

2015 Cost of Potato Production Study
for Wisconsin With Comparison to 2014

Cost of Production Changes per Acre and Per Hundredweight
Per Acre Dollar and Percentage Change in Costs
Detailed Cost of Production per Acre and Change from 2014
Monthly and Cumulative Storage Costs per Hundredweight
Price Received and Cumulative Production & Storage Costs by Month

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Report Submitted to:

United Potato Growers of America

December 21, 2015

This project was funded by the United Potato Growers of America.

2015 Potato Cost of Production Study Overview for Wisconsin

Cost of production estimates in the following tables are typical or representative production costs for Wisconsin. These are not average cost of production values. Farm size, crop rotation, water source, type of irrigation system, age and type of equipment, and the quality and intensity of management all influence costs. Each farm has a unique set of resources with different levels of productivity, different production problems, and therefore, different costs. A single cost of production estimate is presented for Wisconsin, while recognizing the complexity of the issue. This study was funded by United Potato Growers of America and conducted by Paul Patterson, retired University of Idaho Extension Agricultural Economist.

Procedures and Assumptions

Production practice information was collected from Wisconsin potato growers in 2012. This data formed the basis for developing a model farm. The size of the model farm is 3,000 acres with 800 acres of potatoes. Growers provided information on tillage practices, inputs used, irrigation practices, harvesting and storage, basically all aspects of raising potatoes. All resources used in the production process are valued at a market rate, or "opportunity cost". Therefore, costs in the following tables are economic costs, not just accounting or cash costs. The cost of production estimate, or enterprise budget, is for Russet Norkotah. Input prices were collected in 2015 from chemical fertilizer dealers and other input suppliers. A center pivot irrigation system was used on the model farm. Irrigation power costs were based on pressurization and a lift of 75 feet. A Wisconsin farm service power rate was used in these calculations. Labor rates include a base wage, plus a percentage to account for various payroll taxes (FICA, FUTA, SUTA), workman's compensation, as well as typical benefits for that class of labor such as paid vacation/personal leave days, health insurance, and bonuses.

A general overhead charge was calculated at ~2.5% of cash operating costs. A management charge was calculated at ~5% of total expenses. Machinery prices used in calculating capital recovery (or depreciation and interest) were 75% of replacement cost new. Land costs were based on a 1-year cash rent equivalent specifically for potatoes. Costs of production estimates were calculated using the *Budget Planner* software from the University of California, Davis.

The base cost of production in tables 1-3 include the cost to grow, harvest and sort potatoes. Storage costs are not included in these tables. Storage costs (ownership, repairs and monthly operating costs) are added to the base production cost and shown in Table 4. A chart showing breakeven production costs by month (both field-run and paid-yield) and potato prices available through late December helps answer the question of whether market prices are covering grower costs for the model farm.

Table 1. Cost of production per acre and per hundredweight (field-run yield) summary, showing operating, ownership and total costs for 2014 and 2015 and dollar and percent changes.

Table 2. Per acre cost and percentage change from 2014 to 2015 for major cost categories.

Table 3. Detailed Wisconsin cost of production for 2015 and 2014 with dollar and percent changes.

Table 4. Cost of production per hundredweight including storage ownership and repair costs and monthly storage operating costs

Chart with 2015 cost of production and storage costs per hundredweight by month (both field-run and paid-yield) and USDA's monthly fresh potato price for Wisconsin and NAPMN's Wisconsin GRI.

Table 1. Wisconsin Russet Norkotah potato cost of production changes per acre and per hundredweight from 2014 to 2015. Cost to grow, harvest and sort.

	12/15/2015	
	<u>Per Acre</u>	<u>Per Cwt</u>
2014 Operating Cost	\$2,117	\$4.60
2015 Operating Cost	\$2,095	\$4.55
\$ Change	-\$23	-\$0.05
% Change	-1.1%	-1.1%
<hr/>		
2014 Ownership Cost	\$869	\$1.89
2015 Ownership Cost	\$852	\$1.85
\$ Change	-\$17	-\$0.04
% Change	-1.9%	-1.9%
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2014 Total Cost	\$2,986	\$6.49
2015 Total Cost	\$2,947	\$6.41
\$ Change	-\$39	-\$0.09
% Change	-1.3%	-1.3%

Note: rounded values may not add up.

Op. = Operating and Own. = Ownership

[Note: all values in this sheet are linked to Table 3.](#)

Table 2. Per acre and percentage change in costs from 2014 to 2015 for irrigated Russet Norkotah potatoes with fumigation by major cost category. Cost to grow, harvest and sort.

Item	Wisconsin Change from 2014	
Yield	0	0.0%
<u>Operating Inputs</u>	<u>\$</u>	<u>%</u>
Seed:	\$17.00	5.9%
Fertilizer:	-\$21.05	-4.6%
Pesticides & Chemicals:	\$9.99	1.7%
Custom & Consultants:	\$0.00	0.0%
Irrigation:	-\$2.20	-2.5%
Machinery: Fuel & Repairs	-\$32.92	-20.0%
Field Labor	\$4.87	2.9%
Sorting Labor, Power & Repairs	\$1.98	2.7%
Other: Fees & Crop Insurance	\$0.00	0.0%
Operating Interest	-\$0.24	-0.4%
Total Operating Costs	-\$22.57	-1.1%
Operating Costs per Unit	-\$0.05	-1.1%
<u>Ownership Costs:</u>		
Potato Handling Equipment	\$2.00	3.1%
Tractors & Field Equipment	\$6.00	3.3%
Land	-\$25.00	-6.0%
Overhead	\$0.00	0.0%
Management Fee	\$0.00	0.0%
Total Ownership Costs	-\$16.62	-1.9%
Ownership Costs per Unit	-\$0.04	-1.9%
<u>Total Costs:</u>		
Total Costs per Acre	-\$39.19	-1.3%
Total Cost per Unit	-\$0.09	-1.3%

[Note: all values in this sheet are linked to Table 3.](#)

Table 3. **2014** Wisconsin Irrigated Russet Norkotah Commercial Potatoes: With Fumigation and No Storage. Comparison with 2014.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre	Comparison		
					2014	Yield Change	
Gross Returns							
Potatoes	460	cwt	\$8.00	\$3,680.00	460	0	0.0%
Operating Inputs							
Seed:				\$307.00	\$290.00	\$17.00	5.9%
G-3 Norkotah Potato Seed	20	cwt	\$13.50	\$270.00	\$255.00	\$15.00	5.9%
Seed Cutting	20	cwt	\$1.85	\$37.00	\$35.00	\$2.00	5.7%
Fertilizer:				\$433.80	\$454.85	-\$21.05	-4.6%
Dry Nitrogen - Preplant	200	lb	\$0.54	\$108.00	\$118.00	-\$10.00	-8.5%
Dry P2O5	50	lb	\$0.48	\$24.00	\$22.00	\$2.00	9.1%
K2O	345	lb	\$0.43	\$148.35	\$158.70	-\$10.35	-6.5%
Sulfur	115	lb	\$0.25	\$28.75	\$28.75	\$0.00	0.0%
Micronutrients & Foliars	1	ac	\$30.00	\$30.00	\$30.00	\$0.00	0.0%
Liquid Nitrogen	85	lb	\$0.72	\$61.20	\$62.90	-\$1.70	-2.7%
Liquid P2O5	50	lb	\$0.67	\$33.50	\$34.50	-\$1.00	-2.9%
Pesticides & Chemicals:				\$612.83	\$602.84	\$9.99	1.7%
Vapam 42%	40	gal	\$6.00	\$240.00	\$240.00	\$0.00	0.0%
Potato Seed Treatment	20	cwt	\$0.90	\$18.00	\$17.00	\$1.00	5.9%
Admire Pro	7.0	fl oz	\$1.65	\$11.55	\$12.25	-\$0.70	-5.7%
Quadris Flowable	8.0	fl oz	\$2.25	\$18.00	\$20.40	-\$2.40	-11.8%
Ridomil Gold MZ	7.0	oz	\$0.91	\$6.37	\$7.00	-\$0.63	-9.0%
Metribuzin 75DF	0.7	lb	\$17.00	\$11.39	\$10.72	\$0.67	6.3%
Prowl 3.3EC	3.0	pt	\$5.65	\$16.95	\$15.00	\$1.95	13.0%
Headline (2x)	18.0	fl oz	\$3.00	\$54.00	\$22.40	\$31.60	141.1%
Echo Zn (8x)	13.5	pt	\$5.00	\$67.50	\$52.50	\$15.00	28.6%
Endura	4.0	oz	\$4.90	\$19.60	\$34.24	-\$14.64	-42.8%
Revus Top				\$0.00	\$34.30	-\$34.30	-100.0%
Gavel 75DF (2x)	4.0	lb	\$8.00	\$32.00	\$16.60	\$15.40	92.8%
Agri Tin	3.0	oz	\$5.50	\$16.50	\$13.75	\$2.75	20.0%
Reaper 0.75SC	12.0	fl oz	\$0.75	\$9.00	\$11.25	-\$2.25	-20.0%
Rimon 0.83EC (2x)	12.0	fl oz	\$1.75	\$21.00	\$14.10	\$6.90	48.9%
Imidan 70WP	1.33	lb	\$10.50	\$13.97	\$14.63	-\$0.67	-4.5%
Radiant SC	6.00	fl oz	\$5.75	\$34.50	\$42.70	-\$8.20	-19.2%
Reglone	1.0	qt	\$22.50	\$22.50	\$24.00	-\$1.50	-6.3%
Custom & Consultants:				\$73.00	\$73.00	\$0.00	0.0%
Soil & Nematode Sampling	1	ac	\$6.00	\$6.00	\$5.00	\$1.00	20.0%
Custom Fumigate: Shanked	1	ac	\$36.00	\$36.00	\$38.00	-\$2.00	-5.3%
Custom Fertilize	2	ac	\$8.50	\$17.00	\$17.50	-\$0.50	-2.9%
Consultant	1	ac	\$14.00	\$14.00	\$12.50	\$1.50	12.0%
				\$0.00	\$0.00	\$0.00	
Irrigation:				\$85.75	\$87.95	-\$2.20	-2.5%
Water Assessment	1	ac	\$0.35	\$0.35	\$0.35	\$0.00	0.0%
Irrigation Power-CP *	20	acin	\$3.76	\$75.20	\$77.60	-\$2.40	-3.1%
Irrigation Repairs-CP *	20	acin	\$0.51	\$10.20	\$10.00	\$0.20	2.0%
Machinery:				\$131.36	\$164.28	-\$32.92	-20.0%
Fuel - Gas	3.32	gal	\$2.45	\$8.13	\$11.79	-\$3.65	-31.0%
Fuel - Farm Diesel	23.05	gal	\$2.10	\$48.41	\$71.38	-\$22.97	-32.2%
Fuel - Road Diesel	3.32	gal	\$2.70	\$8.96	\$12.95	-\$3.98	-30.8%
Lube	1	ac	\$9.82	\$9.82	\$14.42	-\$4.60	-31.9%
Machinery Repairs	1	ac	\$56.04	\$56.04	\$53.75	\$2.29	4.3%
Field Labor:				\$173.88	\$169.01	\$4.87	2.9%
Equipment Operator Labor	4.11	hr	\$20.20	\$83.022	\$80.49	\$2.54	3.1%
Truck Driver Labor	2.1	hr	\$14.05	\$29.505	\$28.88	\$0.63	2.2%
Irrigation Labor-CP*	0.80	hr	\$20.20	\$16.16	\$15.84	\$0.32	2.0%
Irrigation Labor: Chem-Fert	0.66	hr	\$20.20	\$13.33	\$13.07	\$0.26	2.0%
General Farm Labor	2.47	hr	\$12.90	\$31.863	\$30.74	\$1.12	3.7%
Sorting:				\$74.06	\$72.08	\$1.98	2.7%
Sorting Labor Costs	460	cwt	\$0.119	\$54.51	\$53.13	\$1.38	2.6%
Sorting Equip. Repairs & Power	460	cwt	\$0.043	\$19.55	\$18.95	\$0.60	3.2%
Other:				\$141.91	\$141.91	\$0.00	0.0%
Crop Insurance	1	ac	\$70.00	\$70.00	\$70.00	\$0.00	0.0%
Fees & Assessments	423	cwt	\$0.17	\$71.91	\$71.91	\$0.00	0.0%
Operating Interest @ 5.5%				\$61.21	\$61.45	-\$0.24	-0.4%
Total Operating Costs				\$2,095	\$2,117	-\$22.57	-1.1%
Operating Costs per Unit				\$4.55	\$4.60	-\$0.05	-1.1%
Net Returns Above Operating Expenses				\$1,585	\$1,111		

Final 12/15/2015

Table 3. **2014** Wisconsin Irrigated Russet Norkotah Commercial Potatoes: With Fumigation and No Storage. Comparison with 2014.

Final 12/15/2015		
Comparison		
\$10.64	\$0.38	3.6%
\$180.00	\$6.00	3.3%
\$65.00	\$2.00	3.1%
\$420.00	-\$25.00	-6.0%
\$53.00	\$0.00	0.0%
\$140.00	\$0.00	0.0%
\$869	-\$16.62	-1.9%
\$1.89	-\$0.04	-1.9%
\$2,986	-\$39.19	-1.3%
\$6.49	-\$0.09	-1.3%

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Equipment Insurance, Taxes and Licenses				\$11.02
Field Equipment Depreciation & Interest				\$186.00
Potato Handling Equipment Deprec. & Interest				\$67.00
Land **				\$395.00
Overhead				\$53.00
Management Fee				\$140.00
Total Ownership Costs				\$852
Ownership Costs per Unit				\$1.85
Total Costs per Acre				\$2,947
Total Cost per Unit				\$6.41
Returns to Risk				\$733

Notes:
 * Center pivot. ** Includes irrigation system ownership costs.
 Blue font indicates an increase.
 A red font indicates a decrease.
 A green font indicates a change in product or procedure to derive the cost.
 Procedural changes can result in different costs than were published the previous year.

	Breakeven Analysis:		
	- 10%	Base Yield	+ 10%
Price	414	460	506
Operating Cost Breakeven	\$5.06	\$4.55	\$4.14
Ownership Cost Breakeven	\$2.06	\$1.85	\$1.68
Total Cost Breakeven	\$7.12	\$6.41	\$5.82
		Price	
Yield	\$7.20	\$8.00	\$8.80
Operating Cost Breakeven	290.9	261.9	238.0
Ownership Cost Breakeven	118.3	106.5	96.8
Total Cost Breakeven	409.3	368.4	334.9

Table 4. 2015 Cost per hundredweight to grow, harvest, sort and store Wisconsin Russet Norkotah potatoes.

	12/15/2015	Storage Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field Run Yield			460	
Paid Yield %		92%		423
Base Cost to Grow, Harvest & Sort			\$6.41	\$6.96
Storage System Annual Ownership Costs		\$0.357	\$0.357	\$0.388
Base Cost + Storage Ownership Cost			\$6.76	\$7.35
Storage System Annual Repair Costs		\$0.041	\$0.041	\$0.045
Base + Storage System Ownership & Repairs			\$6.80	\$7.40
		Cumulative Storage Op. Costs	Cumulative Base + Storage Costs	
October		\$0.206	\$7.05	\$7.60
November*		\$0.379	\$7.22	\$7.77
December		\$0.467	\$7.31	\$7.86
January		\$0.555	\$7.40	\$7.95
February		\$0.643	\$7.49	\$8.04
March		\$0.730	\$7.58	\$8.13
April*		\$0.919	\$7.76	\$8.31
May		\$1.028	\$7.87	\$8.42
June		\$1.153	\$8.00	\$8.55

Data entered directly by user. All other values are calculated.

Calculated Values.

Base includes the cost to grow, harvest and sort potatoes, both operating and ownership. Ownership costs for potato handling equipment are included in the base cost of production.

Storage system includes: storage facility and air system.

Storage operating costs include: repairs (shown separately), plus monthly operating costs: power, chemicals, interest, shrink & insurance.

Storage costs do not include the cost of removing potatoes from storage.

* Indicates month when sprout inhibitor applied.

Cumulative storage operating expenses are calculated to the end of the month.

2015 Wisconsin Cost of Production with Storage Costs by Month & Fresh Market Potato Prices: USDA-NASS and NAPMN

