

2015 Cost of Potato Production Study  
for Colorado's San Luis Valley 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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## 2015 Potato Cost of Production Study Overview for Colorado

Cost of production estimates in the following tables are typical or representative production costs for the San Luis Valley of Colorado. 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 Colorado, 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 potato growers in Colorado's San Luis Valley in 2012. This data formed the basis for developing a model farm. The size of the model farm is 2,400 acres with 1,000 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 San Luis Valley Rural Electric Cooperative 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 Colorado 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 Colorado and NAPMN's Colorado GRI.

Table 1. Colorado potato cost of production changes per acre and per hundredweight from 2014 to 2015.

	12/15/2015	
	Per Acre	Per Cwt
2014 Operating Cost	\$ 2,043	\$4.54
2015 Operating Cost	\$ 2,051	\$4.61
\$ Change	\$8	\$0.07
% Change	0.4%	1.5%
<hr/>		
2014 Ownership Cost	\$697	\$1.55
2015 Ownership Cost	\$706	\$1.59
\$ Change	\$9	\$0.04
% Change	1.2%	2.4%
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2014 Total Cost	\$2,740	\$6.09
2015 Total Cost	\$2,757	\$6.20
\$ Change	\$17	\$0.11
% Change	0.6%	1.7%

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 Colorado irrigated Russet Norkotah potatoes: no storage costs.

Item	Colorado Change from 2014	
Yield	-5	-1.1%
<b><u>Operating Inputs</u></b>	<b>\$</b>	<b>%</b>
Seed:	-\$12.60	-2.9%
Fertilizer	\$29.55	6.7%
Pesticides & Chemicals	\$13.80	4.7%
Custom & Consultants	\$0.00	0.0%
Irrigation	\$3.36	1.3%
Machinery: Fuel & Repairs	-\$32.85	-19.9%
Field Labor:	\$6.65	4.3%
Sorting Labor, Power & Repairs	\$0.91	1.5%
Other: Fees & Crop Insurance	-\$0.60	-0.5%
Operating Interest	\$0.84	1.4%
Total Operating Costs	\$8.15	0.4%
Operating Costs per Cwt	\$0.07	1.5%
<b><u>Ownership Costs:</u></b>		
Potato Handling Equipment	\$2.30	3.6%
Tractors & Field Equipment	\$6.00	3.5%
Land **	\$0.00	0.0%
Overhead	\$0.00	0.0%
Management Fee	\$0.00	0.0%
Total Ownership Costs	\$8.64	1.2%
Ownership Costs per Cwt	\$0.04	2.4%
<b><u>Total Costs:</u></b>		
Total Costs per Acre	\$16.79	0.6%
Total Cost per Cwt	\$0.11	1.7%

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

Table 3. 2015 Colorado Irrigated Russet Norkotah Commercial Potatoes: No Fumigation and No Storage. Comparison with 2014.

					Final 12/15/2015			
Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre	Comparison			
<b>Gross Returns</b>					<b>2014</b>	Yield Change		
Potatoes	445	cwt	\$7.50	\$3,337.50	450	-5	-1.1%	
<b>Operating Inputs</b>						<b>\$ Change</b>	<b>% Change</b>	
<b>Seed:</b>					\$428.40	\$441.00	-\$12.60	-2.9%
G-3 Norkotah Potato Seed	28	cwt	\$13.50	\$378.00	\$392.00	-\$14.00	-3.6%	
Seed Cutting	28	cwt	\$1.80	\$50.40	\$49.00	\$1.40	2.9%	
<b>Fertilizer:</b>					\$471.50	\$441.95	\$29.55	6.7%
Dry Nitrogen - Preplant	125	lb	\$0.60	\$75.00	\$76.25	-\$1.25	-1.6%	
Dry P2O5	140	lb	\$0.55	\$77.00	\$67.20	\$9.80	14.6%	
K2O	225	lb	\$0.46	\$103.50	\$94.50	\$9.00	9.5%	
Sulfur	100	lb	\$0.27	\$27.00	\$25.00	\$2.00	8.0%	
Micronutrients & Foliars	1	ac	\$35.00	\$35.00	\$35.00	\$0.00	0.0%	
Liquid Nitrogen	100	lb	\$0.76	\$76.00	\$72.00	\$4.00	5.6%	
Liquid P2O5	100	lb	\$0.78	\$78.00	\$72.00	\$6.00	8.3%	
<b>Pesticides &amp; Chemicals:</b>					\$307.81	\$294.02	\$13.80	4.7%
Potato Seed Treatment	28	cwt	\$0.85	\$23.80	\$23.80	\$0.00	0.0%	
Quadris Flowable	6.0	fl oz	\$2.50	\$15.00	\$15.00	\$0.00	0.0%	
Boundary	1.5	pt	\$11.25	\$16.88	\$16.13	\$0.75	4.7%	
Chateau WDG	1.5	oz	\$6.00	\$9.00	\$9.75	-\$0.75	-7.7%	
Eptam 7E	4.0	pt	\$7.00	\$28.00	\$25.00	\$3.00	12.0%	
Quadris Opti	1.6	pt	\$15.00	\$24.00	\$20.00	\$4.00	20.0%	
Bravo Ultrex	1.25	lb	\$6.00	\$7.50	\$8.13	-\$0.63	-7.7%	
Endura	4.5	oz	\$5.00	\$22.50	\$23.63	-\$1.13	-4.8%	
Revus Top	5.50	fl oz	\$2.50	\$13.75	\$13.20	\$0.55	4.2%	
Super Tin 80WP	3.75	oz	\$1.88	\$7.05	\$7.50	-\$0.45	-6.0%	
Vydate C-LV (2x)	4.2	pt	\$14.50	\$60.90	\$56.70	\$4.20	7.4%	
Fulfill WDG	2.8	oz	\$6.25	\$17.19	\$17.19	\$0.00	0.0%	
Movento	5.0	fl oz	\$7.25	\$36.25	\$35.00	\$1.25	3.6%	
Reglone	1.0	qt	\$26.00	\$26.00	\$23.00	\$3.00	13.0%	
<b>Custom &amp; Consultants:</b>					\$40.50	\$40.50	\$0.00	0.0%
Soil & Nematode Sampling	1	ac	\$6.00	\$6.00	\$5.50	\$0.50	9.1%	
Custom Fertilize: Row Crops	2	ac	\$8.25	\$16.50	\$17.00	-\$0.50	-2.9%	
Crop Consultant	1	ac	\$18.00	\$18.00	\$18.00	\$0.00	0.0%	
<b>Irrigation:</b>					\$259.20	\$255.84	\$3.36	1.3%
Irrigation Power-CP Lift 75*	24	acin	\$3.54	\$84.96	\$84.24	\$0.72	0.9%	
Groundwater Assessment	24	acin	\$6.75	\$162.00	\$159.60	\$2.40	1.5%	
Irrigation Repairs-CP *	24	acin	\$0.51	\$12.24	\$12.00	\$0.24	2.0%	
				\$0.00	\$0.00	\$0.00		
<b>Machinery:</b>					\$132.03	\$164.88	-\$32.85	-19.9%
Fuel - Gas	3.75	gal	\$2.55	\$9.56	\$13.50	-\$3.94	-29.2%	
Fuel - Farm Diesel	21.26	gal	\$2.35	\$49.96	\$73.35	-\$23.39	-31.9%	
Fuel - Road Diesel	2.59	gal	\$2.80	\$7.25	\$10.10	-\$2.85	-28.2%	
Lube	1	ac	\$10.02	\$10.02	\$14.54	-\$4.52	-31.1%	
Machinery Repairs	1	ac	\$55.23	\$55.23	\$53.39	\$1.84	3.4%	
<b>Field Labor:</b>					\$160.68	\$154.03	\$6.65	4.3%
Equipment Operator Labor	3.82	hr	\$18.95	\$72.294	\$70.96	\$1.34	1.9%	
Truck Driver Labor	1.85	hr	\$14.80	\$27.380	\$26.83	\$0.56	2.1%	
Irrigation Labor: CP*	0.96	hr	\$18.95	\$18.192	\$16.37	\$1.82	11.1%	
Irrigation Labor: Chem-Fert	0.86	hr	\$18.95	\$16.297	\$14.51	\$1.79	12.3%	
General Farm Labor	2.04	hr	\$13.00	\$26.520	\$25.37	\$1.15	4.5%	
<b>Sorting:</b>					\$63.01	\$62.10	\$0.91	1.5%
Sorting Labor Costs	445	cwt	\$0.1076	\$47.88	\$47.25	\$0.63	1.3%	
Sorting Equip. & Repair Costs	445	cwt	\$0.034	\$15.13	\$14.85	\$0.28	1.9%	
<b>Other:</b>					\$126.85	\$127.45	-\$0.60	-0.5%
Crop Insurance	1	ac	\$70.00	\$70.00	\$70.00	\$0.00	0.0%	
Fees & Assessments	379	cwt	\$0.15	\$56.85	\$57.45	-\$0.60	-1.0%	
Operating Interest @ 5.75%				\$60.81	\$59.97	\$0.84	1.4%	
Total Operating Costs				\$2,051	\$2,043	\$8.15	0.4%	
Operating Costs per Unit				\$4.61	\$4.54	\$0.07	1.5%	
Net Returns Above Operating Expenses				\$1,287	\$1,110			

Table 3. **2015** Colorado Irrigated Russet Norkotah Commercial Potatoes: No Fumigation and No Storage. Comparison with 2014.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
<b>Ownership Costs:</b>				
Equipment Insurance, Licenses and Fees				\$10.30
Field Equipment Depreciation & Interest				\$178.00
Potato Handling Equipment Deprec. & Interest				\$65.75
Land **				\$270.00
Overhead				\$51.00
Management Fee				\$131.00
<b>Total Ownership Costs</b>				\$706
<b>Ownership Costs per Unit</b>				\$1.59
<b>Total Costs per Acre</b>				\$2,757
<b>Total Cost per Unit</b>				\$6.20
Returns to Risk				\$581

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.

<b>Breakeven Analysis:</b>	-	Base	+
	10%	Yield	10%
<u>Price</u>	400.5	445	489.5
Operating Cost Breakeven	\$5.12	\$4.61	\$4.19
Ownership Cost Breakeven	\$1.76	\$1.59	\$1.44
Total Cost Breakeven	\$6.88	\$6.20	\$5.63
		Price	
<u>Yield</u>	\$6.75	\$7.50	\$8.25
Operating Cost Breakeven	303.8	273.4	248.6
Ownership Cost Breakeven	104.6	94.1	85.6
Total Cost Breakeven	408.4	367.6	334.2

Final 12/15/2015		
Comparison		
\$9.96	\$0.34	3.4%
\$172.00	\$6.00	3.5%
\$63.45	\$2.30	3.6%
\$270.00	\$0.00	0.0%
\$51.00	\$0.00	0.0%
\$131.00	\$0.00	0.0%
\$697	\$8.64	1.2%
\$1.55	\$0.04	2.4%
\$2,740	\$16.79	0.6%
\$6.09	\$0.11	1.7%

Table 4. 2015 Russet Norkotah cost of production, monthly storage costs and cumulative production and storage costs for Colorado.

	12/15/2015	Storage Operating Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield			445	
Paid Yield %		85%		378.25
<b>Base Cost to Grow, Harvest &amp; Sort</b>			<b>\$6.20</b>	<b>\$7.29</b>
Storage System Annual Ownership Costs		\$0.357	\$0.36	\$0.42
Base Cost + Storage Ownership Cost			\$6.55	\$7.71
Storage System Annual Repairs		\$0.041	\$0.041	\$0.05
Base + Storage System Ownership & Repairs			\$6.59	\$7.76
		Cumulative Storage Op. Costs	Cumulative Base + Storage Costs	Cumulative Base + Storage Costs
October		\$0.194	\$6.79	\$7.95
November*		\$0.357	\$6.95	\$8.11
December		\$0.436	\$7.03	\$8.19
January		\$0.515	\$7.11	\$8.27
<b>February</b>		<b>\$0.594</b>	\$7.19	\$8.35
March		\$0.673	\$7.27	\$8.43
April*		\$0.851	\$7.44	\$8.61
May		\$0.948	\$7.54	\$8.70
June		\$1.060	\$7.65	\$8.82

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

