2007, Congress enacted a requirement to use annual catch limits (ACLs) to reduce the risk of overfishing as sustainable management of fish stocks is critically important to the nation's economy (NOAA, 2013).

It is important to mention that fish and fisheries products are considered one of the most traded food commodities in the world. The United States is the second largest importing country in the world for fish and fish products.[11] This puts pressure on the profitability of fisheries in the region. A huge variety of imported seafood comes from trading partners such as Canada, China, Thailand and other countries (FAO, 2014) and the trend is towards increasing imports. The quantity of U.S. imports of edible fishery products[12] in 2012 was 5.4 billion pounds, a 23% growth relative to 2002. Shrimp has become America's favorite seafood, reaching 3.8 pounds annually per person in 2012, and shrimp imports accounted for 26.3% of the value of total edible imports in 2012. [13] A further fisheries problem is the need for better tracking of illegal and unreported fish in seafood imports.[14]

Another important driving force is the increasing role of the aquaculture industry in the Northeast.[15] Overall, the market value of aquaculture products sold increased by 38% from 2002 to 2012 in real terms (Figure 8). The primary commercial species are salmon and oysters with lesser amount of mussels and cod. The number of aquaculture farms increased mildly between 2002 and 2012, mainly in New England by 55 farms (USDA, 2002; 2012). Notably, the number of aquaculture farms decreased in the Mid-Atlantic states by 67 while the market value of aquaculture products sold increased by 40% in real terms as indicated in Figure 8.

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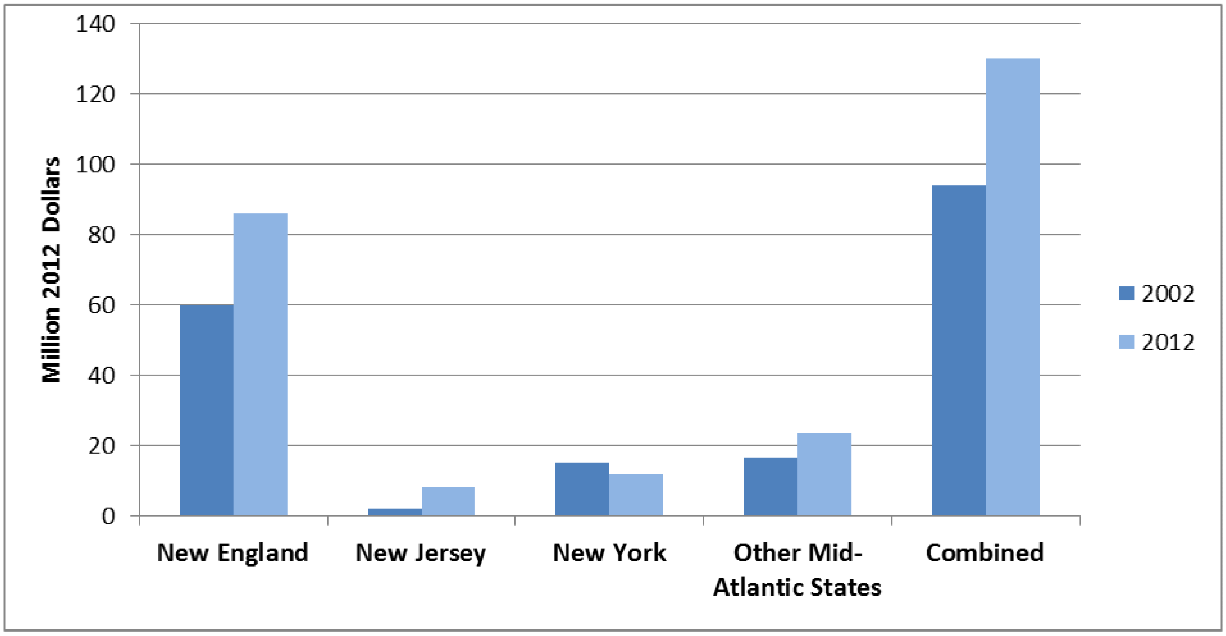
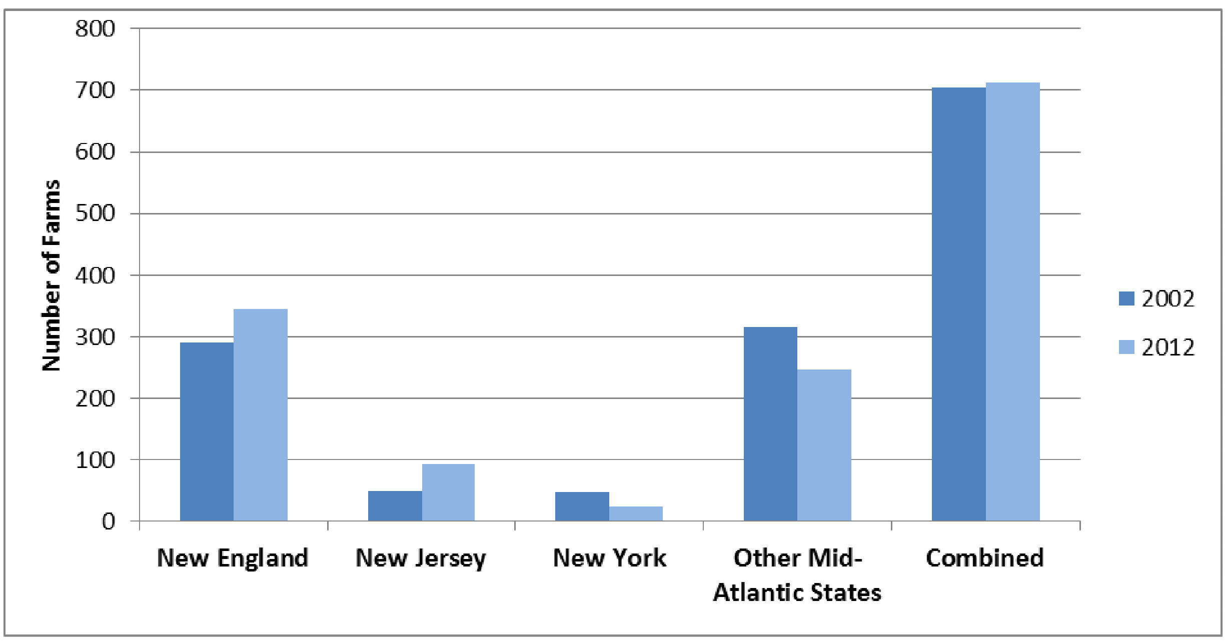
[11] Approximately 80% of the seafood consumed in the U.S. is imported. Over 40% of that seafood comes from aquaculture operations (U.S. FDA, 2014).
[12] Edible imports consist of fresh, frozen, canned and cured fish, caviar and roe, and other products.
[13] Compared with 2012 data, total shrimp imports from China to the U.S. in 2013 were down 8.9% due to a disease related decline in supply, leading to seafood price increases (BLS, 2014). The U.S. supply of shrimp also suffered in 2010 with the British Petroleum oil spill impacting shrimp in the Gulf of Mexico.
[14]A recent study shows that illegal imports to the U.S. are valued at between $1.3 and $2.1 billion out of a total $16.5 billion for the 4.6 billion pounds of edible seafood imports. Up to 32% of all seafood imported in the U.S. is caught illegally or comes from illicit farmed products (Pramod et al., 2014).
[15]Some types of aquaculture are practiced in the open ocean and in bays. In some areas aquaculture occurs in artificial earthen ponds (for tilapia or shrimp) or in raceways (for trout) where water continuously flows through the system.

Figure 7. Annual Market Value of Aquaculture Products Sales in the Northeast, 2002 and 2012



Note: New England (CT, ME, MA, NH, RI and VT). Other Mid-Atlantic States: MD and PA

Figure 8. Number of Aquaculture Farms in the Northeast, 2002 and 2012



Note: New England (CT, ME, MA, NH, RI and VT). Other Mid-Atlantic States: MD and PA.

III. METHODOLOGY

This study uses IMPLAN, the most widely used software for the estimation of statewide economic impacts.[16] Utilizing sector specific input direct sales from the farm/factory/fishery gate, IMPLAN looks at incremental impacts as the sector increases or decreases in activity via built-in multipliers based on input-output coefficients that describe the interaction among sectors in a state's economy.[17] The multipliers express the change in the level of statewide total sales, value added and jobs associated with a unit change in *direct* sales in a specific sector or industry of the economy. An important feature of the IMPLAN model is that it focuses on "supply" to an industry, treating the sector of interest as the point of final "demand." For example, using this model, the impact of the dairy cattle and milk production sector on the fluid milk manufacturing sector would be minimal except through *indirect* and *induced* impacts as defined below, but the impact of these on dairy cattle and milk production would be fully accounted for as it is treated as a supplier.

The IMPLAN model uses the values generated through multipliers to calculate economy-wide impacts for 440 economic sectors.

Sectors Included

Following standard practice, this study relies on the U.S. Department of Commerce classification of 440 sectors of the economy. To define the scope of each of the eight Northeastern states' industries, this analysis takes into consideration 33 of the 440 sectors classified as agricultural, forestry and fishery production and primary agricultural, forestry and fishery processing (these are described in the Appendix). Sectors not relevant to agriculture,

[16] Three standard models are most often referenced with respect to regional economic impacts: IMPLAN (IMpact analysis for PLANning: Minnesota IMPLAN Group, Inc.), RIMS II (Regional Input-output Modelling System: U.S. Department of Commerce), and REMI (Regional Economic Modelling, Inc.). IMPLAN and RIMS II both use as input the direct sales from a sector of the agricultural, forestry and fishery industries, and calculate economy-wide impacts through multipliers to account for effects of the industries beyond direct sales or employment. REMI uses an econometric model of the state economy to conduct a simulation of a state's economic activity including all sectors. REMI estimates economic impacts by assessing the loss of total sales and employment including their impact on migration when a sector is removed from the economy.

[17] Direct sales by each of the sectors included were taken from IMPLAN 2012. However, as some farm-level data were missing in IMPLAN (e.g., aquaculture, tobacco farming, and grain crops), the pertinent data were collected from the 2012 Census of Agriculture for those sectors only. Finally, for "landscape services," which was included as a special sector and not included in economic impact figures for each state, direct sales or revenues were calculated as noted in the Appendix.

forestry and fishery in a state (e.g., sugar cane) are excluded. Agricultural, forestry and fisheries processing sectors were selected based on the extent of linkages between the commodity being processed and the state's farming, forestry and fisheries. Some economically important food and beverage processing sectors are also excluded from this study because they do not use agricultural commodities produced in the state in any significant way; examples of such "secondary processing" are chocolate, confectionary, and bakery product manufacturing and distilleries. Including secondary agricultural, forestry and fishery processing that does not use state agricultural production would overstate the contribution of agriculture, forestry and fisheries to a state's economy.

Also, this study includes two special subsectors (fertilizer manufacturing, and pesticide manufacturing) that may be performed by agricultural establishments or conducted independently as an alternative source of inputs required for the production process for a given crop, animal, or forestry industry. In addition, the landscape services sector is included in the special subsectors category due to its significant role in the impact of the environmental horticulture industry on the economies of the eight Northeastern states.

Measures of Impacts

Applying the IMPLAN model to 2012 data from eight Northeastern states, this study relies on three indicators of the economic importance of agriculture computed for each sector and state:

- *Total impact on statewide sales,* which is measured by sales generated directly from the industries (direct sales) plus spillover (indirect and induced) sales by other industries impacted;
- *Total impact on value added*, which measures the difference between the value of statewide sales and the cost of raw materials, i.e., the money left in the hands of residents and business taxes, both of which stay in the respective states; and
- *Total impact on state employment*, which includes full-time and part-time jobs generated.

Although the primary focus is on the total impacts of agriculture at the state level, impacts per subsector for each state are also presented.

For example, the economic importance of the greenhouse, nursery, and floriculture production industry is not limited to the direct farm gate sales of that sector (the *direct* impact) but extends to other sectors of the economy (e.g., the transportation and utility sector) because greenhouse and nursery businesses buy goods and services from other sectors (the *indirect* impact). Also, employees of the greenhouse and nursery establishments likely spend a major portion of their earnings buying goods and services from firms within the state (the *induced* impact). The *total* sales impact of the greenhouse and nursery sector is the sum of the direct, indirect, and induced impacts. However, downstream business (e.g., landscaping, wholesaling, and retailing other than direct sales from the farm to the consumer) are not included. Three special subsectors, fertilizer manufacturing, pesticide manufacturing and landscape services, are presented in a separate category to determine whether they make significant contributions to the states' economies.

It should be noted that the estimated impacts are limited to a state's economy. For example, if an apple orchard in Connecticut purchases fertilizer from a firm in Massachusetts, the *indirect* impact of this transaction will not be felt in the Connecticut economy but will be reflected in the Massachusetts economy and captured in the impact analysis of the latter. Finally, to adjust for size, summary impacts are also presented on per capita and per acre bases.

IV. RESULTS

All Eight Northeastern States

In 2012, the aggregate total impact of agriculture in the eight Northeastern states (CT, ME, MA, NH, NJ, NY, RI and VT) was significant as indicated by:[18]

- $99.4 billion impact on total sales,
- $36.4 billion contribution in total value added, and
- 474,482 jobs generated across the eight states.

Regionally, the top three agricultural sectors were:

- Dairy cattle and milk production, topping the agricultural production list with $5.4 billion in total sales impact, generating 38,380 jobs;
- The greenhouse, nursery and floriculture sector, second with $2.5 billion in total sales impact, generating 23,761 jobs; and
- Vegetable and melon farming, with $2.3 billion in total sales impact, generating 16,397 jobs.

The top three agricultural processing sectors were:

- Fluid milk and butter manufacturing, topping the list, with $22.8 billion in total sales impact, generating 57,783 jobs;
- Paper mills (capturing approximately 63% of the total for forest industry sales impact), second with a $16.1 billion in total sales impact, generating 51,725 jobs, and
- Cheese manufacturing, third with a $7.2 billion total sales impact, generating 20,393 jobs.

In 2012, in addition to the aggregate total impact of agriculture

- Fertilizer manufacturing generated $2.6 billion in total sales impact, creating 5,505 jobs,
- Pesticide manufacturing generated $1.5 billion in total sales impact, creating 3,388 jobs, and
- Landscape services captured $16.2 billion in total sales impact, generating 193,637 jobs.

Adjusting for size

- Agricultural total sales impact (production and processing) amounted to $5,678 per acre in farmland, and
- Combined overall, agriculture's impact amounted to $2,312 per resident.

[18] The dollar amounts are rounded to one decimal place in these highlights from more precise figures in the tables.

Table 1. Economic Impacts of Agriculture in Eight Northeastern States, 2012

Industry/Sector	Direct Sales, $ million	Statewide Impacts		
		Total Sales, $ million	Value Added, $ million	Employment, Jobs
AGRICULTURE				
Production				
Oilseed farming	223.06	387.47	203.11	4,284
Grain farming	538.94	995.06	408.26	14,616
Vegetable and melon farming	1,215.62	2,275.12	1,313.09	16,397
Fruit farming	789.36	1,479.16	857.32	12,260
Greenhouse, nursery, and floriculture production	1,464.74	2,495.82	1,661.58	23,761
Tobacco farming	69.29	123.99	54.66	1,218
All other crop farming	706.67	1,276.44	593.25	9,526
Cattle ranching and farming	450.33	775.41	228.39	6,605
Dairy cattle and milk production	3,373.25	5,409.22	2,581.00	38,380
Poultry and egg production	330.10	567.76	162.38	2,030
Animal production, except cattle, poultry and eggs	372.50	529.46	315.59	15,977
Support activities for agriculture	437.48	856.01	541.53	20,322
Processing				
Wet corn milling	132.38	198.05	48.61	490
Soybean and other oilseed processing	154.69	206.17	31.37	375
Frozen food manufacturing	2,000.36	3,295.34	1,154.10	13,098
Fruit and vegetable canning, picking, and drying	4,188.02	7,064.94	2,471.29	21,685
Fluid milk and butter manufacturing	12,156.19	22,809.56	6,829.70	57,783
Cheese manufacturing	3,937.03	7,208.33	1,878.56	20,393
Dry, condensed, and evaporated dairy product manufacturing	730.59	1,378.78	401.09	4,242
Ice cream and frozen dessert manufacturing	1,052.29	1,873.08	635.11	6,718
Animal (except poultry) slaughtering, rendering, and processing	3,175.37	4,643.49	1,264.68	20,110
Poultry processing	641.97	992.00	302.76	3,412
Wineries	1,181.35	1,905.33	727.46	6,692
Total for agricultural industry	**39,321.58**	**68,745.99**	**24,664.89**	**320,374**

FORESTRY				
Production				
Forestry, forest products, and timber tract production	213.05	374.68	168.39	3,358
Commercial logging	788.83	1,429.61	680.94	15,340
Support activities for forestry	143.84	302.63	177.01	7,082
Processing				
Sawmills and wood preservation	1,649.24	2,962.27	1,050.66	16,328
Veneer and plywood manufacturing	225.95	374.12	137.84	2,102
Wood container and pallet manufacturing	584.73	989.25	447.22	6,998
Pulp mills	470.43	835.90	274.88	3,261
Paper mills	9,571.39	16,103.96	5,594.53	51,725
Paperboard mills	1,198.94	2,083.68	687.26	6,742
Total for forest industry	**14,846.40**	**25,456.10**	**9,218.73**	**112,936**
FISHERY				
Production				
Commercial fishing	1,331.31	2,087.59	1,398.14	24,895
Aquaculture	151.53	251.13	155.90	3,556
Processing				
Seafood product, preparation and packaging	1,755.05	2,850.01	998.88	12,721
Total for fishery/seafood industry	**3,237.89**	**5,188.73**	**2,552.92**	**41,172**
Total for agriculture, forestry and fishery	**57,405.87**	**99,390.82**	**36,436.54**	**474,482**

Special subsectors	**Direct Sales, $ million**	**Statewide Impact**		
		Total sales, $ million	**Value Added, $ million**	**Employment, Jobs**
Fertilizer manufacturing	1,399.77	2,552.11	711.26	5,505
Pesticide manufacturing	837.47	1,458.63	524.00	3,388
Landscape services	9,726.42	16,231.65	9,932.44	193,637

Connecticut

In 2012, the aggregate total impact of agriculture in Connecticut was significant, as indicated by:

- $4.5 billion impact on statewide total sales,
- $1.8 billion contribution to state value added; and
- 24,842 jobs generated statewide.

The top three agricultural sectors were:

- Greenhouse, nursery, and floriculture production topping the list at $376.7 million in total sales impact and generating 3,876 jobs and continuing to be the dominant sector in spite of a decline in housing and construction in recent years;
- All other crop farming, with $121.7 million in total sales impact, generating 1,027 jobs; and
- Dairy cattle and milk production, with $95.3 million in total sales impact, generating 895 jobs.

The top three agricultural processing sectors were:

- Paper mills, topping the list with $1.0 billion in total sales impact, generating 3,185 jobs,
- Fluid milk manufacturing, second with $727.6 million in total sales impact, generating 1,847 jobs, and
- Ice cream and frozen dessert manufacturing, third with $313.9 million in total sales impact, generating 1,089 jobs.

In 2012, in addition to the aggregate total impact of agriculture

- Fertilizer manufacturing generated $191.4 million in total sales impact, creating 394 jobs,
- Pesticide manufacturing generated $107.9 million in total sales impact, creating 259 jobs, and
- Landscape services captured $1.7 billion in total sales impact, generating 21,185 jobs.

Adjusting for size

- Agricultural total sales impact amounted to $6,557 per acre in farmland, and
- Combined overall, agricultural, forestry and fishery total sales impact amounted to $1,266 per state resident.

In addition, the industries provided significant open space: 436,539 acres of land in farms and 1.5 million acres of land in forests.

Table 2. Economic Impacts of Agriculture in Connecticut, 2012

Industry/Sector	Direct Sales, $ million	Statewide Impact		
		Total sales, $ million	Value Added, $ million	Employment, Jobs
AGRICULTURE				
Production				
Oilseed farming	0.00	0.00	0.00	0
Grain farming	7.72	15.23	7.45	245
Vegetable and melon farming	38.54	60.91	34.52	527
Fruit farming	29.67	47.30	26.78	460
Greenhouse, nursery, and floriculture production	248.94	376.70	254.08	3,876
Tobacco farming	47.44	85.04	37.53	814
All other crop farming	76.49	121.74	54.22	1,027
Cattle ranching and farming	15.63	22.34	6.20	237
Dairy cattle and milk production	69.93	95.29	46.65	895
Poultry and egg production	50.52	74.82	20.79	265
Animal production, except cattle, poultry and eggs	45.41	60.24	36.66	1,956
Support activities for agriculture	25.31	55.45	33.99	1,792
Processing				
Wet corn milling	0.00	0.00	0.00	0
Soybean and other oilseed processing	0.00	0.00	0.00	0
Frozen food manufacturing	79.87	120.79	47.09	437
Fruit and vegetable canning, picking, and drying	147.24	226.44	76.75	663
Fluid milk and butter manufacturing	476.73	727.59	227.90	1,847
Cheese manufacturing	126.61	181.31	39.49	455
Dry, condensed, and evaporated dairy product manufacturing	0.00	0.00	0.00	0
Ice cream and frozen dessert manufacturing	198.83	313.93	115.96	1,089
Animal (except poultry) slaughtering, rendering, and processing	75.91	108.11	25.41	532
Poultry processing	46.24	69.08	20.81	229
Wineries	66.96	100.21	34.37	365
Total for agricultural industry	**1,873.99**	**2,862.52**	**1,146.65**	**17,711**

FORESTRY				
Production				
Forestry, forest products, and timber tract production	0.00	0.00	0.00	0
Commercial logging	21.81	35.65	15.40	416
Support activities for forestry	1.05	2.31	1.42	75
Processing				
Sawmills and wood preservation	49.45	80.11	25.12	414
Veneer and plywood manufacturing	0.00	0.00	0.00	0
Wood container and pallet manufacturing	48.90	79.73	35.21	595
Pulp mills	0.00	0.00	0.00	0
Paper mills	605.53	1,043.07	372.27	3,185
Paperboard mills	192.71	339.46	117.28	1,053
Total for forest industry	**919.45**	**1,580.33**	**566.70**	**5,738**
FISHERY				
Production				
Commercial fishing	27.32	41.48	25.41	626
Aquaculture	19.65	47.52	29.11	717
Processing				
Seafood product, preparation and packaging	7.88	12.12	4.43	50
Total for fishing/seafood industry	**54.85**	**101.12**	**58.95**	**1,393**
Total for agriculture, forestry and fishery	**2,848.29**	**4,543.97**	**1,772.30**	**24,842**

Special subsectors	**Direct Sales, $ million**	**Statewide Impact**		
		Output Sales, $ million	**Value Added, $ million**	**Employment, Jobs**
Fertilizer manufacturing	112.58	191.39	47.18	394
Pesticide manufacturing	62.83	107.89	36.15	259
Landscape services	1,032.48	1,680.36	1,027.82	21,185

Maine

In 2012, the aggregate total impact of agriculture in Maine was significant, as indicated by:

- $13.8 billion impact on statewide total sales,
- $5.1 billion contribution to state value added; and
- 78,656 jobs generated statewide.

The top three agricultural production sectors were:

- Commercial fishing, first with $659.3 in total sales impact, generating 9,618 jobs,
- Commercial logging, second with $655.5 in total sales impact, generating 6,865 jobs, and
- Vegetable and melon farming, with $307.2 million in total sales impact, generating 2,710 jobs.

The top three agricultural processing sectors were:

- Paper mills (capturing approximately 68% of the sales impact for the forest industry), first with $6.0 billion in total sales, generating 21,003 jobs,
- Sawmills and wood preservation, second with $1.1 billion in total sales, generating 6,138 jobs, and
- Fluid milk and butter manufacturing, third with $1.1 billion in total sales impact, generating 2,499 jobs.

In 2012, in addition to the aggregate total impact of agriculture

- Fertilizer manufacturing generated $137.6 million in total sales impact, creating 355 jobs, and
- Landscape services captured $549.9 million in total sales impact, generating 7,988 jobs.

Adjusting for size

- Agricultural total sales impact amounted to $2,570 per acre in farmland, and
- Combined overall, agricultural, forestry and fishery total sales impact amounted to $10,361 per state resident, the highest per capita impact among the states considered.

In addition, the industries provided significant open space: 1,454,104 acres of land in farms and 16.9 million acres of land in forests.

Table 4. Economic Impacts of Agriculture in Maine, 2012

Industry/Sector	Direct Sales, $ million	Statewide Impact: Total sales, $ million	Value Added, $ million	Employment, Jobs
AGRICULTURE				
Production				
Oilseed farming	0.00	0.00	0.00	0
Grain farming	0.00	0.00	0.00	0
Vegetable and melon farming	175.68	307.19	170.94	2,710
Fruit farming	91.21	163.13	91.07	1,586
Greenhouse, nursery, and floriculture production	60.92	103.65	67.54	1,057
Tobacco farming	0.00	0.00	0.00	0
All other crop farming	57.64	96.51	41.79	825
Cattle ranching and farming	19.17	32.50	8.97	329
Dairy cattle and milk production	124.24	191.87	87.76	1,676
Poultry and egg production	69.91	122.65	32.36	447
Animal production, except cattle, poultry and eggs	126.61	188.32	109.42	5,535
Support activities for agriculture	23.52	53.11	30.75	1,672
Processing				
Wet corn milling	80.25	113.90	23.59	268
Soybean and other oilseed processing	0.00	0.00	0.00	0
Frozen food manufacturing	358.03	558.52	176.30	2,467
Fruit and vegetable canning, picking, and drying	217.19	321.20	102.05	1,146
Fluid milk and butter manufacturing	620.44	1,058.19	299.52	2,499
Cheese manufacturing	1.84	2.82	0.51	9
Dry, condensed, and evaporated dairy product manufacturing	0.00	0.00	0.00	0
Ice cream and frozen dessert manufacturing	16.36	26.65	8.62	106
Animal (except poultry) slaughtering, rendering, and processing	48.81	83.34	20.26	599
Poultry processing	186.83	287.86	92.06	1,079
Wineries	17.35	25.63	7.95	110
Total for agricultural industry	**2,296.00**	**3,737.04**	**1,371.46**	**24,120**

FORESTRY				
Production				
Forestry, forest products, and timber tract production	63.78	107.58	50.99	987
Commercial logging	353.59	655.53	323.73	6,865
Support activities for forestry	15.61	36.91	21.36	1,162
Processing				
Sawmills and wood preservation	577.12	1,067.59	393.92	6,138
Veneer and plywood manufacturing	40.10	65.71	26.87	359
Wood container and pallet manufacturing	50.72	84.46	39.38	611
Pulp mills	429.75	761.41	247.70	3,023
Paper mills	3,717.21	5,986.79	2,045.69	21,003
Paperboard mills	22.45	37.89	12.19	141
Total for forestry industry	**5,270.33**	**8,803.87**	**3,161.83**	**40,289**
FISHERY				
Production				
Commercial fishing	428.57	659.26	402.85	9,618
Aquaculture	75.16	121.06	73.98	1,766
Processing				
Seafood, product preparation, and packaging	272.07	450.23	133.25	2,863
Total for fishery/seafood industry	**775.80**	**1,230.55**	**610.08**	**14,247**
Total for agriculture, forestry and fishery	**8,342.13**	**13,771.46**	**5,143.37**	**78,656**

Special subsectors	**Direct Sales, $ million**	**Statewide Impact**		
		Total sales, $ million	**Value Added, $ million**	**Employment, Jobs**
Fertilizer manufacturing	78.48	137.63	26.15	355
Pesticide manufacturing	0.00	0.00	0.00	0
Landscape services	340.78	549.88	301.37	7,988

Massachusetts

In 2012, the aggregate total impact of agriculture in Massachusetts was significant, as indicated by:

- $12.4 billion impact on statewide total sales;
- $4.7 billion contribution to state value added; and
- 60,008 jobs generated statewide.

The top three agricultural production sectors were:

- Commercial fishing, first with $957.6 in total sales impact, generating 9,247 jobs,
- Greenhouse, nursery, and floriculture production, second with $255.2 million in total sales impact, generating 3,224 jobs, and
- Fruit farming, third with $213.1 million in total sales impact, generating 2,349 jobs.

The top three agricultural processing sectors were:

- Fluid milk and butter manufacturing, first with $2.9 billion in total sales impact, generating 7,187 jobs,
- Paper mills (capturing approximately 74% of the sales impact for forest industry), second with $2.1 billion in total sales impact, generating 6,584 jobs; and
- Seafood product, preparation, and packaging, third with $1.5 billion in total sales impact, generating 6,312 jobs.

In 2012, in addition to the aggregate total impact of agriculture

- Fertilizer manufacturing generated $282.1 million in total sales impact, creating 625 jobs,
- Pesticide manufacturing generated $47.3 million in total sales impact, creating 127 jobs, and
- Landscape services captured $2.9 billion in total sales impact, generating 35,465 jobs.

Adjusting for size

- Agricultural total sales impact amounted to $13,524 per acre in farmland, and
- Combined overall, agricultural, forestry and fishery total sales impact amounted to $1,869 per state resident.

In addition, the industries provided significant open space: 523,517 acres of land in farms and 2.3 million acres of land in forests.

Table 3. Economic Impacts of Agriculture in Massachusetts, 2012

Industry/Sector	Direct Sales, $ million	Statewide Impact		
		Total sales, $ million	Value Added, $ million	Employment, Jobs
AGRICULTURE				
Production				
Oilseed farming	0.00	0.00	0.00	0
Grain farming	3.62	7.21	3.65	110
Vegetable and melon farming	77.29	122.92	70.24	1,228
Fruit farming	132.72	213.07	121.92	2,349
Greenhouse, nursery, and floriculture production	164.87	255.24	170.96	3,224
Tobacco farming	21.85	38.95	17.13	404
All other crop farming	50.58	81.98	37.34	795
Cattle ranching and farming	10.60	13.93	4.01	191
Dairy cattle and milk production	43.40	55.51	28.34	703
Poultry and egg production	10.52	14.17	4.09	65
Animal production, except cattle, poultry and eggs	47.16	61.56	38.15	2,680
Support activities for agriculture	51.91	100.13	66.18	2,739
Processing				
Wet corn milling	0.00	0.00	0.00	0
Soybean and other oilseed processing	125.81	163.11	22.80	250
Frozen food manufacturing	220.81	363.64	127.79	1,439
Fruit and vegetable canning, picking, and drying	654.88	1,068.62	400.76	3,447
Fluid milk and butter manufacturing	1,812.18	2,936.41	788.03	7,187
Cheese manufacturing	122.39	176.93	37.57	413
Dry, condensed, and evaporated dairy product manufacturing	6.68	10.65	4.04	28
Ice cream and frozen dessert manufacturing	224.96	398.06	143.65	1,437
Animal (except poultry) slaughtering, rendering, and processing	696.82	946.30	261.72	3,982
Poultry processing	0.00	0.00	0.00	0
Wineries	31.79	51.63	15.50	211
Total for agricultural industry	**4,510.84**	**7,080.02**	**2,363.87**	**32,882**

FORESTRY				
Production				
Forestry, forest products, and timber tract production	31.91	56.82	23.63	535
Commercial logging	42.77	79.81	37.21	846
Support activities for forestry	9.01	17.67	11.66	483
Processing				
Sawmills and wood preservation	64.18	115.03	36.99	643
Veneer and plywood manufacturing	8.47	14.53	5.55	79
Wood container and pallet manufacturing	103.31	177.29	82.29	1,280
Pulp mills	6.78	12.04	3.99	40
Paper mills	1,233.21	2,115.56	766.98	6,584
Paperboard mills	143.27	254.33	83.55	815
Total for forest industry	**1,642.91**	**2,843.08**	**1,051.85**	**11,305**
FISHERY				
Production				
Commercial fishing	601.89	957.62	695.02	9,247
Aquaculture	23.26	27.09	19.66	262
Processing				
Seafood product, preparation, and packaging	913.92	1,511.23	545.72	6,312
Total for fishing/seafood industry	**1,539.07**	**2,495.94**	**1,260.40**	**15,821**
Total for agriculture, forestry and fishery	**7,692.82**	**12,419.04**	**4,676.12**	**60,008**

Special subsectors	**Direct Sales, $ million**	**Statewide Impact**		
		Total sales, $ million	**Value Added, $ million**	**Employment, Jobs**
Fertilizer manufacturing	161.33	282.06	74.49	625
Pesticide manufacturing	26.71	47.33	14.87	127
Landscape services	1,795.10	2,967.79	1,849.17	35,465

New Hampshire

In 2012, the aggregate total impact of agriculture in New Hampshire was significant as indicated by:

- $3.1 billion impact on statewide total sales,
- $1.1 billion contribution to state value added; and
- 18,743 jobs generated statewide.

The top three agricultural production sectors were:

- Commercial logging, first with $175.3 million in total sales, generating 1,950 jobs,
- Dairy cattle and milk production, second with $96.1 million in total sales impact, generating 1,390 jobs; and
- Greenhouse, nursery, and floriculture production, third with $80.5 million in total sales impact, generating 1,440 jobs.

The top three agricultural processing sectors were:

- Fluid milk manufacturing, first accounting for 73% of the total sales impact for agricultural industry at $1.2 billion, generating 3,369 jobs,
- Paper mills, second with $562.0 million in total sales, generating 1,961 jobs; and
- Sawmills and wood preservation, third with $372.0 million in total sales impact, generating 2,143 jobs.

In 2012, in addition to the aggregate total impact of agriculture

- Fertilizer manufacturing generated $13.3 million in total sales impact, creating 30 jobs, and
- Landscape services captured $666.7 million in total sales impact, generating 8,953 jobs.

Adjusting for size

- Agricultural total sales impact amounted to $3,543 per acre in farmland, and
- Combined overall, agricultural, forestry and fishery total sales impact was $2,349 per resident.

In addition, the industries provided significant open space: 474,065 acres in land in farms and approximately $4.5 million acres of land in forests.

Table 5. Economic Impacts of Agriculture in New Hampshire, 2012

Industry/Sector	Direct Sales, $ million	Statewide Impact: Total sales, $ million	Value Added, $ million	Employment, Jobs
AGRICULTURE				
Production				
Oilseed farming	0.00	0.00	0.00	0
Grain farming	0.85	1.43	0.56	26
Vegetable and melon farming	10.35	15.36	8.47	222
Fruit farming	10.47	15.68	8.56	255
Greenhouse, nursery, and floriculture production	55.95	80.47	53.38	1,440
Tobacco farming	0.00	0.00	0.00	0
All other crop farming	28.66	43.54	18.74	611
Cattle ranching and farming	11.99	20.15	6.01	364
Dairy cattle and milk production	53.51	96.10	50.07	1,390
Poultry and egg production	18.68	27.94	7.40	154
Animal production, except cattle, poultry and eggs	9.96	13.21	7.92	782
Support activities for agriculture	4.44	19.61	9.45	802
Processing				
Wet corn milling	0.00	0.00	0.00	0
Soybean and other oilseed processing	0.00	0.00	0.00	0
Frozen food manufacturing	26.44	38.51	11.12	160
Fruit and vegetable canning, picking, and drying	4.97	7.13	2.16	23
Fluid milk and butter manufacturing	783.95	1,218.35	353.42	3,369
Cheese manufacturing	0.00	0.00	0.00	0
Dry, condensed, and evaporated dairy product manufacturing	0.00	0.00	0.00	0
Ice cream and frozen dessert manufacturing	5.09	8.41	2.24	32
Animal (except poultry) slaughtering, rendering, and processing	30.45	48.51	11.23	369
Poultry processing	0.00	0.00	0.00	0
Wineries	17.38	25.09	11.92	90
Total for agricultural industry	**1,073.14**	**1,679.49**	**562.65**	**10,089**

FORESTRY				
Production				
Forestry, forest products, and timber tract production	16.27	27.67	13.60	305
Commercial logging	92.92	175.33	84.53	1,950
Support activities for forestry	2.96	13.07	6.31	535
Processing				
Sawmills and wood preservation	205.28	371.96	128.01	2,143
Veneer and plywood manufacturing	13.21	21.40	8.51	117
Wood container and pallet manufacturing	17.14	29.19	13.10	213
Pulp mills	0.00	0.00	0.00	0
Paper mills	338.67	562.02	169.04	1,961
Paperboard mills	0.00	0.00	0.00	0
Total for forest industry	**686.45**	**1,200.64**	**423.10**	**7,224**
FISHERY				
Production				
Commercial fishing	39.61	59.77	42.64	633
Aquaculture	1.35	2.48	1.77	26
Processing				
Seafood product, preparation and packaging	104.19	160.40	53.28	771
Total for fishing/seafood industry	**145.15**	**222.65**	**97.69**	**1,430**
Total for agriculture, forestry and fishery	**1,904.74**	**3,102.78**	**1,083.44**	**18,743**

Special subsectors	**Direct Sales,** $ million	**Statewide impact**		
		Total sales, $ million	**Value Added,** $ million	**Employment, Jobs**
Fertilizer manufacturing	8.96	13.27	2.82	30
Pesticide manufacturing	0.00	0.00	0.00	0
Landscape services	409.58	666.66	389.68	8,953

New Jersey

In 2012, the aggregate total impact of agriculture in New Jersey was significant as indicated by:

- $11.7 billion impact on statewide total sales,
- $4.4 billion contribution to state value added; and
- 55,317 jobs generated statewide.

The top three agricultural production sectors were:

- Greenhouse, nursery, and floriculture production, first with $772.3 million in total sales impact, generating 7,130 jobs,
- Vegetable and melon farming, second with $473.3 million total sales impact, generating 3,481 jobs; and
- Fruit farming, third with $330.8 million in total sales impact, generating 2,670 jobs.

The top three agricultural processing sectors were:

- Fruit and vegetable canning, picking and drying, first with $2.1 billion in total sales impact, generating 6,212 jobs,
- Fluid milk and butter manufacturing, second with $1.9 billion in total sales impact, generating 4,188 jobs; and
- Animal (except poultry) slaughtering, rendering, and processing, third with $1.3 billion in total sales impact, generating 4,949 jobs.

In 2012, in addition to the aggregate total impact of agriculture

- Fertilizer manufacturing generated $858.6 million in total sales impact, creating 1,872 jobs,
- Pesticide manufacturing generated $331.4 million in total sales impact, creating 817 jobs, and
- Landscape services captured $4.0 billion in total sales impact, generating 45,063 jobs.

Adjusting for size

- Agricultural total sales impact amounted to $14,223 per acre in farmland, the highest per acre impact among the states considered, and
- Combined overall, agricultural, forestry and fishery total sales impact was $1,316 per resident.

In addition, the industries provided significant open space: 715,057 acres in land in farms and approximately $1.5 million acres of land in forests.

Table 6. Economic Impacts of Agriculture in New Jersey, 2012

Industry/Sector	Direct Sales, $ million	Statewide Impact		
		Total sales, $ million	Value Added, $ million	Employment, Jobs
AGRICULTURE				
Production				
Oilseed farming	44.95	72.22	36.34	1,015
Grain farming	60.56	110.99	44.14	2,073
Vegetable and melon farming	272.54	473.29	268.15	3,481
Fruit farming	188.84	330.84	189.59	2,670
Greenhouse, nursery, and floriculture production	469.14	772.25	506.57	7,130
Tobacco farming	0.00	0.00	0.00	0
All other crop farming	36.14	64.74	29.19	456
Cattle ranching and farming	8.27	11.14	3.17	110
Dairy cattle and milk production	24.19	33.31	16.57	296
Poultry and egg production	32.83	49.32	14.44	178
Animal production, except cattle, poultry and eggs	37.90	50.82	30.88	1,564
Support activities for agriculture	158.51	266.88	196.03	5,100
Processing				
Wet corn milling	52.13	84.15	25.02	222
Soybean and other oilseed processing	0.00	0.00	0.00	0
Frozen food manufacturing	492.58	821.27	294.17	3,175
Fruit and vegetable canning, picking, and drying	1,199.60	2,066.82	769.50	6,212
Fluid milk and butter manufacturing	1,201.55	1,882.82	541.68	4,188
Cheese manufacturing	761.14	1,155.62	265.54	2,527
Dry, condensed, and evaporated dairy product manufacturing	109.97	178.90	48.49	426
Ice cream and frozen dessert manufacturing	70.83	123.96	40.74	437
Animal (except poultry) slaughtering, rendering, and processing	951.73	1,293.48	361.39	4,949
Poultry processing	112.24	174.28	54.74	588
Wineries	93.86	153.36	49.84	588
Total for agricultural industry	**6,379.50**	**10,170.46**	**3,786.18**	**47,385**

FORESTRY				
Production				
Forestry, forest products, and timber tract production	54.30	102.16	43.46	809
Commercial logging	8.72	15.28	6.98	155
Support activities for forestry	10.12	17.04	12.51	326
Processing				
Sawmills and wood preservation	34.02	58.96	22.35	286
Veneer and plywood manufacturing	8.95	14.55	5.46	73
Wood container and pallet manufacturing	114.14	190.22	80.40	1,320
Pulp mills	0.00	0.00	0.00	0
Paper mills	330.31	593.60	205.13	1,757
Paperboard mills	3.84	7.21	2.31	21
Total for forest industry	**564.40**	**999.02**	**378.60**	**4,747**
FISHERY				
Production				
Commercial fishing	100.22	156.38	102.87	1,733
Aquaculture	12.32	20.19	13.28	224
Processing				
Seafood product, preparation and packaging	197.75	316.63	107.63	1,228
Total for fishing/seafood industry	**310.29**	**493.20**	**223.78**	**3,185**
Total for agriculture, forestry and fishery	**7,254.19**	**11,662.68**	**4,388.56**	**55,317**

Special subsectors	**Direct Sales,** $ million	**Statewide Impact**		
		Sales, $ million	**Value Added,** $ million	**Employment, Jobs**
Fertilizer manufacturing	439.51	858.63	279.81	1,872
Pesticide manufacturing	167.31	331.43	104.03	817
Landscape services	2,231.35	4,014.06	2,381.95	45,063

New York

In 2012, the aggregate total impact of agriculture in New York was significant as indicated by:

- $46.3 billion impact on statewide total sales;
- $16.9 billion contribution to state value added; and
- 193,497 jobs generated statewide.

The top three agricultural production sectors were:

- Dairy cattle and milk production, first with $4.1 billion in total sales impact, generating 25,923 jobs,
- Vegetable and melon farming, second with $1.2 billion in total sales impact, generating 7,750 jobs; and
- Grain farming, third with $860.2 million in total sales impact, generating 12,162 jobs.

The top three agricultural processing sectors were:

- Fluid milk and butter manufacturing, first with $12.6 billion in total sales impact, generating 30,036 jobs,
- Paper mills (capturing approximately 67% of the sales impact for forest industry), second with $5.6 billion in total sales impact, generating 16,486 jobs, and
- Cheese manufacturing, third with $5.0 billion in total sales impact, generating 14,613 jobs.

In 2012, in addition to the aggregate total impact of agriculture

- Fertilizer manufacturing generated $997.0 million in total sales impact, creating 2,063 jobs,
- Pesticide manufacturing generated $972.0 million in total sales impact, creating 2,185 jobs, and
- Landscape services captured $5.5 billion in total sales impact, generating 62,959 jobs.

Adjusting for size

- Agricultural total sales impact amounted to $5,207 per acre in farmland, and
- Combined overall, agricultural, forestry and fishery total sales impact was $2,364 per resident.

In addition, the industries provided significant open space: 7,183,576 acres in land in farms and approximately $15.4 million acres of land in forests.

Table 7. Economic Impacts of Agriculture in New York, 2012

Industry/Sector	Direct Sales, $ million	Statewide Impact		
		Total sales, $ million	Value Added, $ million	Employment, Jobs
AGRICULTURE				
Production				
Oilseed farming	178.11	315.25	166.77	3,269
Grain farming	466.19	860.20	352.46	12,162
Vegetable and melon farming	617.09	1,244.92	731.94	7,750
Fruit farming	316.98	661.02	391.77	4,453
Greenhouse, nursery, and floriculture production	404.37	791.52	533.90	5,747
Tobacco farming	0.00	0.00	0.00	0
All other crop farming	368.46	686.41	327.54	4,147
Cattle ranching and farming	313.87	522.44	156.79	3,841
Dairy cattle and milk production	2,553.82	4,055.23	1,949.92	25,923
Poultry and egg production	134.94	253.44	75.94	816
Animal production, except cattle, poultry and eggs	90.08	131.90	79.03	2,746
Support activities for agriculture	148.78	304.93	175.82	6,158
Processing				
Wet corn milling	0.00	0.00	0.00	0
Soybean and other oilseed processing	24.10	37.47	7.98	117
Frozen food manufacturing	802.80	1,364.81	490.59	5,303
Fruit and vegetable canning, picking, and drying	1,938.34	3,337.33	1,110.68	10,072
Fluid milk and butter manufacturing	6,071.31	12,644.51	4,003.06	30,036
Cheese manufacturing	2,559.51	5,017.92	1,382.55	14,613
Dry, condensed, and evaporated dairy product manufacturing	363.45	716.30	214.80	2,098
Ice cream and frozen dessert manufacturing	357.96	684.85	234.60	2,365
Animal (except poultry) slaughtering, rendering, and processing	1,172.38	1,867.66	516.17	8,176
Poultry processing	292.26	454.36	133.48	1,493
Wineries	890.53	1,455.07	580.68	4,951
Total for agricultural industry	**20,065.33**	**37,407.54**	**13,616.47**	**156,236**

FORESTRY				
Production				
Forestry, forest products, and timber tract production	26.53	45.29	21.17	319
Commercial logging	192.20	330.55	159.96	3,337
Support activities for forestry	99.18	203.29	117.21	4,105
Processing				
Sawmills and wood preservation	538.11	949.47	346.56	4,738
Veneer and plywood manufacturing	50.25	81.24	31.49	407
Wood container and pallet manufacturing	230.94	392.12	181.65	2,699
Pulp mills	33.90	62.45	23.19	198
Paper mills	3,202.93	5,584.74	1,977.17	16,486
Paperboard mills	470.56	844.68	313.15	2,544
Total for forest industry	**4,844.60**	**8,493.83**	**3,171.55**	**34,833**
FISHERY				
Production				
Commercial fishing	30.89	50.55	25.91	918
Aquaculture	17.87	28.24	15.21	502
Processing				
Seafood product, preparation and packaging	179.59	280.09	117.45	1,008
Total for fishery/seafood industry	**228.35**	**358.88**	**158.57**	**2,428**
Total for agriculture, forestry and fishery	**25,138.28**	**46,260.25**	**16,946.59**	**193,497**

Special subsectors	**Direct Sales, $ million**	**Statewide Impact**		
		Total sales, $ million	**Value Added, $ million**	**Employment, Jobs**
Fertilizer manufacturing	553.51	996.97	268.88	2,063
Pesticide manufacturing	580.62	971.98	368.95	2,185
Landscape services	3,377.95	5,496.80	3,495.66	62,959

Rhode Island

In 2012, the aggregate total impact of agriculture in Rhode Island was significant, as indicated by:

- $1.1 billion impact on statewide total sales,
- $ 363.4 million contribution to state value added; and
- 6,591 jobs generated statewide.

The top three agricultural production sectors were:

- Commercial fishing, first with $162.5 million in total sales impact, generating 2,120 jobs,
- Greenhouse nursery and floriculture production, second with $46.9 million in total sales impact, generating 608 jobs, and
- Vegetable and melon farming, third with $15.1 million in total sales impact, generating 150 jobs.

The top three agricultural processing sectors were:

- Fluid milk and butter manufacturing, accounting for 73% of the total sales impact for agricultural industry, first at $205.4 million, generating 489 jobs,
- Animal (except poultry) slaughtering, rendering and processing, second with total sales impacts of $187.8 million, generating 747 jobs, and
- Seafood product, preparation and packaging, third with $119.3 million in total sales impact, generating 489 jobs.

In 2012, in addition to the aggregate total impact of agriculture

- Landscape services captured $521.5 million in total sales impact, generating 6,765 jobs.

Adjusting for size

- Agricultural total sales impact amounted to $8,606 per acre in farmland, and
- Combined overall, agricultural, forestry and fishery total sales impact was $1,003 per resident.

In addition, the industries provided significant open space: 69,589 acres of land in farms and 314,000 of land in forests.

Table 8. Economic Impacts of Agriculture in Rhode Island, 2012

industry/Sector	Direct Sales, $ million	Statewide Impact: Total sales, $ million	Value Added, $ million	Employment, Jobs
AGRICULTURE				
Production				
Oilseed farming	0.00	0.00	0.00	0
Grain farming	0.00	0.00	0.00	0
Vegetable and melon farming	10.65	15.10	8.51	150
Fruit farming	5.10	7.31	4.15	80
Greenhouse, nursery, and floriculture production	35.13	46.93	31.09	608
Tobacco farming	0.00	0.00	0.00	0
All other crop farming	4.35	6.46	2.81	62
Cattle ranching and farming	0.87	1.09	0.29	15
Dairy cattle and milk production	3.58	4.35	2.19	54
Poultry and egg production	1.65	2.03	0.54	9
Animal production, except cattle, poultry and eggs	4.48	5.53	3.26	244
Support activities for agriculture	4.27	8.14	4.40	213
Processing				
Wet corn milling	0.00	0.00	0.00	0
Soybean and other oilseed processing	0.00	0.00	0.00	0
Frozen food manufacturing	0.00	0.00	0.00	0
Fruit and vegetable canning, picking, and drying	13.46	20.05	4.66	66
Fluid milk and butter manufacturing	143.87	205.44	45.87	489
Cheese manufacturing	45.41	60.27	9.50	136
Dry, condensed, and evaporated dairy product manufacturing	0.00	0.00	0.00	0
Ice cream and frozen dessert manufacturing	6.69	10.04	2.39	39
Animal (except poultry) slaughtering, rendering, and processing	146.77	187.83	44.33	747
Poultry processing	4.40	6.42	1.67	23
Wineries	8.23	11.87	3.03	48
Total for agricultural industry	**438.91**	**598.86**	**168.69**	**2,983**

FORESTRY				
Production				
Forestry, forest products, and timber tract production	0.00	0.00	0.00	0
Commercial logging	3.57	5.17	1.74	70
Support activities for forestry	3.35	6.39	3.46	168
Processing				
Sawmills and wood preservation	23.18	35.20	10.80	182
Veneer and plywood manufacturing	3.88	5.72	2.52	27
Wood container and pallet manufacturing	12.92	25.34	11.05	192
Pulp mills	0.00	0.00	0.00	0
Paper mills	0.00	0.00	0.00	0
Paperboard mills	53.81	90.73	21.68	301
Total for forest Industry	**100.71**	**168.55**	**51.25**	**940**
FISHERY				
Production				
Commercial fishing	102.81	162.53	103.44	2,120
Aquaculture	1.92	4.55	2.89	59
Processing				
Seafood product, preparation and packaging	79.65	119.31	37.12	489
Total for fishery/seafood industry	**184.38**	**286.39**	**143.45**	**2,668**
Total for agriculture, forestry and fishery	**724.00**	**1,053.80**	**363.39**	**6,591**

Special subsectors	**Direct Sales, $ million**	**Statewide Impact**		
		Total sales, $ million	**Value Added, $ million**	**Employment, Jobs**
Fertilizer manufacturing	0.00	0.00	0.00	0
Pesticide manufacturing	0.00	0.00	0.00	0
Landscape services	320.52	521.50	310.65	6,765

Vermont

In 2012, the aggregate total impact of agriculture in Vermont was significant, as indicated by:

- $6.6 billion impact on statewide total sales,
- $ 2.1 billion contribution to state value added, and
- 36,828 jobs generated statewide.

The top three agricultural production sectors were:

- Dairy, cattle and milk production, leading agricultural production with $877.6 million in total sales impact, generating 7,443 jobs,
- All other crop farming, second with $175.1 million in total sales impact, generating 1,603 jobs, and
- Cattle ranching and farming, third with $151.8 million in total sales impact, generating 1,518 jobs.

The top three agricultural processing sectors were:

- Fluid milk and butter manufacturing, accounting for the total sales impact, first at $2.1 billion, generating 8,168 jobs,
- Cheese manufacturing, second with total sales impact of $613.5 million, generating 2,240 jobs, and
- Paperboard mills, third with total sales impact of $509.4 million, generating 1,867 jobs.

In 2012, in addition to the aggregate total impact of agriculture

- Fertilizer manufacturing generated $72.2 million in total sales impact, creating 166 jobs, and
- Landscape services captured $334.6 million in total sales impact, generating 5,259 jobs.

Adjusting for size

- Agricultural total sales impact amounted to $4,162 per acre in farmland, and
- Combined overall, agricultural, forestry and fishery total sales impact was $10,506 per resident.

In addition, the industries provided significant open space: 69,589 acres of land in farms and 4.5 million acres of land in forests.

Table 9. Economic Impacts of Agriculture in Vermont, 2012

Industry/Sector	Direct Sales, $ million	Statewide Impact		
		Total sales, $ million	Value Added, $ million	Employment, Jobs
AGRICULTURE				
Production				
Oilseed farming	0.00	0.00	0.00	0
Grain farming	0.00	0.00	0.00	0
Vegetable and melon farming	13.48	35.43	20.32	329
Fruit farming	14.37	40.81	23.48	407
Greenhouse, nursery, and floriculture production	25.42	69.06	44.06	679
Tobacco farming	0.00	0.00	0.00	0
All other crop farming	84.35	175.06	81.62	1,603
Cattle ranching and farming	69.93	151.82	42.95	1,518
Dairy cattle and milk production	500.58	877.56	399.50	7,443
Poultry and egg production	11.05	23.39	6.82	96
Animal production, except cattle, poultry and eggs	10.90	17.88	10.27	470
Support activities for agriculture	20.74	47.76	24.91	1,846
Processing				
Wet corn milling	0.00	0.00	0.00	0
Soybean and other oilseed processing	4.78	5.59	0.59	8
Frozen food manufacturing	19.83	27.80	7.04	117
Fruit and vegetable canning, picking, and drying	12.34	17.35	4.73	56
Fluid milk and butter manufacturing	1,046.16	2,136.25	570.22	8,168
Cheese manufacturing	320.13	613.46	143.40	2,240
Dry, condensed, and evaporated dairy product manufacturing	250.49	472.93	133.76	1,690
Ice cream and frozen dessert manufacturing	171.57	307.18	86.91	1,213
Animal (except poultry) slaughtering, rendering, and processing	52.50	108.26	24.17	756
Poultry processing	0.00	0.00	0.00	0
Wineries	55.25	82.47	24.17	329
Total for agricultural industry	**2,683.87**	**5,210.06**	**1,648.92**	**28,968**

FORESTRY				
Production				
Forestry, forest products, and timber tract preparation	20.26	35.16	15.54	403
Commercial logging	73.25	132.29	51.39	1,701
Support activities for forestry	2.56	5.95	3.08	228
Processing				
Sawmills and wood preservation	157.90	283.95	86.91	1,784
Veneer and plywood manufacturing	101.09	170.97	57.44	1,040
Wood container and pallet manufacturing	6.66	10.90	4.14	88
Pulp mills	0.00	0.00	0.00	0
Paper mills	143.53	218.18	58.25	749
Paperboard mills	312.30	509.38	137.10	1,867
Total for forest industry	**817.55**	**1,366.78**	**413.85**	**7,860**
FISHERY				
Production				
Commercial fishing	0.00	0.00	0.00	0
Aquaculture	0.00	0.00	0.00	0
Processing				
Seafood product, preparation and packaging	0.00	0.00	0.00	0
Total for fishery/seafood industry	**0.00**	**0.00**	**0.00**	**0**
Total for agriculture, forestry and fishery	**3,501.42**	**6,576.84**	**2,062.77**	**36,828**

Special subsectors	**Direct Sales, $ million**	**Statewide Impact**		
		Total sales, $ million	**Value Added, $ million**	**Employment, Jobs**
Fertilizer manufacturing	45.40	72.16	11.93	166
Pesticide manufacturing	0.00	0.00	0.00	0
Landscape services	218.66	334.60	176.14	5,259

V. CONCLUSION

The agricultural, forestry and fishery industries have a critical, significant impact on the economies of the eight Northeastern states (CT, ME, MA, NH, NJ, NY, RI and VT) studied in this report: **$99.4 billion in total sales and 474,482 jobs.** In addition, these industries provide significant open space and ecosystem services that improve the quality of life. Together, the eight states maintained stewardship of 12.1 million acres of open space in farmland and 46.9 million acres in forests.

Although there is great variability in the distribution of total sales and job creation across these eight Northeastern states, reflecting primarily their relative sizes, the findings attest to the value added nature of the region's agriculture, forestry and fishery industries, due in part to proximity to a large consumer base, which creates opportunities for continued economic growth and employment.

Even though the Northeastern region contains some of the smallest states in the nation in size or population, when the contributions of the agriculture, forestry and fishery industries are expressed on a per capita or per acre basis, it is clear that their role is significant in the lives of the region's residents. On a per acre in farmland basis, the economic impact of agriculture on statewide sales ranged from $2,570 in Maine to $14,223 in New Jersey, and on a per resident basis it ranged from $1,003 in Rhode Island to $10,506 in Vermont. **On average, in 2012 the economic impact of agriculture in the region was $5,678 per acre in farmland and the combined total sales impact of agriculture amounted to $2,312 per resident**,

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APPENDIX

Description of Sectors Included in the Study

NAICS Code	Industry/Sector	Description
	AGRICULTURE	
	Production	
111120	Oilseed farming	Growing fibrous oilseed producing plants and/or producing oilseed seeds, such as sunflower, safflower, flax, rape, canola, and sesame
111130	Grain farming	Raising dry peas and beans or corn; other grain farming
111219	Vegetable and melon farming	Growing melons and/or vegetables (except potatoes; dry peas; dry beans; field, silage, or seed corn; and sugar beets); producing vegetable and/or melon seeds; and growing vegetable and/or melon bedding plants
111339	Fruit farming	Apple orchards; grape vineyards; strawberry farming; berry (except strawberry) farming
111422	Greenhouse, nursery, and floriculture	Growing crops of any kind under cover and/or growing nursery stock and flowers
111910	Tobacco farming	Tobacco farming, field and seed production
111998	All other crop farming	Hay farming; all other miscellaneous crop farming (e.g. aloe)
112111	Cattle ranching and farming	Raising cattle (including cattle for dairy herd replacements)
112120	Dairy cattle and milk production	Milking dairy cattle
112340	Poultry and egg production	Breeding, hatching, and raising poultry for meat or egg production
112990	Animal production, except cattle, poultry and eggs	Raising bees, horses and other equines, rabbits and other fur-bearing animals, and producing products such as honey and other bee products
115112	Support activities for agriculture	Crop harvesting primarily by machine, soil preparation, farm labor contracting, and farm management services. support services that are an essential part of agricultural production
	Processing	
311221	Wet corn milling	Wet milling corn and other vegetables (except to make ethyl alcohol), e.g., corn sweeteners, such as glucose, dextrose, and fructose; corn oil; and starches (except laundry)
311222	Soybean and other oilseed processing	Crushing oilseeds and tree nuts, such as soybeans, cottonseeds, linseeds, peanuts, and sunflower seeds, e.g., oilseed oils, cakes, meals, and protein isolates and concentrates
311411	Frozen food manufacturing	Manufacturing frozen specialty foods (except seafood), such as frozen dinners, entrees, and side dishes; frozen pizza; etc.

Table A1 continued

NAICS Code	Industry/Sector	Description
311421	Fruit and vegetable canning, pickling, and drying	Manufacturing canned, pickled, and brined fruits and vegetables, e.g., canned juices; canned jams and jellies; canned tomato-based sauces, such as catsup, salsa, chili, spaghetti, etc.
311511	Fluid milk and butter manufacturing	Manufacturing processed milk product, such as pasteurized milk or cream and sour cream and/or manufacturing fluid milk dairy substitutes from soybeans and other nondairy substances; creamery butter manufacturing yogurt (except frozen) manufacturing
311513	Cheese manufacturing	Manufacturing cheese products (except cottage cheese) from raw milk and/or processed milk products and/or manufacturing cheese substitutes from soybean and other nondairy substances
311514	Dry, condensed and evaporated dairy product manufacturing	Manufacturing dry, condensed, and evaporated milk and dairy substitute products, yogurt mix manufacturing
311520	Ice cream and frozen dessert manufacturing	Manufacturing ice cream, frozen yogurts, frozen ices, sherbets, frozen tofu, and other frozen desserts (except bakery products)
311611	Animal (except poultry) slaughtering, rendering, and processing	Slaughtering animals (except poultry and small game); meat processing from carcasses; rendering and meat byproduct processing
311615	Poultry processing	Slaughtering poultry and small game and/or preparing processed poultry and small game meat and meat byproducts
312130	Wineries	Growing grapes and manufacturing wines and brandies; manufacturing wines and brandies from grapes and other fruits grown elsewhere; and blending wines and brandies
	FORESTRY	
	Production	
113210	Forestry, forest products, and timber tract preparation	Growing trees for reforestation and/or gathering forest products, such as gums, barks, balsam needles, rhizomes, fibers, Spanish moss, ginseng, and truffles
113310	Commercial logging	Support services that are an essential part of forestry production
115112	Support activities for forestry	Manufacturing paper from pulp. These establishments may manufacture or purchase pulp. In addition, the establishments may convert the paper they make.
	Processing	
321114	Sawmills and wood preservation	Logs or bolts transforming into boards, dimension lumber, beams, timbers, poles, ties, shingles, shakes, siding, and wood chips; cutting and treating round wood and/or treating wood products made in other establishments to prevent rotting
321211	Veneer and plywood manufacturing	Manufacturing hardwood veneer and/or hardwood plywood
321920	Wood container and pallet manufacturing	Manufacturing wood pallets, wood box shook, wood boxes, other wood containers, and wood parts for pallets and containers

Table A1 continued

NAICS Code	Industry/Sector	Description
322110	Pulp mills	Manufacturing newsprint and uncoated groundwood paper from pulp; manufacturing or purchasing pulp; converting the paper they make
322121	Paper mills	Manufacturing paper (except newsprint and uncoated groundwood paper) from pulp. These establishments may manufacture or purchase pulp. In addition, the establishments may also convert the paper they make
322130	Paperboard mills	Manufacturing paperboard from pulp. These establishments may manufacture or purchase pulp. In addition, the establishments may also convert the paperboard they make
	FISHERY	
	Production	
114111	Commercial fishing	Commercial catching or taking of finfish, shellfish, or miscellaneous marine products from a natural habitat
112519	Aquaculture	Farm raising of aquatic animals (except finfish and shellfish) and/or farm raising of aquatic plants. Algae, frog, or seaweed production is included in this industry
	Processing	
311712	Seafood product, preparation and packaging	Canning seafood (including soup); smoking, salting, and drying seafood; eviscerating fresh fish by removing heads, fins, scales, bones, and entrails; shucking and packing fresh shellfish; processing marine fats and oils; and freezing seafood
	Special subsectors	
325311	Fertilizer manufacturing	Mixing ingredients made elsewhere into fertilizers
325320	Pesticide manufacturing	Formulation and preparation of agricultural and household pest control chemicals (except fertilizers)
561730	Landscape services[19]	Providing landscape care and maintenance services and/or installing trees, shrubs, plants, lawns, or gardens; providing landscape services along with the design of landscape plans and/or the construction (i.e., installation) of walkways, retaining walls, decks, fences, ponds, and similar structures

Notes: The following agricultural production sectors were excluded from the analysis because no direct sales were reported for these sectors in 2012: (1) cotton farming, and (2) sugar cane and sugar beet farming. Only the agricultural processing sectors shown in the table above were included in the analysis because these processing activities have strong linkages with agricultural production in the state. Thus the following food processing industries were excluded from this study even though these industries are active in the state as of 2012: (1) other animal food manufacturing, (2) fats and oils refining and blending, (3) breakfast cereal manufacturing, (4) chocolate and confectionery manufacturing from cacao beans, (5) confectionery manufacturing from purchased chocolate, (6) non-chocolate confectionery manufacturing, (7) bread and bakery product manufacturing, (8) cookie, cracker, and pasta manufacturing, (9) snack food manufacturing, (10) coffee and tea manufacturing, (11) flavoring syrup and concentrate manufacturing, (12) seasoning and dressing manufacturing, (13) all other food manufacturing, (14) soft drink and ice manufacturing, (15) breweries, (16) distilleries, and (17) tobacco product manufacturing (e.g., cigarettes and chewing tobacco). Similarly, the following forest processing sectors were excluded from the study: (1) engineered wood members and truss manufacturing, (2) wood windows, door and millwork, (3) manufactured home (mobile home) manufacturing, and (5) all other converted paper manufacturing (e.g., paperboard container, stationery, sanitary paper).

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[19] Sales for the landscape services sector were estimated by obtaining average sales per firm in 2013 reported by Dun and Bradstreet (2014) and multiplying by the number of landscape firms in 2012 provided by the U.S. Census Bureau 2012 County Business Patterns database. See Haydu, Hodges, and Hall (2009).