



POTATO PRODUCTION IN WISCONSIN

Analyzing the Economic Impact



UNIVERSITY OF WISCONSIN
WHITEWATER

Fiscal and Economic Research Center

Introduction

Potatoes are a staple in the diet of most Americans. Whether fried, scalloped, baked or mashed, potatoes can be found on almost every dinner table in the country. The average American consumes 110.3 pounds of potatoes in a year, an amount that exceeds tomato consumption by 20 pounds. Wisconsin helps the nation meet its desire for this food. According to the Wisconsin Department of Agriculture, Trade and Consumer Protection, Wisconsin is the nation's third-largest grower of potatoes, producing 2.6 billion pounds of potatoes in 2013. Wisconsin's production of potatoes is concentrated in the central sands region, which is located in the Wisconsin River watershed. At the center of this production is Portage County, Wisconsin's top potato-producing county. The high yields in this region are attributed to the sandy soil, which allows for an earlier planting season. Other counties in the region are also significant state potato producers, including Waushara, Langlade and Adams counties. Statewide, the value of potato production totals an estimated \$310 million.

In 2014, the Fiscal and Economic Research Center (FERC) at the University of Wisconsin-Whitewater sought to establish the role of potato production in Wisconsin's agricultural output and overall economic welfare. We gathered data from government agencies and growers associations, including the United States Department of Agriculture (USDA) and the National Agricultural Statistics Service (NASS). Our analysis helps quantify the extent that Wisconsin is a significant player in the United States potato industry and demonstrates the importance of this industry to the overall success of the state.

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The Economic Multiplier

The Economic Impact of the Potato Industry on Wisconsin's Economy

To determine the economic impact of the potato industry on Wisconsin, we used the 2013 IMPLAN economic modeling system. This system 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.

Only a fraction of the money spent by growers and processors of the potato industry will likely remain in the local economy, as a portion of those funds will “leak” out through taxes or through spending outside of the local economy. For example, people who work within the industry could live outside the state. Insurance dollars paid by the employers and employees might go to a company in a different state. The harvesting equipment could have been assembled by people from outside the community, or was designed and fabricated in a state other than Wisconsin. Each of these scenarios, and many others, allows for money to “leak” out of the economy and to have effects on other areas. The multiplier effect compensates for this “leak.”

IMPLAN Analysis

To calculate the impact of expenditures by the potato industry, we used an IMPLAN input/output (I/O) model. 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 determine 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 (I/O) model provides a means to capture and measure these effects. It uses the following three effects to measure economic impact:



Direct effect – this 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 the potato industry, this includes the spending brought about by the potato industry.

Indirect effect – this 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, as the potato industry has a demand for locally sourced materials needed to produce its product. The success of the potato industry affects all of its suppliers.

Induced effect – this 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, as individuals working in the potato industry and the industry's suppliers spend money at restaurants, grocery stores and shops.



Production

Nation						
Year	Planted	Harvested	Yield per acre	Production	Value	
					Per cwt.	Total
	Acres		Cwt.	1000 cwt	Dollars	1000 Dollars
2004	1,192,400	1,166,000	391	455,806	5.65	2,565,260
2005	1,108,400	1,086,200	390	423,788	7.04	2,981,754
2006	1,139,400	1,120,200	393	440,698	7.31	3,208,632
2007	1,141,900	1,122,200	396	444,875	7.51	3,339,710
2008	1,059,600	1,046,900	396	415,055	9.09	3,770,462
2009	1,071,200	1,044,000	414	432,601	8.25	3,557,574
2010	1,025,700	1,008,000	401	404,273	9.2	3,721,501
2011	1,099,200	1,077,000	399	429,647	9.41	4,040,568
2012	1,148,400	1,131,900	409	462,766	8.65	3,993,815
2013	1,066,500	1,052,000	416	437,483	9.79	4,282,467

Wisconsin						
Year	Planted	Harvested	Yield per acre	Production	Value	
					Per cwt.	Total
	Acres		Cwt.	1000 cwt	Dollars	1000 Dollars
2004	71,000	70,000	435	30,450	5.80	176,610
2005	68,000	68,000	410	27,880	7.80	217,464
2006	66,000	66,000	445	29,370	7.80	229,086
2007	64,500	64,000	440	28,160	7.80	219,648
2008	63,500	62,000	415	25,730	11.40	293,322
2009	63,500	63,000	460	28,980	8.85	256,473
2010	62,500	61,500	395	24,293	10.60	257,506
2011	63,000	62,500	415	25,938	10.50	262,500
2012	64,500	64,000	460	29,440	8.70	256,128
2013	62,500	62,000	420	26,040	10.40	270,816

Economic Impact

We measured the economic impact of the potato industry using industry sales figures, job creation totals and employment income data. Our analysis indicates that as a direct result of the potato industry, 1,029.20 jobs were created, which provided \$158,842,829 in wages and benefits for a total direct effect on the economy of \$270,816,001. One of the unique attributes of the potato's impact on Wisconsin's economy is its vertical integration. Because all of the potato industry's production steps take place in Wisconsin, most of the industry's output remains in Wisconsin, minimizing "leaks."



Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	1,029.20	\$158,842,829	\$148,172,367	\$270,816,001
Indirect Effect	861.40	\$29,856,845	\$48,919,598	\$98,894,090
Induced Effect	1,231.90	\$49,137,688	\$87,624,454	\$152,568,270
Total Effect	3,122.50	\$237,837,362	\$284,716,418	\$522,278,361



Conclusion

The potato industry has a combined impact (including direct, indirect and induced) of \$522,278,361 on Wisconsin's economy. This impact led to the creation of 3,122.5 jobs. A large portion of the money generated by the potato industry remains in the state, which explains the impressive income and output multipliers. Some money does ultimately flow outside the state as residents purchase items that do not originate in Wisconsin, but the impact of the potato industry on the economy of Wisconsin in general, and specifically on Portage and Waushara counties, is significant.

The potato sales multiplier equals 1.93 ($\$522,278,361/\$270,816,001$), which suggests that for every dollar of sales generated by the potato industry, an additional 93 cents of economic activity will be generated in Wisconsin. The potato industry employment multiplier equals 3.03 ($3,122.50/1,029.20$), which implies that for every job created by the industry, an additional 2.03 jobs will be created.



Finally, the income multiplier created by the potato industry is 1.50 ($\$237,837,362/\$158,842,829$), implying that for every dollar of labor income earned by employees who work in the industry, an additional 50 cents of income is earned in Wisconsin.

In 2013, Wisconsin collected \$16,867,304 in tax revenue as a result of the potato industry. The taxes collected from the industry come from personal and corporate income taxes, sales taxes and property taxes. The property taxes total \$4,626,718. The personal income taxes collected from potato industry employees amount to \$5,901,878. The output of the industry is taxed via the sales tax. Of the total output, the state of Wisconsin collects \$3,557,887. 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.

Map of Wisconsin Potato Production

