

UPDATED NUMBERS FOR SOUTH CENTRAL AND SOUTHEAST

Economic Contribution of the Agbioscience Industry: Southeast Minnesota

University of Minnesota Extension recently completed a study of the economic contribution of the agbioscience industry in Southeast Minnesota. Southeast Minnesota, in that study, includes the 20 counties served by the Southern Minnesota Initiative Foundation. The study builds on the work of Battelle Technology Partnership Practice, which defines agbioscience and identifies four platforms for additional investment and development.

The information published was valuable to community stakeholders, however, there was a request for Extension to provide key information from the report disaggregated into the South Central Region (Blue Earth, Brown, Faribault, Le Sueur, Martin, Nicollet, Sibley, Waseca, and Watonwan counties) and into the Southeast region (Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona counties).

This summary brief was developed in response to that request. This brief is meant to serve as an addendum to the full report. Readers are encouraged to view the full report for additional detail and information. The full report is available here:

<http://www.extension.umn.edu/community/economic-impact-analysis/reports/>.

THE AGBIOSCIENCE INDUSTRY IN SOUTH CENTRAL AND SOUTHEAST MINNESOTA

Agbioscience in this brief includes components of the manufacturing, wholesale trade, and professional and business services industries. The definition of agbioscience includes specific, well-defined sectors within each of these industries. For example, manufacturing is an industry, and soybean processing is a sector within the manufacturing industry. More broadly, however, the definition of agbioscience includes components of food manufacturing; wood and paper product manufacturing; chemical manufacturing; farm supplies wholesalers; environmental consulting; and research and development in biotechnology. The only component of production agriculture included in this analysis is the sector of soil preparation, planting, and cultivation. By and large, this analysis *does not* focus on production agriculture. The analysis also does not include activity related to livestock processing. The definition of agbioscience used in this report is consistent with the definition of agbioscience used in the Battelle report.

In 2014, agbioscience companies in South Central Minnesota employed nearly 4,400 people. Cheese manufacturers, farm suppliers wholesalers, and fruit and vegetable canning manufacturers were the biggest employers in the region (table 1). Agbioscience businesses in the region directly produced \$5.5 billion of output in 2014.

Table 1: Direct Effect of the Agbioscience Industry in South Central Minnesota, 2014

	Employment	Output (millions)
Cheese Manufacturing	804	\$841.2
Farm Supplies Merchant Wholesalers	649	\$158.0
Fruit and Vegetable Canning	524	\$267.8
Soybean and Oilseed Processing	515	\$2,687.5
Breakfast Cereal Manufacturing	322	\$269.5
Frozen Fruit, Juice, and Vegetable Manufacturing	298	\$118.9
Creamery Butter Manufacturing	229	\$404.8
Testing Laboratories	214	\$22.8
Ethyl Alcohol Manufacturing	219	\$380.6
Breweries	154	\$133.2
Soil Preparation, Planting, and Cultivating	117	\$5.7
Flour Milling	97	\$148.0
In-Vitro Diagnostic Substance Manufacturing	63	\$37.6
Spice and Extract Manufacturing	59	\$33.6
Toilet Preparation Manufacturing	30	\$15.3
Sawmills	19	\$7.1
Wineries	14	\$5.3
Phosphatic Fertilizer Manufacturing	5	\$9.0
Research and Development in Biotechnology	5	\$1.0
Environmental Consulting Services	5	\$0.2
Remediation Services	5	\$1.0
Total	4,347	\$5,548.1

In 2014, agbioscience companies in Southeast Minnesota employed nearly 5,000 people. Fruit and vegetable canning manufacturers, breakfast cereal manufacturers, and farm supplies wholesalers were the biggest employers in the region (table 2). Agbioscience businesses in the region directly produced \$3.7 billion of output in 2014.

Table 2: Direct Effect of the Agbioscience Industry in Southeast Minnesota, 2014

	Employment	Output (millions)
Fruit and Vegetable Canning	1,413	\$722.7
Breakfast Cereal Manufacturing	935	\$809.8
Farm Supplies Merchant Wholesalers	637	\$150.4
Cheese Manufacturing	594	\$593.2
Ethyl Alcohol Manufacturing & Basic Organic Chemical	218	\$261.2
Spice and Extract Manufacturing	154	\$91.8
Fats and Oils Refining and Blending	147	\$292.5
Fluid Milk Manufacturing	118	\$99.7
Engineered Wood Member (except Truss) Manufacturing	103	\$18.8
Soil Preparation, Planting, and Cultivating	89	\$3.2
Plastics Material and Resin Manufacturing	89	\$212.5

Flour Milling	87	\$130.2
Wineries	77	\$17.6
Toilet Preparation Manufacturing	75	\$71.0
Sawmills	67	\$15.8
Synthetic Rubber Manufacturing	40	\$51.2
Frozen Fruit, Juice, and Vegetable Manufacturing	35	\$15.0
Remediation Services	32	\$6.2
Testing Laboratories	22	\$1.6
Environmental Consulting Services	16	\$1.6
Soybean and Oilseed Processing	13	\$68.3
Cut Stock, Resawing Lumber, and Planing	5	\$1.2
Hardwood Veneer and Plywood Manufacturing	5	\$1.1
Research and Development in Biotechnology	5	\$1.0
Creamery Butter Manufacturing	5	\$7.8
Breweries	5	\$4.3
Nitrogenous Fertilizer Manufacturing	5	\$8.8
Total	4,991	\$3,658.5

GROWTH AND DECLINE SECTORS

Beyond understanding the current status of the agbioscience industry, studying how the industry is changing also provides insights. The next section examines changes in the agbioscience industry over the last 10 years.

Shift-share analysis examines the drivers of growth and decline for a specific sector in a specific region by comparing to industry and national trends. The analysis provides an interesting interpretation of the changes in each sector (tables 3 and 4). In this analysis, the primary focus is on the competitive effect. A strong positive competitive effect indicates particular characteristics of the local economy are driving growth in the region. A strong negative competitive effect can be interpreted as a warning that the local region may not be supporting the sector as well as it could.

Between 2004 and 2014, the number of jobs in the agbioscience industry in South Central Minnesota declined by 5 percent. In comparison, the number of jobs in the agbioscience industry in Greater Minnesota declined by 3 percent. During the same period, the total number of jobs in all industries in the South Central region also declined by 3 percent.

Between 2004 and 2014, the fastest growing agbioscience sectors (measured in jobs added) in South Central Minnesota were creamery butter manufacturing, soybean and oilseed processing, and ethyl alcohol manufacturing (table 3). Each of these agbioscience sectors also had strong positive competitive effects, indicating the region has a relative strength in these sectors. The highest numbers of lost jobs in agbioscience were recorded in fruit and vegetable canning manufacturing, cheese manufacturing, and farm supplies merchant wholesalers. These three sectors also had negative competitive effects.

Table 3: Shift-Share Analysis (Measured by Number of Jobs) for Growth and Decline Agbioscience Sectors in South Central Minnesota

Sector	Change 2004-2014	Industry Mix Effect	National Growth Effect	Competitive Effect
Top 3 Job Adding Sectors				
Creamery Butter Manufacturing	196	2	1	192
Soybean & Oilseed Processing	184	-131	14	301
Ethyl Alcohol (ethanol) Manufacturing	181	51	2	129
Top 3 Job Loss Sectors				
Fruit and Vegetable Canning	-455	-137	42	-360
Cheese Manufacturing	-357	116	50	-523
Farm Supplies Merchant Wholesalers	-219	4	38	-260

Between 2004 and 2014, the number of jobs in the agbioscience industry in Southeast Minnesota grew by 11 percent. In comparison, the number of jobs in the agbioscience industry in Greater Minnesota declined by 3 percent. During the same period, the total number of jobs in all industries in the Southeast region increased by 2 percent.

The fastest growing agbioscience sectors in Southeast Minnesota were fruit and vegetable canning, breakfast cereal manufacturing, and toilet preparation manufacturing (table 4).

Table 4: Shift-Share Analysis (Measured by Number of Jobs) for Growth and Decline Agbioscience Sectors in Southeast Minnesota

Sector	Change 2004-2014	Industry Mix Effect	National Growth Effect	Competitive Effect
Top 3 Job Adding Sectors				
Fruit and Vegetable Canning	356	-148	46	458
Breakfast Cereal Manufacturing	228	-87	31	284
Toilet Preparation Manufacturing	57	-3	1	58
Top 3 Job Loss Sectors				
Ethyl Alcohol (ethanol) Manufacturing	-96	322	10	-429
Fats & Oils Refining and Blending	-65	15	9	-89
Spice and Extract Manufacturing	-57	69	9	-136
Farm Supplies Wholesalers	-57	3	30	-90

NUMBER OF AGBIOSCIENCE JOBS, CHANGE FROM 2001 TO 2014

Tables 5 and 6 list all the agbioscience sectors with jobs in 2001 or 2014 and the change during the period. The tables are sorted by the change in the number of jobs between 2001 and 2014. Agbioscience sectors with no employment in 2001 or 2014 are not listed in the tables.

The time period of 2001 to 2014 is used in this section, as it is the longest set of continuous data available for analysis. In comparison to tables 3 and 4, these tables show all industries.

The biggest change between 2001 and 2014 in South Central Minnesota was in the soybean and other oilseed processing industry which added 305 jobs in the time period.

Table 5: Agbioscience Jobs in South Central Minnesota, 2001-2014

Description	2001 Jobs	2014 Jobs	2001 - 2014 Change	2001 - 2014 % Change
Soybean and Other Oilseed Processing	210	515	305	145%
Ethyl Alcohol Manufacturing	54	219	165	306%
Testing Laboratories	83	214	131	158%
Breweries	30	154	124	413%
In-Vitro Diagnostic Substance Manufacturing	0	63	63	NA
Spice and Extract Manufacturing	0	59	59	NA
Soil Preparation, Planting, and Cultivating	78	117	39	50%
Frozen Fruit, Juice, and Vegetable Manufacturing	261	298	37	14%
Breakfast Cereal Manufacturing	300	322	22	7%
Creamery Butter Manufacturing	214	229	15	7%
Sawmills	5	19	14	274%
Wineries	5	14	9	187%
Phosphatic Fertilizer Manufacturing	0	5	5	NA
Environmental Consulting Services	5	5	0	0%
Remediation Services	5	5	0	0%
Rice Milling	5	0	-5	-100%
Research and Development in Biotechnology	14	5	-9	-63%
All Other Basic Organic Chemical Manufacturing	10	0	-10	-100%
Toilet Preparation Manufacturing	50	30	-20	-40%
Flour Milling	163	97	-66	-40%
Farm Supplies Merchant Wholesalers	815	649	-166	-20%
Fruit and Vegetable Canning	916	524	-392	-43%
Cheese Manufacturing	1,232	804	-428	-35%
Total	4,455	4,347	-123	-3%

In Southeast, the fruit and vegetable canning industry added the most jobs during the period, increasing by 306 jobs.

Table 6: Agbioscience Jobs in Southeast Minnesota, 2001-2014

Description	2001 Jobs	2014 Jobs	2001 - 2014 Change	2001 - 2014 % Change
Fruit and Vegetable Canning	1,107	1,413	306	28%
Breakfast Cereal Manufacturing	768	935	167	22%
Cheese Manufacturing	455	594	139	31%
Fluid Milk Manufacturing	0	118	118	NA
Wineries	5	77	72	1443%
Ethyl Alcohol Manufacturing	74	144	70	95%
Farm Supplies Merchant Wholesalers	569	637	68	12%
Toilet Preparation Manufacturing	28	75	47	168%
Synthetic Rubber Manufacturing	5	40	35	695%
Soil Preparation, Planting, and Cultivating	59	89	30	51%
Frozen Fruit, Juice, and Vegetable Manufacturing	5	35	30	601%
Sawmills	49	67	18	37%
Engineered Wood Member (except Truss) Manufacturing	89	103	14	16%
All Other Basic Organic Chemical Manufacturing	62	74	12	19%
Hardwood Veneer and Plywood Manufacturing	0	5	5	NA
Breweries	0	5	5	NA
Remediation Services	28	32	4	14%
Cut Stock, Resawing Lumber, and Planing	5	5	0	0%
Creamery Butter Manufacturing	5	5	0	0%
Environmental Consulting Services	21	16	-5	-24%
Nitrogenous Fertilizer Manufacturing	10	5	-5	-50%
Testing Laboratories	29	22	-7	-24%
Plastics Material and Resin Manufacturing	98	89	-9	-9%
Medicinal and Botanical Manufacturing	34	0	-34	-100%
Flour Milling	122	87	-35	-29%
Soybean and Other Oilseed Processing	74	13	-61	-82%
Research and Development in Biotechnology	70	5	-65	-93%
Spice and Extract Manufacturing	233	154	-79	-34%
Malt Manufacturing	103	0	-103	-100%
Fats and Oils Refining and Blending	289	147	-142	-49%
Total	4,396	4,991	595	14%

DEFINITIONS OF AGBIOSCIENCE SECTORS

While many of the agbioscience sectors included in this analysis are easy to understand, there are a few which may not be clear to the average reader. Those sectors will be defined in this section. For additional details about the types of companies classified in each agbioscience sector, please visit <http://www.naics.com/search/>.

- **Spice and Extract Manufacturing:** This U.S. industry comprises establishments primarily engaged in (1) manufacturing spices, table salt, seasonings, flavoring extracts (except coffee and meat), and natural food colorings and/or (2) manufacturing dry mix food preparations, such as salad dressing mixes, gravy and sauce mixes, frosting mixes, and other dry mix preparations.
- **Fats and Oils Refining and Blending:** This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) manufacturing shortening and margarine from purchased fats and oils; (2) refining and/or blending vegetable, oilseed, and tree nut oils from purchased oils; and (3) blending purchased animal fats with purchased vegetable fats.
- **Toilet Preparation Manufacturing:** This industry comprises establishments primarily engaged in preparing, blending, compounding, and packaging toilet preparations, such as perfumes, shaving preparations, hair preparations, face creams, lotions (including sunscreens), and other cosmetic preparations.
- **Medicinal and Botanical Manufacturing:** This U.S. industry comprises establishments primarily engaged in (1) manufacturing uncompounded medicinal chemicals and their derivatives (i.e., generally for use by pharmaceutical preparation manufacturers) and/or (2) grading, grinding, and milling uncompounded botanicals.
- **Malt Manufacturing:** This U.S. industry comprises establishments primarily engaged in manufacturing malt from barley, rye, or other grains.

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