

Potato Cost of Production for Idaho
2017 With Comparisons to 2016

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Cost of Potato Production in Idaho

The overall goal of this project is to provide the Idaho potato industry with an unbiased and consistently calculated estimate of the cost of producing potatoes in three regions of Idaho and to track the change in production costs per acre and per hundredweight over time.

The following objectives are designed to meet the project goal:

1. To collect data from input suppliers, machinery and equipment dealers, and growers as appropriate.
2. To revise and update existing potato cost and return estimates to reflect current input costs and production practices.
3. To develop cost of production estimates for new varieties and/or new or proposed production systems as needed or as requested.
4. To calculate changes in production costs per acre and per hundredweight and include both the detailed and summary cost changes in an annual report.
5. To make the annual report available to the Idaho potato industry and to present the information as requested.
6. To maintain a Cost of Production Advisory Committee representing the different segments of the Idaho potato industry and to meet with this group to review the CAR estimates and to obtain input on proposed revisions.

I would like to acknowledge the cooperation and support that I receive from all segments of the Idaho potato industry, including growers, processors, equipment dealers, and input suppliers. I would also like to thank the Idaho Potato Commission for the funding I receive to support this project. This project has been funded 24 of the past 26 years.

This project was contracted with Ben Eborn through the University of Idaho beginning in 2016. Paul Patterson, who is the author of all previous reports, retired from the University of Idaho in 2015.

Cost of Production Background

No procedural changes were made in terms of how data were collected and processed. The cost of production estimates presented in this report are consistent with those previously produced by the University of Idaho.

The cost of production estimates show the typical or representative production costs by region based on documented production practices. These are not area averages. To simplify comparisons with historical cost of production estimates, the publication code used by the University of Idaho was used for the six commercial potato budgets found in this report. Crop cost of production estimates and earlier reports can still be found at

<http://www.uidaho.edu/cals/idaho-agbiz>

2017 Crop Input Costs

Prices used to value inputs in the 2017 potato CAR estimates based on data collected from input suppliers by the University of Idaho. Sources included irrigation districts and canal companies, agricultural lenders, crop insurance companies, trucking companies, aerial and other custom applicators, fuel suppliers, and chemical and fertilizer dealers. Information on seed potato prices and the cost to cut and treat potato seed was taken from a survey of Idaho seed potato growers and commercial growers. A charge for handling and transportation is added to the FOB seed farm-based seed potato prices to derive a seed potato cost for each region.

Machinery and equipment prices used in these cost of production estimates were mostly obtained from a survey of dealers conducted between August and December of 2010, and published in 2011 as PNW 346: *The Cost of Owning and Operating Farm Machinery in the Pacific Northwest: 2011*. These prices were increased based on the annual change in USDA's Prices Paid Machinery Index from 2011 to 2017.

Potato Cost of Production Overview

Cost of production estimates are influenced by assumptions made in depicting a representative or typical farm. Farm size and acreage planted to different crops will influence costs, particularly machinery ownership costs. It is important to recognize this when making comparisons between regions where assumptions differ or within a region over time as the underlying assumptions change. The University of Idaho currently publishes seven potato CAR estimates. Six CAR estimates are for commercial potato production and one is for seed production. Only the commercial potato cost of production estimates are included in this report. Prior to 2013, there was a separate non-storage (with transloading) and storage budgets for each of the three southern Idaho commercial production regions. The current format, adopted in 2013, shows the cost to grow, harvest and sort potatoes in the base budget, including all costs to the "end of the piler boom." Storage costs are shown in a separate table and begin with the base budget values. A list of CAR estimates by region and variety is found in Table 1.

Farm Size and Potato Acreage

Table 2 shows the farm size and potato acreage for each region's model farm since 2009. The size of the model farm and the number of potato acres were increased in 2013 for all three regions.

In general, operating costs are not influenced by farm size. However, ownership costs do change with farm size, primarily because of economies of size and scale with equipment. Equipment ownership costs per acre are strongly influenced by the number of acres over which these costs are spread. The more acres, the lower the cost. In establishing the farm size and selecting the machinery complement, we attempt to achieve an

economically efficient combination. Equipment that is under-utilized has high ownership costs, while equipment with too many hours of use results in unrealistically low ownership costs.

Input Costs

Some input prices are region specific, while others are standardized for the entire state since they don't vary consistently by region. Table 3 contains information on three such items: interest rates, labor wage and benefit rates, and power cost per acre-inch of water applied based on Idaho Power's Irrigation Service Schedule 24. Table 3 presents values for 2014-2017, and the percentage changes from 2016 to 2017. In the costs and returns estimates, interest is charged from the time expenditures are made until the harvest month using the operating interest rate shown in Table 3. Operating interest is identified as a separate line item in the CAR estimates. The intermediate interest rate is used in calculating non-cash machinery costs. The labor used in crop production falls into one of the six classes shown in Table 3. Labor used to operate machinery, drive trucks, and manage pivot irrigation systems, including chemigation and fertigation, receive a higher wage than irrigation labor used on set-move systems (hand lines and wheel lines) and unskilled general farm labor used primarily during harvest to pick clods and rocks and to help with storage and trans-loading operations. Prior to 2012, irrigation labor was not differentiated between set-move and continuous move irrigation systems. The labor costs include the base wage rate plus payroll taxes and benefit costs, shown as a percentage. Additional labor information is included in the background and assumptions page that accompanies each CAR estimate.

While Idaho Power's service area does not extend to all irrigated areas of southern Idaho, it is by far the largest supplier of power to Idaho farms and ranches and that is why it is used in the CAR estimates. The power rates shown in Table 3 are used with a center pivot irrigation system to derive the cost per acre-inch of water applied. The power demand used in the calculation is for pressurization only. The standard assumption for each region is that surface water is delivered to the farm from a canal. Cost per acre-inch of water applied by different irrigation systems and with different pumping lifts have traditionally been found in Table 3 of the University of Idaho's annual *Crop Input Cost Summary* referenced earlier.

Tables 4-a, 4-b and 4-c contain cost information on commonly used inputs where prices generally vary by region. These include fuel (gas, farm diesel and road diesel) and irrigation water assessments. Table 4-a shows these costs for southwestern Idaho, Table 4-b shows the costs for southcentral Idaho and Table 4-c shows the costs for eastern Idaho.

Prior to 2008, fuel prices were determined by a survey conducted at a single point in time, which typically was in August. Since 2008, fuel prices found in the *Crop Input Cost Summary* and used in CAR estimates are the simple average of prices collected at four times during the year: February, April, June and August. This change was made at the request of the potato cost of production advisory committee.

Table 5 contains the fertilizer component prices from 2014 through 2017 used in the CAR estimates, and the percentage changes from 2016 to 2017. Prior to 2009 fertilizer prices were collected and summarized separately for the three southern Idaho regions.

Potato Yields

The yield in a CAR estimate is used to calculate gross revenue and break-even prices needed to cover costs in different categories. Yield is also the basis for certain costs, such as promotion or inspection fees paid by growers. Yield also drives storage and sorting costs, which are calculated on a hundredweight basis. Table 6 shows the potato yields used in the University of Idaho's 2017 commercial potato CAR estimates, as well as the previous four years. Some values are shown only as a reference and indicate the value we would use if the University of Idaho published a CAR estimate for that area and with those production practices. Only those values shown in bold type are used in CAR estimates.

Prior to 1991 there was not a consistent method used to determine potato yields in CAR estimates for all three regions. Starting in 1991, yields in all three regions were based on USDA-NASS county or regional-level yield data. From 1991 to 1995, the yield was calculated using a 5-year rolling average. From 1995 through 2003 the yields used were based on a projected yield using exponential smoothing with an alpha value of .20. This procedure eliminated the negative bias that resulted from using historical data to calculate averages when yields were increasing rapidly. Unfortunately, exponential smoothing also produced projected yields that varied widely from actual yield when potato yield variation from one year to the next was substantial. To avoid this problem, the yield calculation for CAR estimates was switched to a projected 3-year average starting in 2005. For 2006, the 3-year average consisted of two years of historical data and the third year was projected, based on the November USDA crop production report. Starting in 2007, the 3-year average was switched to the three most recent years of published USDA data. For the 2017 CAR estimates, yield data for the 2014, 2015 and 2016 crops were used. The 2017 county-level data for Idaho will not be published until October 2018, so the yields used in calculating the average will always be lagged by one year. Yields used in the CAR estimates are rounded to the nearest 5 hundredweight. These base area yields are then adjusted to account for fumigation, a procedure described later in the report.

For crop reporting purposes, the Idaho NASS Field Office breaks Idaho into regions. The USDA calculates potato yields both for individual counties within a region and for the region itself. The yield estimates used in southwestern and southcentral Idaho CAR estimates are based on the USDA-NASS regions and includes all the counties in that region. Prior to 2001, yields in eastern Idaho CAR estimates were based on four major commercial potato counties: Bannock, Bingham, Bonneville and Power. Starting in 2001, separate CAR

estimates were made for commercial potato production in the southern counties, Bannock, Bingham and Power, and the northern counties: Bonneville, Jefferson and Madison. Starting in 2012, Jefferson County was removed from the northern county's average. (See Tables 6-8.)

Because of changes in how yields were calculated and other procedural changes, it can be difficult to make historical comparisons going back more than one year. In this report when procedural changes occur in cost calculations, the previous year's CAR estimate is re-calculated using the new procedure so that the year-to-year change is based on the price and quantity change of inputs, not based on procedural changes. Because of this, the resulting costs for the previous year can be different than those published the previous year.

The potato yields for the non-fumigated 2017 CAR estimates are 5 cwt lower than 2016 for southwestern Idaho, 5 cwt lower for southcentral Idaho, and unchanged for eastern-South Idaho. The potato yields for the fumigated 2017 CAR estimates are 5 cwt lower than 2016 for southwestern, 10 cwt lower for southcentral Idaho, and unchanged for eastern-South, and eastern-North was 5 cwt higher (See Table 6.) Note that the yield for Southwestern Idaho uses the Russet Burbank Adjusted Yield, which is 97% of the region's average yield. The increasing use of higher yielding varieties, such as Ranger Russet, made this adjustment necessary.

The following section explains how the yield values used in the fumigation and non-fumigation CAR estimates are derived.

Fumigation Yield and Cost Allocation Dilemma

Fumigation can have a significant impact on per acre production costs and can also have a large impact on potato yield and quality. For an individual grower, this does not pose a problem because the cost and yield increases correspond. In budgeting procedures used to generate potato CAR estimates, the cost increase is not a problem when fumigation is included. There are, however, two yield questions that must be considered. The first question: how much of a yield increase should be attributed to fumigation? The second question: what should the base yield in the non-fumigation CAR estimate be? Since the county and regional yields published by USDA contain both fumigated and non-fumigated potato acreage, USDA values are not appropriate for either a CAR estimate with fumigation or one without fumigation unless some attempt is made to identify and separate the fumigation yield impact in the data.

Historic yields based on USDA data are too low if used in a CAR estimate with the full cost of fumigation included. Historic yields are too high if used in a CAR estimate when no fumigation cost is included. Including only a partial cost for fumigation would be appropriate in calculating average production costs, but not for calculating typical costs where fumigation is either used or it is not. In addition, the methods

used by the University of Idaho to obtain farmer production practice data is not consistent with calculating average production costs for a region. Using the USDA yield data and including a partial fumigation cost in a typical budget is not appropriate as it gives the appearance that fumigation is less expensive than it actually is.

The USDA county-level or regional potato yield data are used to calculate a 3-year average yield for a given area. These procedures were discussed in the previous section. This base area yield value is set equal to the weighted average of the fumigated yield and the non-fumigated yield as shown in the following formula. The weights are estimated percentages of potato acres in that region that are fumigated and not fumigated, respectively. The yield adjustment attributable to fumigation as well as the estimated percentage of acres fumigated in each region is shown in Table 9.

Fumigation Yield Adjustment Factor

$(\% \text{ of acres not fumigated} \times \mathbf{Y}) + (\% \text{ acres fumigated} \times \mathbf{FY}) = \text{Area Average Yield},$

Where \mathbf{Y} = non-fumigation yield,

\mathbf{FY} = fumigation yield, and

$FY = Y + \text{fumigation yield adjustment}$

The following example illustrates how the fumigation adjustment factor was used, given an area yield of 400 cwt, with 60 percent of the potato acreage fumigated and a fumigation yield adjustment of 50 hundredweight per acre. Set up the equation as shown below and solve for Y.

$$.4Y \quad + \quad .6(Y+50) \quad = \quad 400$$

$$.4Y \quad + \quad .6Y + 30 \quad = \quad 400$$

$$1.0 Y \quad + \quad 30 \quad = \quad 400$$

$$Y \quad = \quad 370$$

$$\text{And} \quad FY \quad = \quad 420$$

$$\text{Check:} \quad .4 \times 370 \quad + \quad .6 \times 420 \quad = \quad 400$$

Fumigation yield in this example is 420 and non-fumigation yield is 370, while the area average is 400. The fumigation CAR estimate would include the full cost of fumigation and the non-fumigation would have no fumigation costs. Thus, the costs and yields would correspond.

Note: There are limitations to this type of adjustment and there is a lack of publicly available data on which to base fumigation estimates. While not perfect, using this methodology does reduce the previous negative bias that occurred when calculating costs per hundredweight when the benefit of fumigation on yield was included in the region or county yields, but the cost of fumigation was not. Using the percentages of acres fumigated from Table 9 and the number of potato acres grown in each region produces a statewide weighted-average of approximately 50 percent of the potato acreage being fumigated. This falls within the range of values of 50-60 percent given by knowledgeable people in the industry.

Unresolved Yield Issue: Field-Run vs. Paid

Regardless of how the area potato yields are calculated, how does this yield compare to the grower's paid yield? The answer will vary depending on whether the potatoes are sold in the fresh or in the process market. The yield data from USDA includes all tubers greater than 1-1/2 inches. Since the University of Idaho CAR estimates do not segment yield into size and grade components that would sell for different prices, the breakeven prices shown in the CAR estimates are what the grower would have to average if paid on a field-run yield in order to cover costs. The issue of paid yield is dealt with in the storage tables for each crop budget found in the Appendix: Tables A-2, B-2, C-2, D-2, E-2 and F-2. One column in each table shows the field-run breakeven prices and an adjacent column shows paid-yield breakeven prices for an assumed paid yield of 95%.

2016 Cost of Potato Production Overview and Comparison

Direct comparisons with previously published estimates should not be made without accounting for differences in procedures and assumptions. There are no longer separate storage and non-storage potato budgets as had been published for many years. The base budget contains the operating cost of sorting potatoes, including labor, electricity and repair costs, as well as the ownership costs associated with the equipment used in this operation. Costs in the base budget are to "the end of the piler boom". If potatoes are being transloaded and hauled to a processor or fresh pack shed, the cost of hauling would need to be added. Storage costs are added to the base cost in a separate table, including the storage ownership costs, annual repairs, and monthly storage operating costs. This is done on both a field-run and paid-yield basis.

Table 10-A summarizes the dollar cost per acre and percentage changes from 2016 to 2017 for major input cost categories, total operating, total ownership, and total costs for the Idaho fumigated cost of production estimates. Table 10-B contains the same information for Idaho's non-fumigated cost of potato production estimates.

Detailed cost of production estimates for 2016 and 2017 from which the data in Tables 10-A and 10-B were taken are found in the appendix. Appendix A, B, and C containing the fumigated cost of production estimates for southwestern, southcentral and the eastern south region, respectively, while Appendix D, E, and F contain

the non-fumigated cost of production estimates for southcentral, eastern south, and eastern north regions, respectively.

In general, the cost of seed and cutting was unchanged, and the cost of hauling seed was higher. Fertilizer, pesticides and chemicals, custom and consultants were all higher. The higher cost of pesticides and chemicals in most areas includes a mix of higher and lower prices of some products and a consistent number of foliar applications of insecticides and fungicides. The cost of power was unchanged in 2017, because of the increased PCA rate in 2016 (See Table 3 for more detail.). No adjustment was made to the quantity of water applied and irrigation repair costs increased. Fuel costs were higher (See Table 4 for more detail.). Higher repair costs on machinery and higher fuel costs kept overall machinery operating expenses substantially higher in 2017. Labor costs were up approximately 3.0% across the board. Interest rates on borrowed capital were up slightly.

Overall, operating costs per acre and per hundredweight were higher in 2017. Operating costs per acre increased between \$38 and \$76 per acre, or 17 to 20 cents per hundredweight. Ownership costs per acre were up in each region, reflecting both higher interest rates and equipment costs, which pushes up depreciation and interest (capital recovery), as well as unchanged land costs. Ownership costs per acre increased between \$7 and \$12 per acre, and varied from up 7 cents to down 1 cent per hundredweight.

Total costs per acre and per hundredweight were up in all three regions. With a yield decrease in southwestern and southcentral Idaho, the percentage change in total costs per hundredweight were the greatest of any region. Total costs per acre increases ranged from \$46 to \$88, while total cost per hundredweight decreased by 9 to 24 cents.

Cost of Production Summaries and Comparisons by Region

Table 11-A and 11-B summarizes production costs for 2016 and 2017 for operating, ownership and total costs per acre, as well as per acre dollar and percentage changes between these years. Table 11-A presents the fumigated budgets and 11-B contains the non-fumigated budgets. Table 12-A and 12-B summarize production costs for 2016 and 2017 for operating, ownership and total costs per hundredweight, and the change per hundredweight and percentage between years. Because the yields used in budgets for 2017 were different than those used in 2016, the percentage changes per hundredweight were different than the percentage changes per acre.

The total cost to raise, harvest and sort potatoes in the three regions of southern Idaho for 2017 presented in this report ranged from a low of \$2,302 per acre in eastern Idaho-north (non-fumigation) up to \$3,555 in southwestern Idaho (with fumigation). (See Tables 11-A and 11-B.) There is a 35% difference from low to high. The range in

values per hundredweight is not so extreme; only an 11% difference. The 2017 total cost to raise, harvest and sort potatoes ranged from \$6.31 per hundredweight in eastern Idaho-north up to \$7.11 in southwestern Idaho. (See Tables 12-A and 12-B.)

Adjustments for 2017

There were a number product changes in the potato cost of production estimates shown in this report, as well as quantity changes on some inputs.

Table 1. Idaho potato costs and returns estimates by region for 2017.

Region/Publication No.	Variety	Fumigation	Storage Costs
Commercial Potatoes			
Southwestern:			
EBB2-Po2-17	Russet Burbank	Yes	Yes
Southcentral:			
EBB3-Po2-17	Russet Burbank	No	Yes
EBB3-Po3-17	Russet Burbank	Yes	Yes
Eastern - South Counties:			
EBB4-Po5-17	Russet Burbank	No	Yes
EBB4-Po6-17	Russet Burbank	Yes	Yes
Eastern - North Counties:			
EBB4-Po2-17	Russet Burbank	No	Yes

Eastern - South Counties: Bannock, Bingham and Power.

Eastern - North Counties: Bonneville and Madison; Jefferson County was dropped in 2012.

Note: the potato publication codes (EBB2-Po1-17 for example) are used in this report to simplify historical comparisons.

Table 2. Model farm size acres and potato acreage by Idaho region.

	2009 - 2012		2013 - 2017	
	Farm	Potato	Farm	Potato
Southwestern	1200	300	1600	500
Southcentral	1800	450	2200	550
Eastern	1800	600	2400	800

Table 3. Interest rates, labor charges and power rates used in CAR estimates: 2014 - 2017 and percentage changes from 2016 to 2017.

	2014	2015	2016	2017	Change
Operating Interest Rate	6.00%	5.75%	6.00%	6.25%	4.2%
Intermediate Interest Rate	5.75%	5.50%	5.75%	6.00%	4.3%
<u>Labor Class (overhead)</u>					
Equipment Operator Labor (25%)	\$18.10	\$18.50	\$19.15	\$19.70	2.9%
Truck Driver Labor	\$14.05	\$14.40	\$14.90	\$15.35	3.0%
Irrigation Labor: HL & WL (30%)	\$12.85	\$13.15	\$13.60	\$14.00	2.9%
Irrigation Labor: CP (25%)	\$18.10	\$18.50	\$19.15	\$19.70	2.9%
Irrigation Labor: Chem-Fert (25%)	\$18.10	\$18.50	\$19.15	\$19.70	2.9%
General Farm Labor (15%)	\$10.40	\$10.65	\$11.00	\$11.35	3.2%
Power Rate: Idaho Power Irrigation Service Schedule 24					
Monthly Service Charge	\$22.00	\$22.00	\$22.00	\$22.00	0.0%
Demand Charge: irrigation season	\$7.01	\$7.01	\$7.01	\$7.01	0.0%
Base Rate: per kWh	\$0.05645	\$0.05645	\$0.05645	\$0.05645	0.0%
First 164 kWh per kW of Demand	\$0.05792	\$0.05792	\$0.05792	\$0.05792	0.0%
All Other kWh per kW of Demand	\$0.05499	\$0.05499	\$0.05499	\$0.05499	0.0%
Power Cost Adjustment per kWh	\$0.00526	\$0.00444	\$0.00567	\$0.00567	0.0%
Effective Rate: per kWh	\$0.06172	\$0.06089	\$0.06212	\$0.06212	0.0%
Pumping Cost per Acre Inch	\$1.91	\$1.90	\$1.94	\$1.94	0.0%

Pumping cost is calculated using Idaho Power Company rates for a 160-acre center pivot with a corner system: with 69% pumping plant efficiency and zero lift.

Table 4-a. Current and historical fuel and water assessment prices for Southwestern Idaho: 2014 - 2017 and percentage change from 2016 to 2017.

	2014	2015	2016	2017	Change
Gasoline	\$3.60	\$2.65	\$2.35	\$2.55	8.5%
Off-Road Diesel	\$3.55	\$2.45	\$2.10	\$2.35	11.9%
Road Diesel	\$4.05	\$2.95	\$2.55	\$2.85	11.8%
Water Assessment	\$50.60	\$50.60	\$53.50	\$53.50	0.0%

Table 4-b. Current and historical fuel and water assessment prices for Southcentral Idaho: 2014 - 2017 and percentage change from 2016 to 2017.

	2014	2015	2016	2017	Change
Gasoline	\$3.55	\$2.50	\$2.20	\$2.45	11.4%
Off-Road Diesel	\$3.50	\$2.30	\$1.95	\$2.20	12.8%
Road Diesel	\$4.00	\$2.85	\$2.45	\$2.80	14.3%
Water Assessment	\$45.60	\$45.60	\$47.50	\$47.50	0.0%

Table 4-c. Current and historical fuel and water assessment prices for Eastern Idaho: 2014 - 2017 and percentage change from 2016 to 2017.

	2014	2015	2016	2017	Change
Gasoline	\$3.50	\$2.50	\$2.20	\$2.45	11.4%
Off-Road Diesel	\$3.45	\$2.35	\$2.00	\$2.20	10.0%
Road Diesel	\$3.95	\$2.85	\$2.45	\$2.75	12.2%
Water Assessment: All	\$15.90	\$15.90	\$16.70	\$17.00	1.8%
E. Idaho South District	\$35.00	\$35.00	\$37.00	\$38.00	2.7%
E. Idaho North District	\$12.05	\$12.05	\$12.50	\$12.75	2.0%

Table 5. Current and historical fertilizer components prices for Southern Idaho: 2014 - 2017 and percentage change from 2016 to 2017.

	2014	2015	2016	2017	Change
Dry Nitrogen (46-0-0)	\$0.58	\$0.55	\$0.41	\$0.40	-2.4%
Liquid Nitrogen (32-0-0)	\$0.72	\$0.73	\$0.48	\$0.50	4.2%
P ₂ O ₅ Dry (11-52-0)*	\$0.48	\$0.53	\$0.37	\$0.38	2.7%
P ₂ O ₅ Liquid (10-34-0)*	\$0.61	\$0.72	\$0.60	\$0.56	-6.7%
K ₂ O (0-0-60)	\$0.41	\$0.44	\$0.29	\$0.31	6.9%
Sulfur	\$0.25	\$0.27	\$0.23	\$0.22	-4.3%

*Nitrogen in 11-52-0 and 10-34-0 was valued at the price of N in urea and solution 32, respectively.

Table 6. Calculated potato yields used in published University of Idaho costs and returns estimates by region, both with and without fumigation: 2013 - 2017.*

Area	2013	2014	2015	2016	2017
	cwt	cwt	cwt	cwt	cwt
Southwest Region: Base Yield	538	530	522	512	508
Potatoes: No Fumigation	490	490	480	470	465
Potatoes: Fumigation	550	540	530	520	515
Adj. Russet Burbank: Fumigation	530	525	515	505	500
Southcentral Region: Base Yield	431	443	449	456	447
Russet Burbank: No Fumigation	410	420	425	430	425
Russet Burbank: Fumigation	445	465	470	475	465
Eastern Region: Russet Burbank:					
South Counties*: Base Yield	392	395	400	395	396
South: No Fumigation	375	380	385	380	380
South: Fumigation	410	420	425	420	420
North Counties*: Base Yield	360	368	373	374	379
North: No Fumigation	350	355	360	360	365
North: Fumigation	380	385	390	390	395

Note: Values in bold indicate published CAR estimates. There are no published CAR estimates for those not in bold. These are shown only for reference and comparison.

*Eastern Idaho North Counties: Bonneville and Madison; Jefferson County was dropped in 2012.

*Eastern Idaho South Counties: Bannock, Bingham and Power.

Note: Russet Burbank adjustment factor on SWI is -3%. This was first used in 2011.

Table 7. Potato yields published by USDA for crop years 2012 - 2016 and the 3-year averages based on the most recent published data.

Area	2012	2013	2014	2015	2016	3-Year
						Average
Southwest Region	530	520	515	500	na	508
Southcentral Region	435	465	447	na	na	447
Eastern Region	394	388	395	386	409	397
South District	406	395	400	391	na	396
North District	373	364	383	375	na	379
Statewide	412	415	415	405	430	417

Source: USDA-NASS.

Note: Yields for Eastern - North District are the revised yields that include only Bonneville and Madison Counties.

South District contains only Bingham County data. Power and Bannock not published.

Table 8. Historical potato yields published by USDA for the primary commercial potato counties in Eastern Idaho for 2012 - 2016 and historical 3-year average for crop year.

Area	2012	2013	2014	2015	2016	3-Year
						Average
<u>North District Counties</u>						
Bonneville	360	359	381	na	na	381
Madison	385	369	384	379	na	382
2-County Average	372	364	383	na	na	383
Jefferson	na	na	na	na	na	
<u>South District Counties</u>						
Bannock	400	na	412	na	na	
Bingham	406	395	400	391	409	400
Power	na	na	na	na	na	
3-County Average	403					

Source: USDA-NASS.

Note: Jefferson County was dropped from the North District in 2012 (2011 potato crop year).

Values for previous years were re-calculated using only Bonneville and Madison Counties.

3-Year averages are based on the last three years where data was published.

Note: County-level data was not published for either Bannock or Power Counties for 2015-2016.

Table 9. Fumigation percentage by region and yield adjustment factors by region.

Region	Acres Fumigated	Fumigation Adjustment
Southwestern	80%	+ 50 cwt
Southcentral	60%	+ 40 cwt
Southeastern		
South District	50%	+ 35 cwt
North District	40%	+ 30 cwt

Notes:

Southwestern increased from 65% to 80% in 2013 and yield increase dropped from 65 to 50 cwt.

Southcentral increased from 55% to 60% in 2013 and yield increase dropped from 55 to 40 cwt.

South District increased from 45% to 50% in 2013 and yield increase dropped from 45 to 35 cwt.

North District increased from 30% to 45% in 2013 and yield increase dropped from 40 to 30 cwt.

Table 10-A Change in per-acre cost of production by major cost category from 2016 to 2017 for fumigated Russet Burbank potatoes in three production regions of Idaho.

Item	Southwestern Idaho Change from 2016 Fumigated EBB4-Po2		Southcentral Idaho Change from 2016 Fumigated EBB3-Po3		Eastern Idaho - S. Change from 2016 Fumigated EBB4-Po6	
Yield	-5	-1.0%	-10	-2.1%	0	0.0%
Operating Inputs	\$	%	\$	%	\$	%
Seed & Cutting	\$12.00	3.3%	\$11.50	3.4%	\$10.50	3.5%
Fertilizer	\$4.50	1.1%	\$12.65	3.5%	\$4.30	1.3%
Chemicals & Pesticides	\$28.92	5.3%	-\$7.95	-1.6%	\$28.60	7.3%
Custom & Consultants	\$5.50	4.2%	\$5.00	4.0%	\$4.50	4.1%
Irrigation: Water, Power, Repairs	\$0.31	0.2%	\$0.29	0.2%	\$1.26	1.3%
Machinery: Fuel & Repairs	\$9.74	6.8%	\$8.73	7.6%	\$7.78	6.7%
Field Labor	\$6.82	3.0%	\$5.36	2.9%	\$4.81	2.9%
Sorting: Labor, Repairs & Power	\$1.78	2.4%	\$0.88	1.3%	\$2.10	3.4%
Other: Fees & Crop Insurance	-\$0.90	-0.6%	-\$1.62	-1.1%	\$0.00	0.0%
Operating Interest	\$6.94	9.0%	\$3.62	5.1%	\$5.20	8.5%
Total Operating Costs	\$75.60	3.4%	\$38.46	1.9%	\$69.05	3.9%
Operating Costs per Cwt	\$0.20	4.4%	\$0.17	4.1%	\$0.16	3.9%
Ownership Costs						
Tractors, Trucks & Field Equip.	\$4.00	2.0%	\$4.00	2.1%	\$4.00	2.3%
Potato Handling Equipment	\$2.00	2.6%	\$1.50	2.1%	\$1.50	2.4%
Land*	\$0.00	0.0%	\$0.00	0.0%	\$0.00	0.0%
Overhead	\$2.00	3.6%	\$0.50	1.0%	\$1.00	2.2%
Management Fee	\$4.00	2.3%	\$1.00	0.6%	\$3.00	2.2%
Total Ownership Costs	\$12.15	1.0%	\$7.12	0.6%	\$9.63	1.0%
Ownership Costs per Cwt	\$0.05	2.0%	\$0.07	2.8%	\$0.02	1.0%
Total Costs						
Total Costs per Acre	\$87.75	2.5%	\$45.58	1.5%	\$78.68	2.9%
Total Costs per Cwt	\$0.24	3.6%	\$0.24	3.6%	\$0.19	2.9%

Note: Cost of production refers to the cost to grow, harvest and sort potatoes. The cost of on-farm storage is not included. See appendix for detailed cost comparison and for storage costs by month.

Table 10-B. Change in per-acre cost of production by major cost category from 2016 to 2017 for non-fumigated Russet Burbank potatoes in three production regions of Idaho.

Item	Southcentral Idaho Change from 2016 Non-Fumigated EBB3-Po2		Eastern Idaho - S. Change from 2016 Non-Fumigated EBB4-Po5		Eastern Idaho - N. Change from 2016 Non-Fumigated EBB4-Po2	
Yield	-5	-1.2%	0	0.0%	5	1.4%
Operating Inputs	\$	%	\$	%	\$	%
Seed & Cutting	\$11.50	3.4%	\$10.50	3.5%	\$10.50	3.6%
Fertilizer	\$12.65	3.8%	\$4.90	1.6%	\$2.90	1.0%
Chemicals & Pesticides	\$9.92	3.9%	\$18.15	8.6%	\$24.07	11.9%
Custom & Consultants	\$2.00	2.4%	\$1.50	2.2%	\$1.00	1.7%
Irrigation: Water, Power, Repairs	\$0.27	0.2%	\$1.24	1.3%	\$0.23	0.3%
Machinery: Fuel & Repairs	\$8.71	7.6%	\$7.74	6.7%	\$7.89	6.8%
Field Labor	\$5.18	2.9%	\$4.72	2.9%	\$4.77	2.9%
Sorting: Labor, Repairs & Power	\$1.40	2.2%	\$1.90	3.4%	\$2.55	4.9%
Other: Fees & Crop Insurance	-\$0.90	-0.6%	\$0.00	0.0%	\$0.90	0.7%
Operating Interest	\$1.88	3.8%	\$2.34	5.2%	\$1.85	4.3%
Total Operating Costs	\$52.62	3.2%	\$52.99	3.5%	\$56.67	4.0%
Operating Costs per Cwt	\$0.17	4.4%	\$0.14	3.5%	\$0.10	2.6%
Ownership Costs						
Tractors, Trucks & Field Equip.	\$4.00	2.1%	\$4.00	2.3%	\$4.00	2.3%
Potato Handling Equipment	\$1.50	2.4%	\$1.00	1.8%	\$1.00	1.9%
Land*	\$0.00	0.0%	\$0.00	0.0%	\$0.00	0.0%
Overhead	\$1.00	2.4%	\$1.00	2.6%	\$1.00	2.8%
Management Fee	\$5.00	3.7%	\$2.00	1.6%	\$2.50	2.2%
Total Ownership Costs	\$11.62	1.1%	\$8.14	0.9%	\$8.62	1.1%
Ownership Costs per Cwt	\$0.06	2.3%	\$0.02	0.9%	-\$0.01	-0.3%
Total Costs						
Total Costs per Acre	\$64.24	2.4%	\$61.13	2.5%	\$65.29	2.9%
Total Costs per Cwt	\$0.23	3.6%	\$0.16	2.5%	\$0.09	1.5%

Note: Cost of production refers to the cost to grow, harvest and sort potatoes. The cost of on-farm storage is not included. See appendix for detailed cost comparison and for storage costs by month.

Table 11-A. Cost of production per acre for irrigated Russet Burbank potatoes by region for 2016 and 2017 and change in costs between these years.

	Southwestern Russet Burbank with Fumigation	Southcentral Russet Burbank with Fumigation	Eastern - South Russet Burbank with Fumigation
	Po2	Po3	Po6
2016 Operating Cost	\$2,251	\$2,017	\$1,783
2017 Operating Cost	\$2,327	\$2,055	\$1,852
\$ Change	\$76	\$38	\$69
% Change	3.4%	1.9%	3.9%
2016 Ownership Cost	\$1,216	\$1,101	\$960
2017 Ownership Cost	\$1,228	\$1,108	\$969
\$ Change	\$12	\$7	\$10
% Change	1.0%	0.6%	1.0%
2016 Total Cost	\$3,467	\$3,118	\$2,743
2017 Total Cost	\$3,555	\$3,163	\$2,821
\$ Change	\$88	\$46	\$79
% Change	2.5%	1.5%	2.9%

Note: values are rounded and may not add up.

Table 11-B. Cost of production per acre for irrigated Russet Burbank potatoes by region for 2016 and 2017 and change in costs between these years.

	Southcentral Russet Burbank with No Fumigation	Eastern - South Russet Burbank with No Fumigation	Eastern - North Russet Burbank with No Fumigation
	Po2	Po5	Po2
2016 Operating Cost	\$1,664	\$1,500	\$1,419
2017 Operating Cost	\$1,716	\$1,553	\$1,476
\$ Change	\$53	\$53	\$57
% Change	3.2%	3.5%	4.0%
2016 Ownership Cost	\$1,056	\$929	\$818
2017 Ownership Cost	\$1,068	\$937	\$826
\$ Change	\$12	\$8	\$9
% Change	1.1%	0.9%	1.1%
2016 Total Cost	\$2,720	\$2,429	\$2,237
2017 Total Cost	\$2,784	\$2,490	\$2,302
\$ Change	\$64	\$61	\$65
% Change	2.4%	2.5%	2.9%

Note: values are rounded and may not add up.

Table 12-A. Cost of production per cwt for irrigated Russet Burbank potatoes by region for 2016 and 2017 and change in costs between these years.

	Southwestern Russet Burbank with Fumigation	Southcentral Russet Burbank with Fumigation	Eastern - South Russet Burbank with Fumigation
	Po2	Po3	Po6
2016 Operating Cost	\$4.46	\$4.25	\$4.25
2017 Operating Cost	\$4.65	\$4.42	\$4.41
\$ Change	\$0.20	\$0.17	\$0.16
% Change	4.4%	4.1%	3.9%
2016 Ownership Cost	\$2.41	\$2.32	\$2.29
2017 Ownership Cost	\$2.46	\$2.38	\$2.31
\$ Change	\$0.05	\$0.07	\$0.02
% Change	2.0%	2.8%	1.0%
2016 Total Cost	\$6.87	\$6.56	\$6.53
2017 Total Cost	\$7.11	\$6.80	\$6.72
\$ Change	\$0.24	\$0.24	\$0.19
% Change	3.6%	3.6%	2.9%

Note: values are rounded and may not add up.

Table 12-B. Cost of production per cwt for irrigated Russet Burbank potatoes by region for 2016 and 2017 and change in costs between these years.

	Southcentral Russet Burbank with No Fumigation	Eastern - South Russet Burbank with No Fumigation	Eastern - North Russet Burbank with No Fumigation
	Po2	Po5	Po2
2016 Operating Cost	\$3.87	\$3.95	\$3.94
2017 Operating Cost	\$4.04	\$4.09	\$4.04
\$ Change	\$0.17	\$0.14	\$0.10
% Change	4.4%	3.5%	2.6%
2016 Ownership Cost	\$2.46	\$2.45	\$2.27
2017 Ownership Cost	\$2.51	\$2.47	\$2.26
\$ Change	\$0.06	\$0.02	-\$0.01
% Change	2.3%	0.9%	-0.3%
2016 Total Cost	\$6.33	\$6.39	\$6.21
2017 Total Cost	\$6.55	\$6.55	\$6.31
\$ Change	\$0.23	\$0.16	\$0.09
% Change	3.6%	2.5%	1.5%

Note: values are rounded and may not add up.

Appendix A
Southwestern Idaho
Irrigated Russet Burbank Potato
Fumigated

Table A-1. 2017 Costs to grow, harvest and sort Southwestern Idaho Russet Burbank potatoes with fumigation.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Gross Returns				
Potatoes	500.00	cwt	7.75	\$3,875.00
Total Gross Returns				\$3,875.00
Operating Inputs				
Seed:				\$375.60
G-3 Russet Burbank Seed	24.00	cwt	13.90	333.60
Seed Cutting	24.00	cwt	1.75	42.00
Fertilizer:				\$405.85
Dry Nitrogen - Preplant	175.00	lb	0.40	70.00
Dry P2O5	220.00	lb	0.38	83.60
K2O	255.00	lb	0.31	79.05
Sulfur	115.00	lb	0.22	25.30
Liquid Nitrogen	135.00	lb	0.50	67.50
Liquid P2O5	65.00	lb	0.56	36.40
Micronutrients & Foliar	2.00	acre	22.00	44.00
Pesticides & Chemicals:				\$575.30
Vapam HL 42%	42.00	gal	5.50	231.00
Seed Treatment	24.00	cwt	0.65	15.60
Admire Pro	8.00	fl oz	1.25	10.00
Moncut 70DF	0.80	lb	29.80	23.84
Eptam 7E	4.00	pt	6.30	25.20
Metribuzin 75DF	0.75	lb	11.90	8.93
Prowl 3.3EC	2.00	pt	5.15	10.30
Quadris Flowable	8.00	fl oz	1.50	12.00
Endura (2x)	7.00	oz	4.55	31.85
Revus Top (2x)	12.00	fl oz	2.25	27.00
Bravo Weather Stik (2x)	3.00	pt	5.60	16.80
Manzate Pro-Stick	2.00	lb	3.85	7.70
Gavel 75DF	2.00	lb	8.50	17.00
Fulfill WDG	5.50	oz	6.50	35.75
Brigadier (2x)	12.00	fl oz	1.40	16.80
Movento	5.00	fl oz	8.30	41.50
Agri-Mek .75SC (2x)	7.00	fl oz	2.25	15.75
Beleaf 50SG	2.80	oz	10.10	28.28
Custom & Consultants:				\$135.25
Custom Fumigate - Deep Injection	1.00	acre	45.00	45.00
Custom Fertilize: 400 - 800 lbs	1.00	acre	8.00	8.00
Custom Fertilize: 0 - 400 lbs	1.00	acre	7.25	7.25
Custom Air Spray - 5 gal	5.00	acre	9.00	45.00
Consultant & Soil/Pet. Test	1.00	acre	30.00	30.00
Irrigation:				\$130.07
Water Assessment	1.00	acre	53.50	53.50
Irrigation Repairs - Center Pivot	31.00	acre-inch	0.53	16.43
Irrigation Power - Center Pivot	31.00	acre-inch	1.94	60.14
Machinery:				\$153.08
Fuel - Gas	5.32	gal	2.55	13.57
Fuel - Farm Diesel	22.37	gal	2.35	52.57
Fuel - Road Diesel	2.32	gal	2.85	6.61
Lube	1.00	\$	11.01	11.01
Machinery Repairs	1.00	\$	69.32	69.32
Labor:				\$237.33
Equipment Operator Labor	4.78	hrs	19.70	94.17
Truck Driver Labor	3.60	hrs	15.35	55.26
Irrigation Labor - Center Pivot	1.28	hrs	19.70	25.22
Irrigation Labor - Chem-Fert	1.20	hrs	19.70	23.64
General Farm Labor	3.44	hrs	11.35	39.04
Sorting:				\$75.00
Sorting Labor	500.00	cwt	0.115	57.50
Sorting Equipment Repairs & Power	500.00	cwt	0.035	17.50
Other:				\$155.50
Crop Insurance	1.00	acre	70.00	70.00
Fees & Assessments	475.00	cwt	0.18	85.50
Interest on Operating Capital at 6.25%				\$83.84
Total Operating Costs				\$2,326.81
Operating Costs per Unit				\$4.65
Net Returns Above Operating Costs				\$1,548.19

2016	Yield Change	
505	-5	-1.0%
\$ Change % Change		
\$363.60	\$12.00	3.3%
321.60	\$12.00	3.7%
42.00	\$0.00	0.0%
\$401.35	\$4.50	1.1%
71.75	-\$1.75	-2.4%
81.40	\$2.20	2.7%
73.95	\$5.10	6.9%
26.45	-\$1.15	-4.3%
64.80	\$2.70	4.2%
39.00	-\$2.60	-6.7%
44.00	\$0.00	0.0%
\$546.38	\$28.92	5.3%
218.40	\$12.60	5.8%
14.40	\$1.20	8.3%
10.40	-\$0.40	-3.8%
21.28	\$2.56	12.0%
23.20	\$2.00	8.6%
9.38	-\$0.45	-4.8%
6.50	\$3.80	58.5%
13.20	-\$1.20	-9.1%
24.50	\$7.35	30.0%
27.00	\$0.00	0.0%
16.05	\$0.75	4.7%
9.30	-\$1.60	-17.2%
17.00	\$0.00	0.0%
28.88	\$6.88	23.8%
15.60	\$1.20	7.7%
34.50	\$7.00	20.3%
17.50	-\$1.75	-10.0%
26.60	\$1.68	6.3%
\$129.75	\$5.50	4.2%
42.00	\$3.00	7.1%
7.75	\$0.25	3.2%
7.50	-\$0.25	-3.3%
42.50	\$2.50	5.9%
30.00	\$0.00	0.0%
\$129.76	\$0.31	0.2%
53.50	\$0.00	0.0%
16.12	\$0.31	1.9%
60.14	\$0.00	0.0%
\$143.34	\$9.74	6.8%
12.50	\$1.06	8.5%
46.98	\$5.59	11.9%
5.92	\$0.70	11.8%
9.78	\$1.23	12.6%
68.16	\$1.16	1.7%
\$230.51	\$6.82	3.0%
91.54	\$2.63	2.9%
53.64	\$1.62	3.0%
24.51	\$0.70	2.9%
22.98	\$0.66	2.9%
37.84	\$1.20	3.2%
\$73.23	\$1.78	2.4%
56.06	\$1.45	2.6%
17.17	\$0.33	1.9%
\$156.40	-\$0.90	-0.6%
70.00	\$0.00	0.0%
86.40	-\$0.90	-1.0%
76.90	\$6.94	9.0%
\$2,251.21	\$75.60	3.4%
\$4.46	\$0.20	4.4%
\$1,410.04		

Table A-1. 2017 Costs to grow, harvest and sort Southwestern Idaho Russet Burbank potatoes with fumigation.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				6.15
Tractors & Equipment Depreciation & Interest				208.00
Potato Handling Equipment Deprec. & Interest				79.00
Land*				700.00
Overhead				58.00
Management Fee				177.00
Total Ownership Costs				\$1,228.15
Ownership Costs per Unit				\$2.46
Total Costs per Acre				\$3,554.96
Total Cost per Unit				\$7.11
Returns to Risk				\$320.04
Notes:				
*Includes irrigation system ownership costs.				
Blue font indicates an increase.				
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:				
	-	Base	+	
	5%		5%	
		Yield		
<u>Price</u>	475	500	525	
Operating Cost Breakeven	\$4.90	\$4.65	\$4.43	
Ownership Cost Breakeven	\$2.59	\$2.46	\$2.34	
Total Cost Breakeven	\$7.48	\$7.11	\$6.77	
		Price		
<u>Yield</u>	\$7.36	\$7.75	\$8.14	
Operating Cost Breakeven	316.0	300.2	285.9	
Ownership Cost Breakeven	166.8	158.5	150.9	
Total Cost Breakeven	482.8	458.7	436.9	

6.00	\$0.15	2.5%
204.00	\$4.00	2.0%
77.00	\$2.00	2.6%
700.00	\$0.00	0.0%
56.00	\$2.00	3.6%
173.00	\$4.00	2.3%
\$1,216.00	\$12.15	1.0%
\$2.41	\$0.05	2.0%
\$3,467.21	\$87.75	2.5%
\$6.87	\$0.24	3.6%
\$194.04		

Table A-2. 2017 Cost per cwt to grow, harvest, sort and store Southwestern Idaho Russet Burbank potatoes with fumigation based on both field-run and paid yield.

	Storage Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield		500.00	
Paid Yield %	95%		475.0
Base Cost to Grow, Harvest & Sort		\$7.11	\$7.48
Storage System Annual Ownership Costs	\$0.365	\$0.365	\$0.384
Base Cost + Storage Ownership Costs		\$7.47	\$7.87
Storage System Annual Repairs	\$0.042	\$0.042	\$0.044
Base + Storage System Ownership & Repairs		\$7.52	\$7.91
	Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October	\$0.228	\$7.74	\$8.15
November*	\$0.408	\$7.92	\$8.34
December	\$0.497	\$8.01	\$8.44
January	\$0.590	\$8.11	\$8.53
February	\$0.681	\$8.20	\$8.63
March	\$0.772	\$8.29	\$8.72
April	\$0.969	\$8.49	\$8.93
May	\$1.081	\$8.60	\$9.05
June	\$1.214	\$8.73	\$9.19

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

Calculated values.

* Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & 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, air system, and the equipment used to place.

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

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

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

Appendix B
Southcentral Idaho
Irrigated Russet Burbank Potato
Fumigated

Table B-1. 2017 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes with fumigation.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Gross Returns				
Potatoes	465.00	cwt	7.50	\$3,487.50
Total Gross Returns				\$3,487.50
Operating Inputs				
Seed:				\$350.75
G-3 Russet Burbank Seed	23.00	cwt	13.50	310.50
Seed Cutting	23.00	cwt	1.75	40.25
Fertilizer:				\$370.45
Dry Nitrogen - Preplant	175.00	lb	0.40	70.00
Dry P2O5	220.00	lb	0.38	83.60
K2O	235.00	lb	0.31	72.85
Sulfur	90.00	lb	0.22	19.80
Liquid Nitrogen	110.00	lb	0.50	55.00
Liquid P2O5	45.00	lb	0.56	25.20
Micronutrients & Foliar	2.00	acre	22.00	44.00
Pesticides & Chemicals:				\$479.93
Metam CLR (42%)	40.00	gal	5.35	214.00
Seed Treatment	23.00	cwt	0.65	14.95
Admire Pro	8.00	oz	1.25	10.00
Quadris Flowable	8.00	fl oz	1.50	12.00
Outlook 6EC	20.00	fl oz	1.00	20.00
Prowl 3.3EC	2.00	pt	5.15	10.30
Metribuzin 75DF	0.75	lb	11.90	8.93
Endura	5.50	oz	4.55	25.03
Dithane F45 Rainshield (2x)	3.75	qt	8.50	31.88
Tanos DF	6.00	oz	2.85	17.10
Gavel 75DF	2.00	lb	8.50	17.00
Revus Top	7.00	fl oz	2.25	15.75
Brigadier (2x)	12.00	fl oz	1.40	16.80
Movento	5.00	fl oz	8.30	41.50
Agri-Mek .75SC (2x)	7.00	fl oz	2.25	15.75
Reglone	1.00	qt	8.95	8.95
Custom & Consultants:				\$130.25
Custom Fumigate - Deep Injection	1.00	acre	45.00	45.00
Custom Fertilize: 400 - 800 lbs	1.00	acre	8.00	8.00
Custom Fertilize: 0 - 400 lbs	1.00	acre	7.25	7.25
Custom Air Spray - 7.5 gal	4.00	acre	10.00	40.00
Consultant & Soil/Pet. Test	1.00	acre	30.00	30.00
Irrigation:				\$119.13
Water Assessment	1.00	acre	47.50	47.50
Irrigation Repairs - Center Pivot	29.00	acre-inch	0.53	15.37
Irrigation Power - Center Pivot	29.00	acre-inch	1.94	56.26
Machinery:				\$123.58
Fuel - Gas	4.59	gal	2.45	11.25
Fuel - Farm Diesel	19.41	gal	2.20	42.70
Fuel - Road Diesel	2.28	gal	2.80	6.38
Lube	1.00	\$	9.10	9.10
Machinery Repairs	1.00	\$	54.15	54.15
Labor:				\$187.95
Equipment Operator Labor	4.52	hrs	19.70	89.04
Truck Driver Labor	2.00	hrs	15.35	30.70
Irrigation Labor - Center Pivot	1.16	hrs	19.70	22.85
Irrigation Labor - Chem-Fert	1.00	hrs	19.70	19.70
General Farm Labor	2.26	hrs	11.35	25.65
Sorting:				\$69.75
Sorting Labor	465.00	cwt	0.115	53.48
Sorting Equipment Repairs & Power	465.00	cwt	0.035	16.28
Other:				\$149.56
Crop Insurance	1.00	acre	70.00	70.00
Fees & Assessments	442.00	cwt	0.18	79.56
Interest on Operating Capital at 6.25%				\$73.92
Total Operating Costs				\$2,055.26
Operating Costs per Unit				\$4.42
Net Returns Above Operating Costs				\$1,432.24

2016	Yield Change	
475	-10	-2.1%
\$ Change % Change		
\$339.25	\$11.50	3.4%
299.00	\$11.50	3.8%
40.25	\$0.00	0.0%
\$357.80	\$12.65	3.5%
71.75	-\$1.75	-2.4%
81.40	\$2.20	2.7%
68.15	\$4.70	6.9%
20.70	-\$0.90	-4.3%
52.80	\$2.20	4.2%
27.00	-\$1.80	-6.7%
36.00	\$8.00	22.2%
\$487.88	-\$7.95	-1.6%
232.00	-\$18.00	-7.8%
13.80	\$1.15	8.3%
10.40	-\$0.40	-3.8%
13.20	-\$1.20	-9.1%
20.00	\$0.00	0.0%
6.50	\$3.80	58.5%
9.38	-\$0.45	-4.8%
19.25	\$5.78	30.0%
30.00	\$1.88	6.3%
15.90	\$1.20	7.5%
17.00	\$0.00	0.0%
15.75	\$0.00	0.0%
15.60	\$1.20	7.7%
34.50	\$7.00	20.3%
17.50	-\$1.75	-10.0%
17.10	-\$8.15	-47.7%
\$125.25	\$5.00	4.0%
42.00	\$3.00	7.1%
7.75	\$0.25	3.2%
7.50	-\$0.25	-3.3%
38.00	\$2.00	5.3%
30.00	\$0.00	0.0%
\$118.84	\$0.29	0.2%
47.50	\$0.00	0.0%
15.08	\$0.29	1.9%
56.26	\$0.00	0.0%
\$114.85	\$8.73	7.6%
10.10	\$1.15	11.4%
37.85	\$4.85	12.8%
5.59	\$0.80	14.3%
8.08	\$1.02	12.6%
53.24	\$0.91	1.7%
\$182.58	\$5.36	2.9%
86.56	\$2.49	2.9%
29.80	\$0.90	3.0%
22.21	\$0.64	2.9%
19.15	\$0.55	2.9%
24.86	\$0.79	3.2%
\$68.88	\$0.88	1.3%
52.73	\$0.75	1.4%
16.15	\$0.13	0.8%
\$151.18	-\$1.62	-1.1%
70.00	\$0.00	0.0%
81.18	-\$1.62	-2.0%
70.30	\$3.62	5.1%
\$2,016.81	\$38.46	1.9%
\$4.25	\$0.17	4.1%
\$1,308.19		

Table B-1. 2017 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes with fumigation.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				5.85
Tractors & Equipment Depreciation & Interest				194.00
Potato Handling Equipment Deprec. & Interest				72.00
Land*				625.00
Overhead				52.00
Management Fee				159.00
Total Ownership Costs				\$1,107.85
Ownership Costs per Unit				\$2.38
Total Costs per Acre				\$3,163.11
Total Cost per Unit				\$6.80
Returns to Risk				\$324.39
Notes:				
*Includes irrigation system ownership costs.				
Blue font indicates an increase.				
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:				
	-	Base	+	
	5%		5%	
		Yield		
<u>Price</u>	441.75	465	488.25	
Operating Cost Breakeven	\$4.65	\$4.42	\$4.21	
Ownership Cost Breakeven	\$2.51	\$2.38	\$2.27	
Total Cost Breakeven	\$7.16	\$6.80	\$6.48	
		Price		
<u>Yield</u>	\$7.13	\$7.50	\$7.88	
Operating Cost Breakeven	288.5	274.0	261.0	
Ownership Cost Breakeven	155.5	147.7	140.7	
Total Cost Breakeven	443.9	421.7	401.7	

5.73	\$0.12	2.1%
190.00	\$4.00	2.1%
70.50	\$1.50	2.1%
625.00	\$0.00	0.0%
51.50	\$0.50	1.0%
158.00	\$1.00	0.6%
\$1,100.73	\$7.12	0.6%
\$2.32	\$0.07	2.8%
\$3,117.54	\$45.58	1.5%
\$6.56	\$0.24	3.6%
\$207.46		

Table B-2. 2017 Cost per cwt to grow, harvest, sort and store Southcentral Idaho Russet Burbank potatoes with fumigation based on both field-run and paid yield.

	Storage Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield		465.00	
Paid Yield %	95%		441.8
Base Cost to Grow, Harvest & Sort		\$6.80	\$7.16
Storage System Annual Ownership Costs	\$0.365	\$0.365	\$0.384
Base Cost + Storage Ownership Costs		\$7.17	\$7.54
Storage System Annual Repairs	\$0.042	\$0.042	\$0.044
Base + Storage System Ownership & Repairs		\$7.21	\$7.59
	Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October	\$0.215	\$7.42	\$7.82
November*	\$0.390	\$7.60	\$8.00
December	\$0.478	\$7.69	\$8.09
January	\$0.564	\$7.77	\$8.18
February	\$0.652	\$7.86	\$8.28
March	\$0.739	\$7.95	\$8.37
April	\$0.931	\$8.14	\$8.57
May	\$1.038	\$8.25	\$8.68
June	\$1.163	\$8.37	\$8.81

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

Calculated values.

* Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & 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, air system, and the equipment used to place.

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

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

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

Appendix C
Eastern Idaho Southern Region
Irrigated Russet Burbank Potato
Fumigated

Table C-1. 2017 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes with fumigation.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Gross Returns				
Potatoes	420.00	cwt	7.50	\$3,150.00
Total Gross Returns				\$3,150.00
Operating Inputs				
Seed:				\$309.75
G-3 Russet Burbank Seed	21.00	cwt	13.00	273.00
Seed Cutting	21.00	cwt	1.75	36.75
Fertilizer:				\$331.65
Dry Nitrogen - Preplant	140.00	lb	0.40	56.00
Dry P2O5	185.00	lb	0.38	70.30
K2O	215.00	lb	0.31	66.65
Sulfur	85.00	lb	0.22	18.70
Liquid Nitrogen	120.00	lb	0.50	60.00
Liquid P2O5	50.00	lb	0.56	28.00
Micronutrients/Humic Acid - CP	1.00	acre	32.00	32.00
Pesticides & Chemicals:				\$421.90
Vapam 42%	35.00	gal	5.50	192.50
Seed Treatment	21.00	cwt	0.65	13.65
Admire Pro	8.00	fl oz	1.25	10.00
Moncut 70DF	1.00	lb	29.80	29.80
Metribuzin 75DF	0.67	lb	11.90	7.97
Eptam 7E	3.50	pt	6.30	22.05
Prowl 3.3EC	2.00	pt	5.15	10.30
Quadris Flowable	8.00	fl oz	1.50	12.00
Omega 500DF	5.50	fl oz	3.20	17.60
Endura	5.50	oz	4.55	25.03
Bravo Weatherstik	1.00	pt	5.60	5.60
Dithane F45 Rainshield (2x)	3.20	qt	8.50	27.20
Ranman	2.75	fl oz	5.10	14.03
Agri-Mek .75SC	3.50	fl oz	2.25	7.88
Brigadier	6.00	fl oz	1.40	8.40
Reglone	2.00	pt	8.95	17.90
Custom & Consultants:				\$113.25
Custom Fumigate - Deep Injection	1.00	acre	45.00	45.00
Custom Fertilize: 400 - 800 lbs	1.00	acre	8.00	8.00
Custom Fertilize: 0 - 400 lbs	1.00	acre	7.25	7.25
Custom Air Spray - 5.0 gal	3.00	acre	9.00	27.00
Consultant & Soil/Pet. Test	1.00	acre	26.00	26.00
Irrigation:				\$100.99
Water Assessment	1.00	acre	38.00	38.00
Irrigation Repairs - Center Pivot	25.50	acre-inch	0.53	13.52
Irrigation Power - Center Pivot	25.50	acre-inch	1.94	49.47
Machinery:				\$124.64
Fuel - Gas	4.52	gal	2.45	11.07
Fuel - Farm Diesel	20.47	gal	2.20	45.03
Fuel - Road Diesel	2.02	gal	2.75	5.56
Lube	1.00	\$	9.46	9.46
Machinery Repairs	1.00	\$	53.52	53.52
Labor:				\$168.27
Equipment Operator Labor	3.88	hrs	19.70	76.44
Truck Driver Labor	1.98	hrs	15.35	30.39
Irrigation Labor - Center Pivot	1.02	hrs	19.70	20.09
Irrigation Labor - Chem-Fert	0.82	hrs	19.70	16.15
General Farm Labor	2.22	hrs	11.35	25.20
Sorting:				\$63.00
Sorting Labor	420.00	cwt	0.115	48.30
Sorting Equipment Repairs & Power	420.00	cwt	0.035	14.70
Other:				\$152.00
Crop Insurance: MP + Hail	1.00	acre	80.00	80.00
Fees & Assessments	400.00	cwt	0.18	72.00
Interest on Operating Capital at 6.25%				\$66.60
Total Operating Costs				\$1,852.05
Operating Costs per Unit				\$4.41
Net Returns Above Operating Costs				\$1,297.95

2016	Yield Change	
420	0	0.0%
\$ Change % Change		
\$299.25	\$10.50	3.5%
262.50	\$10.50	4.0%
36.75	\$0.00	0.0%
\$327.35	\$4.30	1.3%
57.40	-\$1.40	-2.4%
68.45	\$1.85	2.7%
62.35	\$4.30	6.9%
19.55	-\$0.85	-4.3%
57.60	\$2.40	4.2%
30.00	-\$2.00	-6.7%
32.00	\$0.00	0.0%
\$393.30	\$28.60	7.3%
182.00	\$10.50	5.8%
12.60	\$1.05	8.3%
10.40	-\$0.40	-3.8%
26.60	\$3.20	12.0%
8.38	-\$0.40	-4.8%
20.30	\$1.75	8.6%
6.50	\$3.80	58.5%
13.20	-\$1.20	-9.1%
17.05	\$0.55	3.2%
19.25	\$5.78	30.0%
5.40	\$0.20	3.7%
25.60	\$1.60	6.3%
12.38	\$1.65	13.3%
8.75	-\$0.88	-10.0%
7.80	\$0.60	7.7%
17.10	\$0.80	4.7%
\$108.75	\$4.50	4.1%
42.00	\$3.00	7.1%
7.75	\$0.25	3.2%
7.50	-\$0.25	-3.3%
25.50	\$1.50	5.9%
26.00	\$0.00	0.0%
\$99.73	\$1.26	1.3%
37.00	\$1.00	2.7%
13.26	\$0.26	1.9%
49.47	\$0.00	0.0%
\$116.86	\$7.78	6.7%
9.94	\$1.13	11.4%
40.94	\$4.09	10.0%
4.95	\$0.61	12.2%
8.40	\$1.06	12.6%
52.63	\$0.89	1.7%
\$163.46	\$4.81	2.9%
74.30	\$2.13	2.9%
29.50	\$0.89	3.0%
19.53	\$0.56	2.9%
15.70	\$0.45	2.9%
24.42	\$0.78	3.2%
\$60.90	\$2.10	3.4%
46.62	\$1.68	3.6%
14.28	\$0.42	2.9%
\$152.00	\$0.00	0.0%
80.00	\$0.00	0.0%
72.00	\$0.00	0.0%
61.40	\$5.20	8.5%
\$1,783.00	\$69.05	3.9%
\$4.25	\$0.16	3.9%
\$1,157.00		

Table C-1. 2017 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes with fumigation.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				5.40
Tractors & Equipment Depreciation & Interest				178.00
Potato Handling Equipment Deprec. & Interest				64.00
Land*				535.00
Overhead				46.00
Management Fee				141.00
Total Ownership Costs				\$969.40
Ownership Costs per Unit				\$2.31
Total Costs per Acre				\$2,821.45
Total Cost per Unit				\$6.72
Returns to Risk				\$328.55
Notes:				
*Includes irrigation system ownership costs.				
Blue font indicates an increase.				
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:				
	-	Base	+	
	5%		5%	
		Yield		
<u>Price</u>	399	420	441	
Operating Cost Breakeven	\$4.64	\$4.41	\$4.20	
Ownership Cost Breakeven	\$2.43	\$2.31	\$2.20	
Total Cost Breakeven	\$7.07	\$6.72	\$6.40	
		Price		
<u>Yield</u>	\$7.13	\$7.50	\$7.88	
Operating Cost Breakeven	259.9	246.9	235.2	
Ownership Cost Breakeven	136.1	129.3	123.1	
Total Cost Breakeven	396.0	376.2	358.3	

5.27	\$0.13	2.5%
174.00	\$4.00	2.3%
62.50	\$1.50	2.4%
535.00	\$0.00	0.0%
45.00	\$1.00	2.2%
138.00	\$3.00	2.2%
\$959.77	\$9.63	1.0%
\$2.29	\$0.02	1.0%
\$2,742.77	\$78.68	2.9%
\$6.53	\$0.19	2.9%
\$197.23		

Table C-2. 2017 Cost per cwt to grow, harvest, sort and store Eastern Idaho Southern region Russet Burbank potatoes with fumigation based on both field-run and paid yield.

	Storage Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield		420.00	
Paid Yield %	95%		399.0
Base Cost to Grow, Harvest & Sort		\$6.72	\$7.07
Storage System Annual Ownership Costs	\$0.365	\$0.365	\$0.384
Base Cost + Storage Ownership Costs		\$7.08	\$7.46
Storage System Annual Repairs	\$0.042	\$0.042	\$0.044
Base + Storage System Ownership & Repairs		\$7.12	\$7.50
	Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October	\$0.228	\$7.35	\$7.74
November*	\$0.408	\$7.53	\$7.93
December	\$0.497	\$7.62	\$8.02
January	\$0.590	\$7.72	\$8.12
February	\$0.681	\$7.81	\$8.22
March	\$0.772	\$7.90	\$8.31
April	\$0.969	\$8.09	\$8.52
May	\$1.081	\$8.21	\$8.64
June	\$1.214	\$8.34	\$8.78

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

Calculated values.

* Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & 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, air system, and the equipment used to place.

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

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

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

Appendix D
Southcentral Idaho
Irrigated Russet Burbank Potato
Non-Fumigated

Table D-1. 2017 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Gross Returns				
Potatoes	425.00	cwt	7.50	\$3,187.50
Total Gross Returns				\$3,187.50
Operating Inputs				
Seed:				\$350.75
G-3 Russet Burbank Seed	23.00	cwt	13.50	310.50
Seed Cutting	23.00	cwt	1.75	40.25
Fertilizer:				\$341.35
Dry Nitrogen - Preplant	155.00	lb	0.40	62.00
Dry P2O5	205.00	lb	0.38	77.90
K2O	215.00	lb	0.31	66.65
Sulfur	85.00	lb	0.22	18.70
Liquid Nitrogen	105.00	lb	0.50	52.50
Liquid P2O5	35.00	lb	0.56	19.60
Micronutrients & Foliar	2.00	acre	22.00	44.00
Pesticides & Chemicals:				\$267.05
Seed Treatment	23.00	cwt	0.65	14.95
Admire Pro	8.00	oz	1.25	10.00
Quadris Flowable	8.00	fl oz	1.50	12.00
Outlook 6EC	20.00	fl oz	1.00	20.00
Prowl 3.3EC	2.00	pt	5.15	10.30
Metribuzin 75DF	0.75	lb	11.90	8.93
Endura	5.50	oz	4.55	25.03
Dithane F45 Rainshield (2x)	3.75	qt	8.50	31.88
Tanos DF	6.00	oz	2.85	17.10
Gavel 75DF	2.00	lb	8.50	17.00
Revus Top	7.00	fl oz	2.25	15.75
Brigadier (2x)	12.00	fl oz	1.40	16.80
Movento	5.00	fl oz	8.30	41.50
Agri-Mek .75SC (2x)	7.50	fl oz	2.25	16.88
Reglone	1.00	qt	8.95	8.95
Custom & Consultants:				\$85.25
Custom Fertilize: 400 - 800 lbs	1.00	acre	8.00	8.00
Custom Fertilize: 0 - 400 lbs	1.00	acre	7.25	7.25
Custom Air Spray - 7.5 gal	4.00	acre	10.00	40.00
Consultant & Soil/Pet. Test	1.00	acre	30.00	30.00
Irrigation:				\$114.19
Water Assessment	1.00	acre	47.50	47.50
Irrigation Repairs - Center Pivot	27.00	acre-inch	0.53	14.31
Irrigation Power - Center Pivot	27.00	acre-inch	1.94	52.38
Machinery:				\$122.97
Fuel - Gas	4.59	gal	2.45	11.25
Fuel - Farm Diesel	19.41	gal	2.20	42.70
Fuel - Road Diesel	2.28	gal	2.80	6.38
Lube	1.00	\$	9.04	9.04
Machinery Repairs	1.00	\$	53.60	53.60
Labor:				\$181.59
Equipment Operator Labor	4.49	hrs	19.70	88.45
Truck Driver Labor	1.83	hrs	15.35	28.09
Irrigation Labor - Center Pivot	1.08	hrs	19.70	21.28
Irrigation Labor - Chem-Fert	0.92	hrs	19.70	18.12
General Farm Labor	2.26	hrs	11.35	25.65
Sorting:				\$63.75
Sorting Labor	425.00	cwt	0.115	48.88
Sorting Equipment Repairs & Power	425.00	cwt	0.035	14.88
Other:				\$137.72
Crop Insurance	1.00	acre	65.00	65.00
Fees & Assessments	404.00	cwt	0.18	72.72
Interest on Operating Capital at 6.25%				\$51.73
Total Operating Costs				\$1,716.36
Operating Costs per Unit				\$4.04
Net Returns Above Operating Costs				\$1,471.14

2016	Yield Change	
430	-5	-1.2%
\$ Change % Change		
\$339.25	\$11.50	3.4%
299.00	\$11.50	3.8%
40.25	\$0.00	0.0%
\$328.70	\$12.65	3.8%
63.55	-\$1.55	-2.4%
75.85	\$2.05	2.7%
62.35	\$4.30	6.9%
18.70	-\$0.85	-4.3%
50.40	\$2.10	4.2%
21.00	-\$1.40	-6.7%
36.00	\$8.00	22.2%
\$257.13	\$9.92	3.9%
13.80	\$1.15	8.3%
10.40	-\$0.40	-3.8%
13.20	-\$1.20	-9.1%
20.00	\$0.00	0.0%
6.50	\$3.80	58.5%
9.38	-\$0.45	-4.8%
19.25	\$5.78	30.0%
30.00	\$1.88	6.3%
15.90	\$1.20	7.5%
17.00	\$0.00	0.0%
15.75	\$0.00	0.0%
15.60	\$1.20	7.7%
34.50	\$7.00	20.3%
18.75	-\$1.88	-10.0%
17.10	-\$8.15	-47.7%
\$83.25	\$2.00	2.4%
7.75	\$0.25	3.2%
7.50	-\$0.25	-3.3%
38.00	\$2.00	5.3%
30.00	\$0.00	0.0%
\$113.92	\$0.27	0.2%
47.50	\$0.00	0.0%
14.04	\$0.27	1.9%
52.38	\$0.00	0.0%
\$114.26	\$8.71	7.6%
10.10	\$1.15	11.4%
37.85	\$4.85	12.8%
5.59	\$0.80	14.3%
8.03	\$1.01	12.6%
52.70	\$0.90	1.7%
\$176.41	\$5.18	2.9%
85.98	\$2.47	2.9%
27.27	\$0.82	3.0%
20.68	\$0.59	2.9%
17.62	\$0.51	2.9%
24.86	\$0.79	3.2%
\$62.35	\$1.40	2.2%
47.73	\$1.15	2.4%
14.62	\$0.26	1.7%
\$138.62	-\$0.90	-0.6%
65.00	\$0.00	0.0%
73.62	-\$0.90	-1.2%
49.85	\$1.88	3.8%
\$1,663.74	\$52.62	3.2%
\$3.87	\$0.17	4.4%
\$1,346.26		

Table D-1. 2017 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				5.75
Tractors & Equipment Depreciation & Interest				192.00
Potato Handling Equipment Deprec. & Interest				64.00
Land*				625.00
Overhead				42.00
Management Fee				139.00
Total Ownership Costs				\$1,067.75
Ownership Costs per Unit				\$2.51
Total Costs per Acre				\$2,784.11
Total Cost per Unit				\$6.55
Returns to Risk				\$403.39
Notes:				
*Includes irrigation system ownership costs.				
Blue font indicates an increase.				
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:				
	-	Base	+	
	5%		5%	
		Yield		
<u>Price</u>	403.75	425	446.25	
Operating Cost Breakeven	\$4.25	\$4.04	\$3.85	
Ownership Cost Breakeven	\$2.64	\$2.51	\$2.39	
Total Cost Breakeven	\$6.90	\$6.55	\$6.24	
		Price		
<u>Yield</u>	\$7.13	\$7.50	\$7.88	
Operating Cost Breakeven	240.9	228.8	217.9	
Ownership Cost Breakeven	149.9	142.4	135.6	
Total Cost Breakeven	390.8	371.2	353.5	

5.63	\$0.12	2.1%
188.00	\$4.00	2.1%
62.50	\$1.50	2.4%
625.00	\$0.00	0.0%
41.00	\$1.00	2.4%
134.00	\$5.00	3.7%
\$1,056.13	\$11.62	1.1%
\$2.46	\$0.06	2.3%
\$2,719.87	\$64.24	2.4%
\$6.33	\$0.23	3.6%
\$290.13		

Table D-2. 2017 Cost per cwt to grow, harvest, sort and store Southcentral Idaho Russet Burbank potatoes based on both field-run and paid yield.

	Storage Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield		425.00	
Paid Yield %	95%		403.8
Base Cost to Grow, Harvest & Sort		\$6.55	\$6.90
Storage System Annual Ownership Costs	\$0.365	\$0.365	\$0.384
Base Cost + Storage Ownership Costs		\$6.92	\$7.28
Storage System Annual Repairs	\$0.042	\$0.042	\$0.044
Base + Storage System Ownership & Repairs		\$6.96	\$7.32
	Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October	\$0.215	\$7.17	\$7.55
November*	\$0.390	\$7.35	\$7.73
December	\$0.478	\$7.44	\$7.83
January	\$0.564	\$7.52	\$7.92
February	\$0.652	\$7.61	\$8.01
March	\$0.739	\$7.70	\$8.10
April	\$0.931	\$7.89	\$8.30
May	\$1.038	\$8.00	\$8.42
June	\$1.163	\$8.12	\$8.55

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

Calculated values.

* Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & 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, air system, and the equipment used to place.

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

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

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

Appendix E
Eastern Idaho Southern Region
Irrigated Russet Burbank Potato
Non-Fumigated

Table E-1. 2017 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre	2016	Yield Change	
Gross Returns					380	0	0.0%
Potatoes	380.00	cwt	7.50	\$2,850.00			
Total Gross Returns				\$2,850.00			
Operating Inputs					\$ Change % Change		
Seed:					\$299.25	\$10.50	3.5%
G-3 Russet Burbank Seed	21.00	cwt	13.00	273.00	262.50	\$10.50	4.0%
Seed Cutting	21.00	cwt	1.75	36.75	36.75	\$0.00	0.0%
Fertilizer:					\$304.65	\$4.90	1.6%
Dry Nitrogen - Preplant	135.00	lb	0.40	54.00	55.35	-\$1.35	-2.4%
Dry P2O5	160.00	lb	0.38	60.80	59.20	\$1.60	2.7%
K2O	195.00	lb	0.31	60.45	56.55	\$3.90	6.9%
Sulfur	85.00	lb	0.22	18.70	19.55	-\$0.85	-4.3%
Liquid Nitrogen	100.00	lb	0.50	50.00	48.00	\$2.00	4.2%
Liquid P2O5	60.00	lb	0.56	33.60	36.00	-\$2.40	-6.7%
Micronutrients/Humic Acid - CP	1.00	acre	32.00	32.00	30.00	\$2.00	6.7%
Pesticides & Chemicals:					\$211.25	\$18.15	8.6%
Seed Treatment	21.00	cwt	0.65	13.65	12.60	\$1.05	8.3%
Admire Pro	8.00	fl oz	1.25	10.00	10.40	-\$0.40	-3.8%
Moncut 700DF	1.00	lb	29.80	29.80	26.60	\$3.20	12.0%
Metribuzin 75DF	0.67	lb	11.90	7.97	8.38	-\$0.40	-4.8%
Eptam 7E	3.50	pt	6.30	22.05	20.30	\$1.75	8.6%
Prowl 3.3EC	2.00	pt	5.15	10.30	6.50	\$3.80	58.5%
Quadris Flowable	8.00	fl oz	1.50	12.00	13.20	-\$1.20	-9.1%
Omega 500DF	5.50	fl oz	3.20	17.60	17.05	\$0.55	3.2%
Endura	5.50	oz	4.55	25.03	19.25	\$5.78	30.0%
Bravo Weatherstik	1.00	pt	5.60	5.60	5.35	\$0.25	4.7%
Dithane F45 Rainshield (2x)	3.20	qt	8.50	27.20	25.60	\$1.60	6.3%
Ranman	2.75	fl oz	5.10	14.03	12.38	\$1.65	13.3%
Agri-Mek .75SC	3.50	fl oz	2.25	7.88	8.75	-\$0.88	-10.0%
Brigadier	6.00	fl oz	1.40	8.40	7.80	\$0.60	7.7%
Reglone	2.00	pt	8.95	17.90	17.10	\$0.80	4.7%
Custom & Consultants:					\$66.75	\$1.50	2.2%
Custom Fertilize: 400 - 800 lbs	1.00	acre	8.00	8.00	7.75	\$0.25	3.2%
Custom Fertilize: 0 - 400 lbs	1.00	acre	7.25	7.25	7.50	-\$0.25	-3.3%
Custom Air Spray - 5.0 gal	3.00	acre	9.00	27.00	25.50	\$1.50	5.9%
Consultant & Soil/Pet. Test	1.00	acre	26.00	26.00	26.00	\$0.00	0.0%
Irrigation:					\$96.04	\$1.24	1.3%
Water Assessment	1.00	acre	38.00	38.00	37.00	\$1.00	2.7%
Irrigation Repairs - Center Pivot	24.00	acre-inch	0.53	12.72	12.48	\$0.24	1.9%
Irrigation Power - Center Pivot	24.00	acre-inch	1.94	46.56	46.56	\$0.00	0.0%
Machinery:					\$116.16	\$7.74	6.7%
Fuel - Gas	4.52	gal	2.45	11.07	9.94	\$1.13	11.4%
Fuel - Farm Diesel	20.47	gal	2.20	45.03	40.94	\$4.09	10.0%
Fuel - Road Diesel	1.92	gal	2.75	5.28	4.70	\$0.58	12.2%
Lube	1.00	\$	9.42	9.42	8.37	\$1.05	12.5%
Machinery Repairs	1.00	\$	53.09	53.09	52.20	\$0.89	1.7%
Labor:					\$160.36	\$4.72	2.9%
Equipment Operator Labor	3.88	hrs	19.70	76.44	74.30	\$2.13	2.9%
Truck Driver Labor	1.86	hrs	15.35	28.55	27.71	\$0.84	3.0%
Irrigation Labor - Center Pivot	0.96	hrs	19.70	18.91	18.38	\$0.53	2.9%
Irrigation Labor - Chem-Fert	0.80	hrs	19.70	15.76	15.32	\$0.44	2.9%
General Farm Labor	2.24	hrs	11.35	25.42	24.64	\$0.78	3.2%
Sorting:					\$55.10	\$1.90	3.4%
Sorting Labor	380.00	cwt	0.115	43.70	42.18	\$1.52	3.6%
Sorting Equipment Repairs & Power	380.00	cwt	0.035	13.30	12.92	\$0.38	2.9%
Other:					\$144.98	\$0.00	0.0%
Crop Insurance: MP + Hail	1.00	acre	80.00	80.00	80.00	\$0.00	0.0%
Fees & Assessments	361.00	cwt	0.18	64.98	64.98	\$0.00	0.0%
Interest on Operating Capital at 6.25%				\$47.74	45.40	\$2.34	5.2%
Total Operating Costs				\$1,552.93	\$1,499.94	\$52.99	3.5%
Operating Costs per Unit				\$4.09	\$3.95	\$0.14	3.5%
Net Returns Above Operating Costs				\$1,297.07	\$1,160.06		

Table E-1. 2017 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				5.35
Tractors & Equipment Depreciation & Interest				176.00
Potato Handling Equipment Deprec. & Interest				58.00
Land*				535.00
Overhead				39.00
Management Fee				124.00
Total Ownership Costs				\$937.35
Ownership Costs per Unit				\$2.47
Total Costs per Acre				\$2,490.28
Total Cost per Unit				\$6.55
Returns to Risk				\$359.72
Notes:				
*Includes irrigation system ownership costs.				
Blue font indicates an increase.				
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:				
	-	Base	+	
	5%		5%	
		Yield		
<u>Price</u>	361	380	399	
Operating Cost Breakeven	\$4.30	\$4.09	\$3.89	
Ownership Cost Breakeven	\$2.60	\$2.47	\$2.35	
Total Cost Breakeven	\$6.90	\$6.55	\$6.24	
		Price		
<u>Yield</u>	\$7.13	\$7.50	\$7.88	
Operating Cost Breakeven	218.0	207.1	197.2	
Ownership Cost Breakeven	131.6	125.0	119.0	
Total Cost Breakeven	349.5	332.0	316.2	

5.21	\$0.14	2.7%
172.00	\$4.00	2.3%
57.00	\$1.00	1.8%
535.00	\$0.00	0.0%
38.00	\$1.00	2.6%
122.00	\$2.00	1.6%
\$929.21	\$8.14	0.9%
\$2.45	\$0.02	0.9%
\$2,429.15	\$61.13	2.5%
\$6.39	\$0.16	2.5%
\$230.85		

Table E-2. 2017 Cost per cwt to grow, harvest, sort and store Eastern Idaho Northern region Russet Burbank potatoes based on both field-run and paid yield.

	Storage Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield		380.00	
Paid Yield %	95%		361.0
Base Cost to Grow, Harvest & Sort		\$6.55	\$6.90
Storage System Annual Ownership Costs	\$0.365	\$0.365	\$0.384
Base Cost + Storage Ownership Costs		\$6.92	\$7.28
Storage System Annual Repairs	\$0.042	\$0.042	\$0.044
Base + Storage System Ownership & Repairs		\$6.96	\$7.33
	Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October	\$0.228	\$7.19	\$7.57
November*	\$0.408	\$7.37	\$7.76
December	\$0.497	\$7.46	\$7.85
January	\$0.590	\$7.55	\$7.95
February	\$0.681	\$7.64	\$8.04
March	\$0.772	\$7.73	\$8.14
April	\$0.969	\$7.93	\$8.35
May	\$1.081	\$8.04	\$8.46
June	\$1.214	\$8.17	\$8.60

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

Calculated values.

* Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & 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, air system, and the equipment used to place.

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

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

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

Appendix F
Eastern Idaho Northern Region
Irrigated Russet Burbank Potato
Non-Fumigated

Table F-1. 2017 Costs to grow, harvest and sort Eastern Idaho Northern region Russet Burbank potatoes.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Gross Returns				
Potatoes	365.00	cwt	7.25	\$2,646.25
Total Gross Returns				\$2,646.25
Operating Inputs				
Seed:				\$300.30
G-3 Russet Burbank Seed	21.00	cwt	12.55	263.55
Seed Cutting	21.00	cwt	1.75	36.75
Fertilizer:				\$297.80
Dry Nitrogen - Preplant	135.00	lb	0.40	54.00
Dry P2O5	155.00	lb	0.38	58.90
K2O	160.00	lb	0.31	49.60
Sulfur	80.00	lb	0.22	17.60
Liquid Nitrogen	105.00	lb	0.50	52.50
Liquid P2O5	45.00	lb	0.56	25.20
Micronutrients/Humic Acid - CP	1.00	acre	40.00	40.00
Pesticides & Chemicals:				\$226.97
Seed Treatment	21.00	cwt	0.65	13.65
Admire Pro	8.00	fl oz	1.25	10.00
Regent 4SC	3.20	fl oz	8.90	28.48
Metribuzin 75DF	0.75	lb	11.90	8.93
Outlook 6EC	18.00	fl oz	1.00	18.00
Prowl 3.3EC	2.00	pt	5.15	10.30
Quadris Flowable	8.00	fl oz	1.50	12.00
Bravo ZN	1.25	pt	7.35	9.19
Endura	5.50	oz	4.55	25.03
Dithane F45	1.60	qt	8.50	13.60
Revus Top	7.00	fl oz	2.25	15.75
Brigadier	6.00	fl oz	1.40	8.40
Fulfill WDG	5.50	oz	6.50	35.75
Reglone	2.00	pt	8.95	17.90
Custom & Consultants:				\$59.25
Custom Fertilize: 400 - 800 lbs	1.00	acre	8.00	8.00
Custom Fertilize: 0 - 400 lbs	1.00	acre	7.25	7.25
Custom Air Spray - 5.0 gal	2.00	acre	9.00	18.00
Consultant & Soil/Pet. Test	1.00	acre	26.00	26.00
Irrigation:				\$69.31
Water Assessment	1.00	acre	12.50	12.50
Irrigation Repairs - Center Pivot	23.00	acre-inch	0.53	12.19
Irrigation Power - Center Pivot	23.00	acre-inch	1.94	44.62
Machinery:				\$123.60
Fuel - Gas	4.51	gal	2.45	11.05
Fuel - Farm Diesel	21.30	gal	2.20	46.86
Fuel - Road Diesel	1.91	gal	2.75	5.25
Lube	1.00	\$	9.69	9.69
Machinery Repairs	1.00	\$	50.75	50.75
Labor:				\$166.80
Equipment Operator Labor	4.03	hrs	19.70	79.39
Truck Driver Labor	1.86	hrs	15.35	28.55
Irrigation Labor - Center Pivot	0.92	hrs	19.70	18.12
Irrigation Labor - Chem-Fert	0.76	hrs	19.70	14.97
General Farm Labor	2.27	hrs	11.35	25.76
Sorting:				\$54.75
Sorting Labor	365.00	cwt	0.115	41.98
Sorting Equipment Repairs & Power	365.00	cwt	0.035	12.78
Other:				\$132.46
Crop Insurance: MP + Hail	1.00	acre	70.00	70.00
Fees & Assessments	347.00	cwt	0.18	62.46
Interest on Operating Capital at 6.25%				\$44.40
Total Operating Costs				\$1,475.64
Operating Costs per Unit				\$4.04
Net Returns Above Operating Costs				\$1,170.61

2016	Yield Change	
360	5	1.4%
\$ Change % Change		
\$289.80	\$10.50	3.6%
253.05	\$10.50	4.1%
36.75	\$0.00	0.0%
\$294.90	\$2.90	1.0%
55.35	-\$1.35	-2.4%
57.35	\$1.55	2.7%
46.40	\$3.20	6.9%
18.40	-\$0.80	-4.3%
50.40	\$2.10	4.2%
27.00	-\$1.80	-6.7%
40.00	\$0.00	0.0%
\$202.90	\$24.07	11.9%
12.60	\$1.05	8.3%
10.40	-\$0.40	-3.8%
25.12	\$3.36	13.4%
9.38	-\$0.45	-4.8%
18.00	\$0.00	0.0%
6.50	\$3.80	58.5%
13.20	-\$1.20	-9.1%
6.13	\$3.06	50.0%
19.25	\$5.78	30.0%
12.80	\$0.80	6.3%
15.75	\$0.00	0.0%
7.80	\$0.60	7.7%
28.88	\$6.88	23.8%
17.10	\$0.80	4.7%
\$58.25	\$1.00	1.7%
7.75	\$0.25	3.2%
7.50	-\$0.25	-3.3%
17.00	\$1.00	5.9%
26.00	\$0.00	0.0%
\$69.08	\$0.23	0.3%
12.50	\$0.00	0.0%
11.96	\$0.23	1.9%
44.62	\$0.00	0.0%
\$115.71	\$7.89	6.8%
9.92	\$1.13	11.4%
42.60	\$4.26	10.0%
4.68	\$0.57	12.2%
8.61	\$1.08	12.5%
49.90	\$0.85	1.7%
\$162.03	\$4.77	2.9%
77.17	\$2.22	2.9%
27.71	\$0.84	3.0%
17.62	\$0.51	2.9%
14.55	\$0.42	2.9%
24.97	\$0.79	3.2%
\$52.20	\$2.55	4.9%
39.96	\$2.02	5.0%
12.24	\$0.54	4.4%
\$131.56	\$0.90	0.7%
70.00	\$0.00	0.0%
61.56	\$0.90	1.5%
42.55	\$1.85	4.3%
\$1,418.98	\$56.67	4.0%
\$3.94	\$0.10	2.6%
\$1,011.02		

Table E-1. 2017 Costs to grow, harvest and sort Eastern Idaho Northern region Russet Burbank potatoes.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				5.35
Tractors & Equipment Depreciation & Interest				176.00
Potato Handling Equipment Deprec. & Interest				54.00
Land*				440.00
Overhead				36.50
Management Fee				114.50
Total Ownership Costs				\$826.35
Ownership Costs per Unit				\$2.26
Total Costs per Acre				\$2,301.99
Total Cost per Unit				\$6.31
Returns to Risk				\$344.26
Notes:				
*Includes irrigation system ownership costs.				
Blue font indicates an increase.				
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:				
	-	Base	+	
	5%		5%	
		Yield		
<u>Price</u>	346.75	365	383.25	
Operating Cost Breakeven	\$4.26	\$4.04	\$3.85	
Ownership Cost Breakeven	\$2.38	\$2.26	\$2.16	
Total Cost Breakeven	\$6.64	\$6.31	\$6.01	
		Price		
<u>Yield</u>	\$6.89	\$7.25	\$7.61	
Operating Cost Breakeven	214.2	203.5	193.8	
Ownership Cost Breakeven	120.0	114.0	108.6	
Total Cost Breakeven	334.2	317.5	302.4	

5.23	\$0.12	2.3%
172.00	\$4.00	2.3%
53.00	\$1.00	1.9%
440.00	\$0.00	0.0%
35.50	\$1.00	2.8%
112.00	\$2.50	2.2%
\$817.73	\$8.62	1.1%
\$2.27	-\$0.01	-0.3%
\$2,236.71	\$65.29	2.9%
\$6.21	\$0.09	1.5%
\$193.29		

Table F-2. 2017 Cost per cwt to grow, harvest, sort and store Eastern Idaho Northern region Russet Burbank potatoes based on both field-run and paid yield.

	Storage Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield		365.00	
Paid Yield %	95%		346.8
Base Cost to Grow, Harvest & Sort		\$6.31	\$6.64
Storage System Annual Ownership Costs	\$0.365	\$0.365	\$0.384
Base Cost + Storage Ownership Costs		\$6.67	\$7.02
Storage System Annual Repairs	\$0.042	\$0.042	\$0.044
Base + Storage System Ownership & Repairs		\$6.71	\$7.07
	Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October	\$0.228	\$6.94	\$7.31
November*	\$0.408	\$7.12	\$7.50
December	\$0.497	\$7.21	\$7.59
January	\$0.590	\$7.30	\$7.69
February	\$0.681	\$7.39	\$7.78
March	\$0.772	\$7.49	\$7.88
April	\$0.969	\$7.68	\$8.09
May	\$1.081	\$7.80	\$8.21
June	\$1.214	\$7.93	\$8.34

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

Calculated values.

* Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & 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, air system, and the equipment used to place.

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

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

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