

sales multiplier is 1.67 +\$0.67 economic activity for every sales dollar and the employment multiplier is 2.24 +1.24 jobs for every one added. The income multiplier is 1.76 +\$0.76 income for every labor dollar. The tax revenue was \$4,863,974. The processed sweet corn sales multiplier equals 1.67 (129,953,080/78,008,720), which suggests that for every dollar of sales by the processed sweet corn industry, an additional 67 cents of economic activity will be generated in Wisconsin.

The processed sweet corn industry employment multiplier equals processed sweet corn industry 2.24 (719.2/320.5), which implies that for every job created by the industry 1.24 additional jobs will be created. Finally, the income multiplier created by the processed sweet corn industry is 1.76 (37,919,084/21,606,166), implying that for every dollar of labor income earned by employees who work in the industry, an additional 76 cents of income is earned in Wisconsin.

In 2012, Wisconsin will collect \$4,863,974 in tax revenue. The taxes collected from the processed sweet corn industry come from personal and corporate income taxes, sales taxes, and property taxes. The property tax totals \$1,528,505. The personal income taxes collected from processed sweet corn employees amount to \$929,023. The output is taxed in the form of the sales tax of the total output; the state collects \$1,154,994. Some of the inputs and products are tax exempt, or this figure would be greater. There are a wide variety of fees and taxes (both personal and corporate) that contribute to federal and state budgets that are not included in this analysis.



## Processed Sweet Corn:

Analyzing the Economic Impact in Wisconsin

## PROFILE OF SWEET CORN

### **PROCESSED SWEET CORN: ANALYZING THE ECONOMIC IMPACT IN WISCONSIN**

#### **Principal Researcher and Analyst**

Russ Kashian, Ph.D.  
kashianr@uww.edu  
Department of Economics  
Professor  
UW-Whitewater  
800 W. Main Street  
Whitewater, WI 53190

#### **FERC GIS Specialist**

Matthew Schmus

#### **Report Preparation and Industry Analysis**

Jamie Depas

While the term “like a can of corn” implies something that is easy, the relationship of sweet corn to the Wisconsin economy is actually complex. The vertical integrated system of the sweet corn industry shows a solid platform for job creation along each process. Wisconsin is the leading state in exporting processed sweet corn. The Wisconsin Department of Agriculture reported in 2011 Wisconsin exported 37 percent of the nation’s processed sweet corn.

Production and processing of specialty crops in Wisconsin are important to both state and national agricultural and manufacturing industries. Wisconsin ranks seventh among U.S. states for farmgate vegetable sales and eighth for farmgate fruit and tree nut sales. While a portion of these sales enter fresh markets (grocery stores, restaurants, farmers markets, etc.), a significant amount of Wisconsin farmgate sales go to processors for freezing, canning, drying and pickling. As a result, Wisconsin ranks second among U.S. states for both harvested acreage and total production of processing vegetables and third for production value. Key processing crops in Wisconsin include potatoes, sweet corn, green beans, green peas, carrots, cucumbers and onions, with cranberries by far the leading fruit.

According to Canned Food Alliance, in 1795 the French army, under the control of Napoleon Bonaparte, announced a reward for the individual who could conceive of an idea to help with food preservation. The need came from the army having trouble shipping food across supply lines. Nicholas Appert built on the principle of bottled wine though he could not explain why the food did not spoil. The explanation did not come until Louis Pasteur demonstrated that microorganisms are the cause of food spoilage. After this discovery, canning and processing food was widely accepted as a way to preserve food.

In 2012, FERC (Fiscal and Economic Research Center) at the University of Wisconsin-Whitewater gathered data from government agencies and growers associations including the United States Department of Agriculture (USDA) and the National Agricultural Statistics Service (NASS). The data collected will exemplify how Wisconsin is leading the nation in processed sweet corn

## THE ECONOMIC IMPACT OF PROCESSED SWEET CORN ON WISCONSIN

about by processed sweet corn. As a direct result of processed sweet corn, 320.5 jobs were created, paying out over \$21,606,166 dollars in wages and benefits for a total direct effect on the economy of over \$78,008,720. One of the unique attributes of processed sweet corn’s impact on Wisconsin’s economy is its vertical integration. Because all the steps of processing sweet corn are done in Wisconsin, most of the output created by the industry stays in Wisconsin. Thus leaks are minimized. The indirect effect refers to the operation of processed sweet corn that requires several expenditures including utilities, insurance and maintenance costs. This spending creates additional jobs in those industries that supply those services. These impacts are referred to as indirect effects because they are indirectly created by the establishment of jobs within the industry of processed sweet corn. The success of the processed sweet corn industry affects all of the suppliers. The induced effect is another impact that occurs from the people who work at the company spending their earned income in the local community. This spending creates jobs in the businesses that provide the services. These impacts are called induced impacts. The induced effect measures the effects of the changes in household income: individuals working in the processed sweet corn industry and the suppliers of the industry spend money at restaurants, grocery stores and shops.

The processed sweet corn industry has a combined impact (including direct, indirect and induced) of \$129,953,080 on the economy of Wisconsin. This impact led directly to the creation of 719 jobs. A large portion of the money generated by the processed sweet corn industry stays in the state, which explains the impressive income multiplier and output multiplier. Some money does ultimately flow outside the state to purchase items that do not originate in Wisconsin. The impact of the processed sweet corn industry on the economy of Wisconsin in general and specifically on Portage and Waushara counties is significant. The processed sweet corn industry provides a notable amount of employment and labor income for the state. The

### **DIRECT EFFECT**

**JOBS CREATED:** 320.5  
**LABOR INCOME:** \$21,606,166  
**OUTPUT:** \$78,008,720

### **INDIRECT EFFECT**

**JOBS CREATED:** 187.3  
**LABOR INCOME:** \$8,194,002  
**OUTPUT:** \$26,141,216

### **INDUCED EFFECT**

**JOBS CREATED:** 211.4  
**LABOR INCOME:** \$8,118,918  
**OUTPUT:** \$25,803,146

### **TOTAL EFFECT**

**JOBS CREATED:** 719.2  
**LABOR INCOME:** \$37,919,084  
**OUTPUT:** \$129,953,080

## THE ECONOMIC MULTIPLIER

**Direct effect** – refers to production change associated with a change in demand for the good itself. It is the initial impact to the economy, which is exogenous to the model. In the case of processed sweet corn, this includes the spending brought about by the industry.

**Indirect effect** – refers to the secondary impact caused by changing input needs of directly affected industries (e.g., additional input purchases to produce additional output). It concerns inter-industry transactions: The processed sweet corn industry has a demand for locally produced materials needed to produce its product. The success of the processed sweet corn industry affects all of the industry's suppliers.

**Induced effect** – is caused by changes in household spending due to the additional employment generated by direct and indirect effects. The induced effect measures the effects of the changes in household income: Individuals working in the processed sweet corn industry and the industry's suppliers spend money at restaurants, grocery stores and shops.

To determine the economic impact of the processed sweet corn industry on Wisconsin, the 2012 IMPLAN economic modeling system was used. This produces an economic multiplier, which is a quantitative measure of economic impact that recognizes that all levels of economies are interconnected networks of interdependent activity. When one part of the economy changes the rest of the economy will be influenced by that change. This will typically result in a greater total impact than was caused by the original injection of capital into the economy.

A portion of that money will “leak” out of the local economy through taxes or be spent outside of the local economy. Only a fraction of the money spent by growers and processors of sweet corn will probably stay in the local economy. People who work within the industry could be from outside the state. Insurance paid by the employers and employees might be paid to a company in a different state. The harvesting equipment could have been not only assembled by people from outside the community, but also designed and fabricated in a state other than Wisconsin. Each of these and many more possibilities allow for money to leak out of the economy and to have effects on other areas. The multiplier effect compensates for this “leak.”

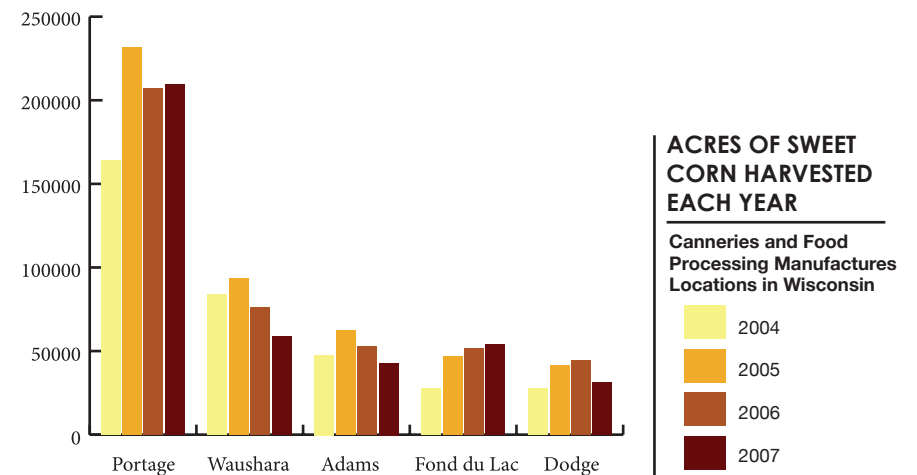
To calculate the impact of expenditures by the sweet corn processing industry, an IMPLAN input-output model was used. An IMPLAN model is capable of determining the overall economic impact that initial spending has on the local economy. The IMPLAN model uses data gathered in surveys and estimates to what extent different spending categories affect the local economy in terms of initial effect, direct effect, indirect effect, and induced effect. This input-output model provides a means to capture and measure these effects. It uses the following three effects to measure economic impact:

The economic impact of processed sweet corn is measured across industry sales, job creation and employment income. The direct effect is the indicator that refers to the spending brought

from the fields, to the cannery, to the shelf. Along every process in the cycle more capital is added to Wisconsin, equaling more jobs in our state.

According to the National Agricultural Statistics Service, in 2008 Wisconsin's growing season for processed sweet corn starts around April to July 1 and harvesting is between August 1 and October 15, with most activity from August 15 to September 25. There are three primary districts in Wisconsin where corn is grown: Central, South Central, and East Central. According to Mike Rankin's research on Wisconsin pea and sweet corn trends, Wisconsin harvested sweet corn acres drop from first in the United States in the 1990s to third in the 2000s. Over the past 15 years Wisconsin has produced 8,969,640 tons of processed corn and in that same time the total United States output of processed corn was 46,722,360 tons. In just the state of Wisconsin we have produced almost 20 percent of our nation's processed corn in the last 15 years.

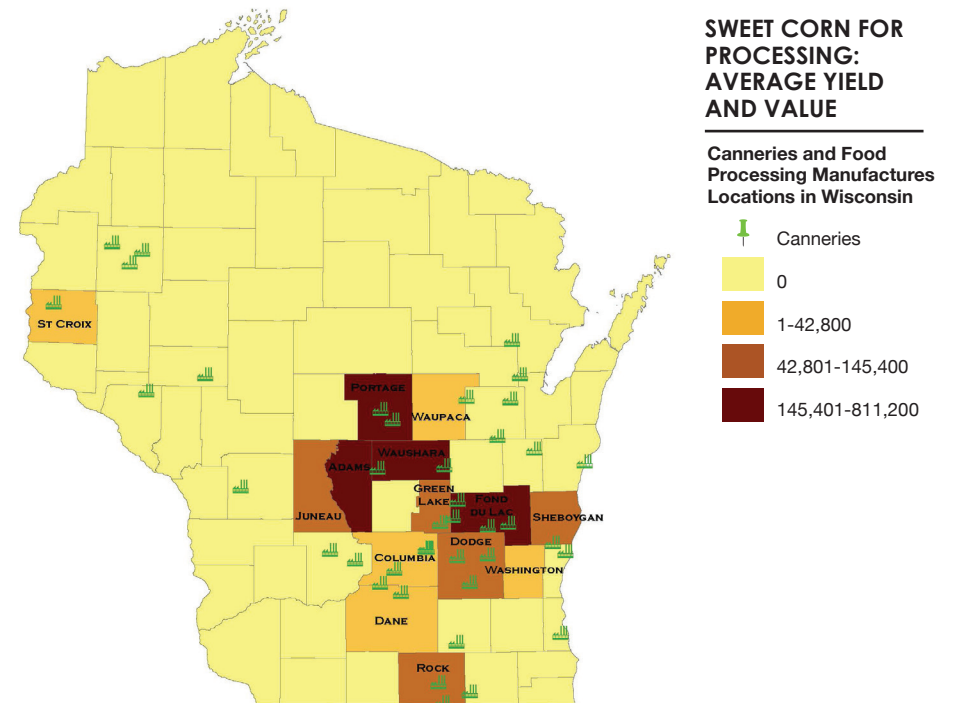
Sweet corn fields have migrated toward sandier soil where planters find higher yields. In the 1980s Fond du Lac and Dodge counties accounted for 30 percent of the total sweet corn production, while today the two counties account for only 15 percent. The new counties leading the state in sweet corn for processing are Portage, Waushara and Adams.



## PROCESSING PLANTS IN WISCONSIN

Lakeside Foods Incorporated, Del Monte Corporation, Friday Canning Foods Incorporated, and Dean Foods Vegetable Company are the largest processor companies of sweet corn and have the most locations in Wisconsin, with Lakeside Foods leading the group. The firms cluster toward certain parts of the state for economic benefits such as shipping cost and being close to competitors. The cities that have the most processing manufacturers are Pulaski, in Brown County, and New Richmond, in St. Croix County. After analyzing the data a reasonable question is why don't more firms locate in the leading counties where sweet corn is grown? Between Portage and Waushara there is only one known processing plant.

## 2013 MWFPA PROCESSOR MEMBERS AND LOCATIONS IN WISCONSIN



### CANNERIES AND FOOD PROCESSING MANUFACTURES LOCATIONS IN WISCONSIN

<b>Allens Inc.</b> Pulaski	<b>Jennie-O Turkey Store</b> Barron	Fort Atkinson Plover Rice Lake	These locations do not include frozen processing facilities such as Birds Eye Foods Inc. in Darien, Wisconsin.
<b>Birds Eye Foods</b> Darien	<b>Lakeside Foods Inc</b> Belgium Brillion Eden	<b>Seneca Foods Corp</b> Baraboo Cambria Clyman Cumberland De Forest Gillett Hancock Janesville Mayville Oakfield Ripon	
<b>Bonduelle USA</b> Fairwater	<b>Bush Brothers &amp; Co</b> Augusta	<b>TLC/Beaver Dam Logistic Center</b> Beaver Dam	
<b>Del Monte Foods</b> Cambria Markesan Plover	<b>General Mills</b> Milwaukee	<b>Leach Farms</b> Berlin	
<b>Great Lakes Kraut</b> Bear Creek	<b>Lodi Canning Co</b> Lodi	<b>Mc Cain Foods USA</b> Appleton	
<b>Hormel Foods</b> Beloit Sparta			

### CORN, SWEET, COMMERCIAL CROP: AREA AND PRODUCTION FOR WISCONSIN

Year	Area Harvested in Achres	Production in Tons	Value per Ton
1996	115,900	701,200	78.60
1997	109,600	716,780	73.90
1998	102,700	657,780	61.80
1999	105,600	699,000	56.00
2000	92,900	576,700	65.40
2001	98,800	657,640	65.80
2002	84,200	596,050	56.20
2003	92,100	681,420	62.30
2004	78,600	511,520	67.20
2005	92,000	568,230	61.70
2006	82,900	611,260	62.70
2007	83,000	578,720	87.50
2008	87,600	651,570	124.00
2009	85,700	666,630	93.50
2010	77,700	604,980	74.4
2011	74,500	595,780	110
2012	73,200	586,340	114

### CORN, SWEET, COMMERCIAL CROP: AREA AND PRODUCTION FOR UNITED STATES

Year	Area Harvested in Achres	Production in Tons	Value per Ton
1996	474,200	3,296,330	78.50
1997	465,800	3,342,330	74.90
1998	467,600	3,255,560	73.60
1999	466,300	3,291,910	71.10
2000	459,700	3,155,540	73.40
2001	446,450	3,142,840	72.90
2002	419,800	3,083,890	68.20
2003	426,600	3,266,050	70.40
2004	405,900	2,968,180	72.10
2005	403,910	3,174,800	68.40
2006	384,700	3,085,550	66.80
2007	367,600	2,897,430	81.80
2008	360,600	2,832,490	117.00
2009	379,500	3,234,080	104.00
2010	338,300	2,689,380	89.7
2011	326,650	2,627,320	116
2012	358,780	2,946,290	127