

2014 Cost of Potato Production for Idaho With Comparisons to 2013

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The Cost of Potato Production Advisory Committee

and the Idaho Potato Commission R & E Committee

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Copies of the earlier report plus earlier reports can be found at
<http://web.cals.uidaho.edu/IdahoAgBiz>

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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 costs and returns 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, IPC Project Number 8742, UI Project number BDK802. This project has been funded 21 of the past 23 years.

Cost of Production Background

The University of Idaho Department of Agricultural Economics and Rural Sociology (AERS) develops and publishes crop costs and returns (CAR) estimates – also referred to as enterprise budgets or cost of production estimates -- for many of the major crops grown in Idaho. CAR estimates are revised and published every other year in odd-numbered years, typically in the early winter. Crop CAR estimates have historically been developed for four geographic regions of the state: northern Idaho, southwestern Idaho, southcentral Idaho, and eastern Idaho. Enterprise budgets are tied to region-specific production management systems that reflect climate and soil conditions as well as current cultural practices. Production practices depicted in the University of Idaho CAR estimates are typical or representative for that crop and region, recognizing that there is a wide range in production practices among growers, or

even between fields on the same farm. Because of data collection limitations relating to sample size, these costs of production estimates do not represent a regional average or state average.

Information used in developing production practices modeled in the CAR estimates comes from a variety of sources, including: information from individual growers, information from grower panels, industry fieldmen, as well as University of Idaho county Extension educators and production specialists. Both crop and livestock CAR estimates are available from the Internet at the following URL:

<http://web.cals.uidaho.edu/idaohoagbiz/> Click on Cost of Production

The crop and livestock enterprise budgets and the annual input cost summary are located here. A database search routine has replaced the old listing of crop budgets by region. Simply fill in one or more of the search items (Year, Region, Commodity and Format) and then click Search. Copies of this report and earlier reports on changes in potato production costs in Idaho can be found at the same web address. Click on Publications and then scroll down to the Potato Bulletins and Reports section.

2014 Crop Input Costs

Prices used to value inputs in the 2014 potato CAR estimates came from data collected from input suppliers by the University of Idaho. This information is published in the Agricultural Economics Extension Series. The *Idaho Crop Input Price Summary for 2014* is available at the Idaho AgBiz website shown above, simply select the year and click on Search.

Data were collected between February and October. 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 were 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 by approximately 16% based on the annual change in USDA's Prices Paid Machinery Index from 2010 to 2013. Irrigation equipment prices and costs were based on Extension Bulletin 788, *Economics of Sprinkler Irrigation Systems: handline, solid set & wheelline*, and Extension Bulletin 787, *Economics of Low-Pressure Sprinkler Irrigation Systems: center pivot and linear move*. Irrigation system costs were also adjusted using the USDA Prices Paid Machinery Index.

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. 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. Basically 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 for the five most recent years these estimates were made. For 2014 the model farm in southwestern Idaho is 1,600 acres with 500 acres in potatoes. The model farm for southcentral Idaho is 2,200 with 550 acres in potatoes. The model farm for eastern Idaho is 2,400 acres with 800 acres in potatoes. 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 setting the farm size and selecting the machinery compliment, 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 other input prices 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 costs based on Idaho Power’s Service Schedule 24, and the resulting cost per acre inch of water applied. Table 3 has values for 2014, the previous 3 years and the percentage change from 2013 to 2014. 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 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 (handlines and wheellines) 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. These are 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 are found in Table 3 of the *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, typically 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 2012 through 2014 used in the CAR estimates, and the percentage changes from 2013 to 2014. 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 2014 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 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 2014 CAR estimates, yield data for the 2011, 2012 and 2013 crops were used. The 2014 county-level data for Idaho will not be published until October 2015, 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.

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 2014 CAR estimates are the same as 2013 for southwestern, 10 cwt higher for southcentral Idaho, and 5 cwt higher for eastern Idaho. The potato yields for the fumigated 2014 CAR estimates are 5 cwt higher than 2013 for southwestern, 15 cwt higher for southcentral Idaho, and 5 cwt higher for eastern-South, and eastern-North. (See Table 6.) Note that for the fourth year, 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 Rangers, 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 fumigate, respectively. The yield adjustment attributable to fumigation as well as the 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

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

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 \mathbf{Y} .

$$\begin{array}{rclcl} .4\mathbf{Y} & + & .6(\mathbf{Y}+50) & = & 400 \\ .4\mathbf{Y} & + & .6\mathbf{Y} + 30 & = & 400 \\ 1.0\mathbf{Y} & + & 30 & = & 400 \\ & & \mathbf{Y} & = & 370 \\ \text{And} & & \mathbf{FY} & = & 420 \\ \text{Check:} & & .4 \times 370 & + & .6 \times 420 & = & 400 \end{array}$$

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. Comments from the potato industry on how to improve this procedure are encouraged, particularly on how to improve the values shown in Table 9. 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 ranges 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: Tables A-2, B-2 and C-2 of the Appendix for storage. 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%.

Another unresolved issue is whether it is better to use changes in cost per acre or per hundredweight to measure production costs changes from year-to-year. This report provides both values.

2014 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 storage and non-storage potato budgets as had been published for many years. The base budget contains the cost of sorting potatoes, including labor, electricity and repair costs. 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 costs. This is done on both a field-run and paid-yield basis.

Table 10 summarizes the dollar cost per acre and percentage changes from 2013 to 2014 by region for the major input cost categories. The detailed cost of production estimates for 2014 and 2013 from which this data were taken are in the appendix. Appendix A, B, and C, contain the cost of production estimates for southwestern, southcentral and the eastern south region, respectively.

In general, the cost of seed was higher and fertilizer costs were lower. Pesticide and chemical costs in southwestern and southcentral potato budgets were lower in part because of a reduction in foliar insecticides. While pesticide and chemical costs were higher in eastern Idaho because of an increase in foliar fungicides because of late blight. Viewing the color-coded detailed budgets in the appendix shows that price changes for pesticides is a mixed bag, some up and some down. The cost of power was down in 2014, because of the lower PCA rate (See Table 3 for more detail.). No adjustment was made to the quantity of water applied. Higher irrigation repairs offset most of the power cost savings, however. Fuel

costs were lower (See Table 4 for more detail.), but were offset by higher repair costs on machinery, pushing overall machinery operating expenses higher. Labor costs were also up slightly across the board.

Overall, operating costs per acre and per hundredweight were down slightly in 2014, primarily because the drop in fertilizer costs. Operating costs per acre dropped between \$30 and \$94 per acre, or 13 to 23 cents per hundredweight. Ownership costs per acre were unchanged in southcentral Idaho, up slightly in eastern Idaho (primarily on higher land costs), and down slightly in southwestern Idaho.

Total costs per acre and per hundredweight were down in all three regions. With yield increases in southcentral and eastern Idaho, the percentage change in total costs per unit was greater than the percentage drop per acre. The opposite was the case in southwestern Idaho the yield used in the potato budget was down 5 hundredweight from 2013.

Cost of Production Summaries and Comparisons by Region

Table 11 summarizes production costs for 2013 and 2014 for operating, ownership and total costs per acre, as well as per acre dollar and percentage changes between these years. Table 12 summarizes production costs for 2013 and 2014 for operating, ownership and total costs per hundredweight, and the change per hundredweight and percentage between years. Because the yields used in budgets for 2014 were different than those used in 2013, 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 presented in this report ranged from \$2,558 per acre in eastern Idaho (nonfumigation) up to \$3,679 in southwestern Idaho (with fumigation). (See Table 11.) The range in values per hundredweight is not so extreme. The total cost to raise, harvest and sort potatoes ranged from \$6.73 per hundredweight in eastern Idaho up to \$7.12 in southwestern Idaho. (See Table 12.)

Adjustments for 2014

As mentioned previously, there no longer are separate storage and non-storage budgets. The base budget now shows the cost of growing, harvesting and sorting the potatoes. The cost in the base budget is basically to the end of the piler boom. Potatoes at this point can be loaded into a semi-trailer and hauled to a potato processing plant or fresh pack shed. Transportation costs can simply be added to the base cost of production to get the cost of potatoes delivered to a processing plant or fresh pack shed. The storage budgets published previously showed storage costs to the end of February. Monthly storage costs from the end of October to the end of June are now provided in the appendix tables. Cumulative costs per hundredweight for both field-run and paid-yield are shown.

There were no product changes in the three potato cost of production estimates shown in this report.

There was, however, a change in quantities for some inputs. These were primarily associated with fungicides and insecticides. Changes in products or quantities shown in the detailed cost estimates found in the appendix are shown in green (Tables A-1, B-1 and C-1).

Table 1. Idaho potato costs and returns estimates by region for 2014.

Region/Publication No.	Variety	Fumigation	Storage Costs
Commercial Potatoes			
<u>Southwestern:</u>			
EBB2-Po1-13	Russet Burbank	Yes	Yes
<u>Southcentral:</u>			
EBB3-Po1-13	Russet Burbank	No	Yes
EBB3-Po3-13	Russet Burbank	Yes	Yes
<u>Eastern – South Counties:</u>			
EBB4-Po1-13	Russet Burbank	No	Yes
EBB4-Po6-13	Russet Burbank	Yes	Yes
<u>Eastern – North Counties:</u>			
EBB4-Po2-13	Russet Burbank	No	Yes
Seed			
Eastern – Seed Counties			
EBB4-Po4-13	G3 Russet Burbank	No	Yes

Eastern – South Counties: Bannock, Bingham and Power.

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

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

	2009 - 2012		2013 & 2014	
	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: 2011 – 2014 and percentage changes from 2013 to 2014.

	2011	2012	2013	2014	Change
Operating Interest Rate	6.75%	6.0%	5.75%	6.0%	+4.3%
Intermediate Interest Rate	7.0%	6.25%	6.0%	5.75%	-4.2%
<u>Labor Class (overhead)</u>					
Equipment Operator Labor (25%)	\$16.25	\$17.50	\$17.80	\$18.10	+1.7%
Truck Driver Labor	\$13.00	\$13.50	\$13.80	\$14.05	+1.8%
Irrigation Labor: HL & WL (30%)	\$11.55	\$12.35	\$12.60	\$12.85	+2.0%
Irrigation Labor: CP (25%)	\$16.25	\$17.50	\$17.80	\$18.10	+1.7%
Irrigation Labor: Chem-Fert (25%)			\$17.80	\$18.10	+1.7%
General Farm Labor (15%)	\$9.55	\$10.05	\$10.25	\$10.40	+1.5%
<u>Power Rate: Idaho Power Irrigation Service Schedule 24</u>					
Monthly Service Charge	\$18.18	\$22.00	\$22.00	\$22.00	+0%
Demand Charge: irrigation season	\$5.65	\$6.54	\$7.01	\$7.01	+0%
Base Rate: per kWh	4.6168¢	4.584¢	4.9133¢	5.6453¢	+14.9%
< 165 kWh per kW of Demand			5.0596	5.7916	+14.5%
>165 kWh per kW of Demand			4.7670	5.4990	+15.4%
Power Cost Adjustment per kWh	0.0114¢	0.1295¢	1.1767¢	0.5263¢	-55%
Effective Rate: per kWh	4.6282¢	4.7135¢	6.090¢	5.9383¢	-2.5%
Pumping Cost per Acre Inch	\$1.47	\$1.56	\$1.90	\$1.86	-2.1%

Pumping cost is calculated using Idaho Power Company rates for a 160-acre center pivot with a corner system: 69% pumping plant efficiency and with zero lift. Pumping costs per acre-inch at different lifts (0-, 100-, 200- and 300-feet) and different irrigation systems (center pivots without corner systems and wheelines) can be found in the *Idaho Crop Input Cost Summary for 2013*.

Table 4-a. Current and historical fuel and water assessment prices for southwestern Idaho: 2011 – 2014 and percentage change from 2013 to 2014.

	2011	2012	2013	2014	Change
Gasoline	\$3.50	\$3.60	\$3.70	\$3.60	-2.7%
Off-Road Diesel	\$3.50	\$3.55	\$3.60	\$3.55	-1.4%
Road Diesel	\$4.00	\$4.05	\$4.10	\$4.05	-1.2%
Water Assessment	\$45.85	\$45.85	\$48.85	\$50.60	+3.6%

Table 4-b. Current and historical fuel and water assessment prices for southcentral Idaho: 2011 – 2014 and percentage change from 2013 to 2014.

	2011	2012	2013	2014	Change
Gasoline	\$3.50	\$3.55	\$3.60	\$3.55	-1.4%
Off-Road Diesel	\$3.45	\$3.50	\$3.55	\$3.50	-1.4%
Road Diesel	\$3.95	\$4.00	\$4.10	\$4.00	-2.4%
Water Assessment	\$41.30	\$44.15	\$45.30	\$45.60	+0.7%

Table 4-c. Current and historical fuel and water assessment prices for eastern Idaho: 2011 – 2014 and percentage change from 2012 to 2013.

	2011	2012	2013	2014	Change
Gasoline	\$3.45	\$3.50	\$3.60	\$3.50	-2.8%
Off-Road Diesel	\$3.35	\$3.50	\$3.50	\$3.45	-1.4%
Road Diesel	\$3.85	\$4.00	\$4.00	\$3.95	-1.25%
Water Assessment: All	\$14.60	\$14.70	\$15.80	\$15.90	+0.6%
E. Idaho South District	\$30.00	\$30.00	\$35.00	\$35.00	+0%
E. Idaho North District	\$11.55	\$11.65	\$11.95	\$12.05	+0.8%

Table 5. Current and historical fertilizer component prices for southern Idaho: 2011 – 2014 and percentage change from 2013 to 2014.

	2011	2012	2013	2014	Change
Dry Nitrogen (46-0-0)	\$0.61	\$0.69	\$0.66	\$0.58	-12.1%
Liquid Nitrogen (32-0-0)	\$0.70	\$0.75	\$0.82	\$0.72	-12.2%
P ₂ O ₅ Dry (11-52-0)*	\$0.57	\$0.60	\$0.53	\$0.48	-9.4%
P ₂ O ₅ Liquid (10-34-0)*	\$0.76	\$0.91	\$0.76	\$0.61	-19.7%
K ₂ O (0-0-60)	\$0.51	\$0.57	\$0.50	\$0.41	-18.0%
Sulfur	\$0.22	\$0.25	\$0.25	\$0.25	+0%

*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: 2010 - 2014. *

Area	2010	2011	2012	2013	2014
	cwt	cwt cwt		cwt	
<u>Southwest Region: Base Yield</u>	510	530 530		540	530
Potatoes: No Fumigation	470	490	485	490	490
Potatoes: Fumigation	535	555 550		550	540
Adj. Russet Burbank: Fumigation	515	530	530	530	525
<u>Southcentral Region: Base Yield</u>	445	445 440		431	443
Russet Burbank: No Fumigation	415	420	415	410	420
Russet Burbank: Fumigation	470	475	470	445	460
<u>Eastern Region: Russet Burbank: Base</u>					
South Counties* : Base Yield	385	385	395	392	395
South: No Fumigation	365	365	375	375	380
South: Fumigation	410	410	420	410	415
North Counties*: Base Yield		345	360	360	368
North: No Fumigation		335	350	350	355
North: Fumigation		375	390	380	385

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 2009 - 2013 and the 3-year averages based on the most recent published data.

Area	2009	2010	2011	2012	2013	3-Year Average
Southwest Region	500	545	540	530	520	530
Southcentral Region	466	428	429	435	465	443
Eastern Region	390	357	383	394	388	388
South District	405	375	399	403	395	399
North District	377	339	369	372	364	368
Statewide	415	384	404	412	415	410

Source: USDA-NASS.

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

Table 8. Historical potato yields reported by USDA for the primary commercial potato counties in eastern Idaho for 2009 - 2013 and historical 3-year average for crop year.

Area	2009	2010	2011	2012	2013	3-Year Average
<u>North District Counties:</u>						
Bonneville	373	355	370	360	359	363
Madison	381	323	367	385	369	374
2-county Average	377	339	369	372	364	368
Jefferson	472	412	471	na	na	
<u>South District Counties:</u>						
Bannock	409	367	na	400	na	
Bingham	385	367	384	406	395	395
Power	422	391	414	na	na	
3-county Average	405	375	399	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 2013.

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

Region	Acres Fumigated	Fumigation Adjustment
Southwest	80%	+ 50 cwt
Southcentral	60%	+ 40 cwt
<u>Southeastern</u>		
South District	50%	+ 35 cwt
North District	40%	+ 30 cwt

Notes:

Southwest increased from 65% to 80% in 2013 and yield increase dropped from 65 to 50

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. Change in per acre cost of production by major cost category from 2013 to 2014 for irrigated Russet Burbank potatoes in three production regions of Idaho.

Item	Southwestern Idaho Change from 2013 Fumigated		Southcentral Idaho Change from 2013 Non-Fumigated		Eastern Idaho Change from 2013 Non-Fumigated	
Yield	-5	-0.9%	10	2.4%	5	1.3%
Operating Inputs	\$	%	\$	%	\$	%
Seed:	\$6.00	1.7%	\$5.75	1.8%	\$5.25	1.8%
Fertilizer:	-\$77.70	-12.6%	\$50.95	-10.7%	-\$54.90	-12.2%
Pesticides & Chemicals:	-\$26.31	-4.4%	-\$19.92	-6.7%	\$11.82	5.1%
Custom & Consultants:	-\$2.00	-1.6%	\$4.90	5.9%	\$2.20	3.9%
Irrigation:	\$1.11	0.9%	-\$0.24	-0.2%	-\$0.48	-0.5%
Machinery: Fuel & Repairs	\$0.44	0.2%	\$0.18	0.1%	\$0.19	0.1%
Field Labor	\$3.60	1.7%	\$2.80	1.7%	\$2.58	1.7%
Sorting:	\$1.11	1.4%	\$2.76	4.5%	\$2.08	3.7%
Other: Fees & Crop Insurance	-\$0.72	-0.4%	\$1.62	1.2%	\$0.90	0.6%
Operating Interest	\$0.13	0.2%	\$0.69	1.3%	\$0.42	0.9%
Total Operating Costs	-\$94.33	-3.7%	-\$52.40	-2.8%	-\$29.94	-1.8%
Operating Costs per Unit	-\$0.13	-2.8%	-\$0.23	-5.1%	-\$0.14	-3.1%
Ownership Costs:						
Tractors & Equipment	\$4.00	2.1%	\$3.00	1.7%	\$2.00	1.2%
Land *	\$0.00	0.0%	\$0.00	0.0%	\$15.00	3.0%
Overhead	-\$2.50	-3.9%	-\$1.25	-2.7%	-\$0.75	-1.8%
Management Fee	-\$5.00	-2.8%	-\$3.00	-2.2%	\$0.00	0.0%
Total Ownership Costs	-\$1.31	-0.1%	-\$0.07	0.0%	\$18.41	2.1%
Ownership Costs per Unit	\$0.02	0.8%	-\$0.06	-2.4%	\$0.02	0.7%
Total Costs:						
Total Costs per Acre	-\$95.64	-2.5%	-\$52.47	-1.8%	-\$11.53	-0.4%
Total Cost per Unit	-\$0.11	-1.6%	-\$0.29	-4.1%	-\$0.12	-1.8%

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.

<http://web.cals.uidaho.edu/idahoagbiz/> Click on Publications.

Table 11. Cost of production per acre for irrigated Russet Burbank potatoes by region for 2013 and 2014 and change in costs between these years.

	Southwestern	Southcentral	Eastern -South
	Russet Burbank with Fumigation Po2	Russet Burbank with No Fumigation Po2	Russet Burbank with No Fumigation Po5
2013 Operating Cost	\$2,550	\$1,870	\$1,679
2014 Operating Cost	\$2,456	\$1,818	\$1,649
\$ Change	-\$94	-\$52	-\$30
% Change	-3.7%	-2.8%	-1.8%
2013 Ownership Cost	\$1,224	\$1,030	\$891
2014 Ownership Cost	\$1,223	\$1,030	\$909
\$ Change	-\$1	\$0	\$18
% Change	-0.1%	0.0%	2.0%
2013 Total Cost	\$3,774	\$2,900	\$2,570
2014 Total Cost	\$3,679	\$2,848	\$2,558
\$ Change	-\$95	-\$52	-\$12
% Change	-2.5%	-1.8%	-0.5%

Note: values are rounded and may not add up.

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.

Table 12. Cost of production per hundredweight for irrigated Russet Burbank potatoes by region for 2013 and 2014 and change in costs between these years.

	Southwestern	Southcentral	Eastern -South
	Russet Burbank with Fumigation	Russet Burbank with No Fumigation	Russet Burbank with No Fumigation
	Po2	Po2	Po5
2013 Operating Cost	\$4.81	\$4.56	\$4.48
2014 Operating Cost	\$4.68	\$4.33	\$4.34
\$ Change	-\$0.13	-\$0.23	-\$0.14
% Change	-2.7%	-5.0%	-3.1%
2013 Ownership Cost	\$2.31	\$2.51	\$2.38
2014 Ownership Cost	\$2.33	\$2.45	\$2.39
\$ Change	\$0.02	-\$0.06	\$0.01
% Change	0.9%	-2.4%	0.4%
2013 Total Cost	\$7.12	\$7.07	\$6.86
2014 Total Cost	\$7.01	\$6.78	\$6.73
\$ Change	-\$0.11	-\$0.29	-\$0.13
% Change	-1.5%	-4.1%	-1.9%

Note: values are rounded and may not add up.

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 and storage costs.

Appendix A
Southwestern Idaho
Irrigated Russet Burbank Potato

Table A-1. **2014** Costs to grow, harvest and sort southwestern Idaho irrigated Russet Burbank potatoes with fumigation. No costs for transloading and hauling to processor or for on-farm storage are included. Comparison with 2013.

Final 10/30/2014		
Comparison		
2013	Yield Change	
530	-5	-0.9%
\$ Change % Change		
\$351.60	\$6.00	1.7%
\$312.00	\$6.00	1.9%
\$39.60	\$0.00	0.0%
\$619.05	-\$77.70	-12.6%
\$115.50	-\$14.00	-12.1%
\$121.90	-\$11.50	-9.4%
\$132.50	-\$23.85	-18.0%
\$28.75	\$0.00	0.0%
\$48.00	\$0.00	0.0%
\$123.00	-\$18.60	-15.1%
\$49.40	-\$9.75	-19.7%
\$600.20	-\$26.31	-4.4%
\$233.10	-\$2.10	-0.9%
\$10.80	\$1.20	11.1%
\$18.40	-\$5.60	-30.4%
\$26.08	\$0.88	3.4%
\$25.00	\$0.40	1.6%
\$9.56	\$1.20	12.6%
\$11.20	-\$1.70	-15.2%
\$41.00	-\$1.38	-3.4%
\$39.33	-\$6.33	-16.1%
\$71.50	\$0.00	0.0%
\$30.60	\$1.80	5.9%
\$12.38	\$1.26	10.2%
\$18.00	\$5.25	29.2%
\$13.65	\$1.20	8.8%
\$15.80	\$1.40	8.9%
\$23.80	-\$23.80	-100.0%
\$125.70	-\$2.00	-1.6%
\$38.00	-\$3.00	-7.9%
\$8.50	\$0.75	8.8%
\$8.00	\$1.00	12.5%
\$18.30	-\$0.30	-1.6%
\$30.90	-\$0.45	-1.5%
\$22.00	\$0.00	0.0%
\$125.01	\$1.11	0.9%
\$48.85	\$1.75	3.6%
\$60.80	-\$1.28	-2.1%
\$15.36	\$0.64	4.2%
\$189.20	\$0.44	0.2%
\$19.68	-\$0.53	-2.7%
\$80.53	-\$1.12	-1.4%
\$9.40	-\$0.11	-1.2%
\$16.46	-\$0.26	-1.6%
\$63.02	\$2.46	3.9%
\$214.16	\$3.60	1.7%
\$85.08	\$1.44	1.7%
\$49.68	\$0.90	1.8%
\$22.78	\$0.39	1.7%
\$21.36	\$0.36	1.7%
\$35.26	\$0.52	1.5%
\$79.21	\$1.11	1.4%
\$62.25	\$0.75	1.2%
\$16.96	\$0.36	2.2%
\$160.54	-\$0.72	-0.4%
\$70.00	\$0.00	0.0%
\$90.54	-\$0.72	-0.8%
\$85.43	\$0.13	0.2%
\$2,550	-\$94.33	-3.7%
\$4.81	-\$0.13	-2.8%
\$1,148		

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Gross Returns				
Potatoes	525	cwt	\$7.25	\$3,806.25
Operating Inputs				
Seed:				
G-3 Burbank Potato Seed	24	cwt	\$13.25	\$318.00
Seed Cutting	24	cwt	\$1.65	\$39.60
Fertilizer:				
Dry Nitrogen - Preplant	175	lb	\$0.58	\$101.50
Dry P2O5	230	lb	\$0.48	\$110.40
K2O	265	lb	\$0.41	\$108.65
Sulfur	115	lb	\$0.25	\$28.75
Micronutrients & Foliars	2	ac	\$24.00	\$48.00
Liquid Nitrogen	145	lb	\$0.72	\$104.40
Liquid P2O5	65	lb	\$0.61	\$39.65
Pesticides & Chemicals:				
Vapam HL 42%	42	gal	\$5.50	\$231.00
Potato Seed Treatment	24	cwt	\$0.50	\$12.00
Admire Pro	8.0	fl oz	\$1.60	\$12.80
Moncut 70DF	0.8	lb	\$33.70	\$26.96
Eptam 7E	4.0	pt	\$6.35	\$25.40
Metribuzin 75DF	0.75	lb	\$14.35	\$10.76
Prowl 3.3EC	2.0	pt	\$4.75	\$9.50
Ridomil Gold MZ	2.5	lb	\$15.85	\$39.63
Fulfill WDG	5.50	oz	\$6.00	\$33.00
Movento (2x)	10.00	fl oz	\$7.15	\$71.50
Endura	6.00	oz	\$5.40	\$32.40
Revus Top	5.5	fl oz	\$2.48	\$13.64
Agri-Mek .75SC (2x)	5.0	fl oz	\$4.65	\$23.25
Bravo Weather Stik	3.0	pint	\$4.95	\$14.85
Gavel 75DF	2.0	lb	\$8.60	\$17.20
Athena	0.0	fl oz	\$1.35	\$0.00
Custom & Consultants:				
Custom Fumigate: Deep Inject	1	ac	\$35.00	\$35.00
Custom Fertilize: 400 - 800 lbs	1	ac	\$9.25	\$9.25
Custom Fertilize: 0 - 400 lbs	1	ac	\$9.00	\$9.00
Custom Air Spray-5G	2	ac	\$9.00	\$18.00
Custom Air Spray-8G	3	ac	\$10.15	\$30.45
Consultant & Soil Test	1	ac	\$22.00	\$22.00
Irrigation:				
Water Assessment	1	ac	\$50.60	\$50.60
Irrigation Power-CP *	32	acin	\$1.86	\$59.52
Irrigation Repairs-CP *	32	acin	\$0.50	\$16.00
Machinery:				
Fuel - Gas	5.32	gal	\$3.60	\$19.15
Fuel - Farm Diesel	22.37	gal	\$3.55	\$79.41
Fuel - Road Diesel	2.32	gal	\$4.05	\$9.40
Lube	1	ac	\$16.20	\$16.20
Machinery Repairs	1	ac	\$65.48	\$65.48
Field Labor:				
Equipment Operator Labor	4.78	hr	\$18.10	\$86.52
Truck Driver Labor	3.6	hr	\$14.05	\$50.58
Irrigation Labor: CP*	1.28	hr	\$18.10	\$23.17
Irrigation Labor: Chem-Fert	1.2	hr	\$18.10	\$21.72
General Farm Labor	3.44	hr	\$10.40	\$35.78
Sorting:				
Sorting Labor Costs	525	cwt	\$0.120	\$63.00
Sorting Equip. Repairs & Power	525	cwt	\$0.033	\$17.33
Other:				
Crop Insurance	1	ac	\$70.00	\$70.00
Fees & Assessments	499	cwt	\$0.18	\$89.82
Operating Interest @ 6.0%				\$85.56
Total Operating Costs				\$2,456
Operating Costs per Unit				\$4.68
Net Returns Above Operating Expenses				\$1,350

Table A-1. **2014** Costs to grow, harvest and sort southwestern Idaho irrigated Russet Burbank potatoes with fumigation. No costs for transloading and hauling to processor or for on-farm storage are included. Comparison with 2013.

Final 10/30/2014

Comparison		
\$5.43	\$0.19	3.5%
\$194.00	\$4.00	2.1%
\$81.00	\$2.00	2.5%
\$700.00	\$0.00	0.0%
\$64.00	-\$2.50	-3.9%
\$180.00	-\$5.00	-2.8%
\$1,224	-\$1.31	-0.1%
\$2.31	\$0.02	0.8%
\$3,775	-\$95.64	-2.5%
\$7.12	-\$0.11	-1.6%

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				\$5.62
Tractors & Equipment Depreciation & Interest				\$198.00
Potato Handling Equipment Deprec. & Interest				\$83.00
Land **				\$700.00
Overhead				\$61.50
Management Fee				\$175.00
Total Ownership Costs				\$1,223
Ownership Costs per Unit				\$2.33
Total Costs per Acre				\$3,679
Total Cost per Unit				\$7.01
Returns to Risk				\$127

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:

	-	Base	+
	5%	Yield	5%
<u>Price</u>	498.75	525	551.25
Operating Cost Breakeven	\$4.92	\$4.68	\$4.45
Ownership Cost Breakeven	\$2.45	\$2.33	\$2.22
Total Cost Breakeven	\$7.38	\$7.01	\$6.67
		<u>Price</u>	
<u>Yield</u>	\$6.89	\$7.25	\$7.61
Operating Cost Breakeven	356.6	338.7	322.6
Ownership Cost Breakeven	177.6	168.7	160.7
Total Cost Breakeven	534.1	507.4	483.3

Table A-2. **2014** Cost per hundredweight to grow, harvest, sort and store Southwestern Idaho irrigated Russet Burbank potato based on both field-run and paid yield.

	Ownership Costs	Operating Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield			525	
Paid Yield %		95%		498.75
Base Cost of Production: southwestern Idaho			\$7.01	\$7.38
Storage System Annual Ownership Costs	\$0.356		\$0.356	\$0.37
Base Cost + Storage Ownership Cost			\$7.36	\$7.75
Storage System Annual Repairs		\$0.039	\$0.039	\$0.04
Base + Storage System Ownership & Repairs			\$7.40	\$7.79
		Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October		\$0.210	\$7.61	\$8.01
November*		\$0.382	\$7.78	\$8.19
December		\$0.470	\$7.87	\$8.29
January		\$0.557	\$7.96	\$8.38
February		\$0.645	\$8.05	\$8.47
March		\$0.732	\$8.13	\$8.56
April*		\$0.921	\$8.32	\$8.76
May		\$1.028	\$8.43	\$8.87
June		\$1.153	\$8.56	\$9.01

Base cost of production includes cost to grow and harvest potatoes, not including storage or transloading.

Storage system includes: storage facility, air system, and the equipment used to place potatoes in storage (even flow bin, tables, sizer, piler, etc.)

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 the potatoes from storage.

* Indicates month when sprout inhibitor applied.

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

Appendix B
Southcentral Idaho
Irrigated Russet Burbank Potato

Table B-1. **2014** Costs to grow, harvest and sort southcentral Idaho irrigated Russet Burbank potatoes. No Costs for transloading and hauling to processor or for on-farm storage are included. Comparison with 2013.

Final 10/30/2014

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre	Comparison		
					2013	Yield Change	
Gross Returns					410	10	2.4%
Potatoes	420	cwt	\$7.25	\$3,045.00			
Operating Inputs							
Seed:				\$331.20	\$325.45	\$5.75	1.8%
G-3 Burbank Potato Seed	23	cwt	\$12.75	\$293.25	\$287.50	\$5.75	2.0%
Seed Cutting	23	cwt	\$1.65	\$37.95	\$37.95	\$0.00	0.0%
Fertilizer:				\$426.45	\$477.40	-\$50.95	-10.7%
Dry Nitrogen - Preplant	150	lb	\$0.58	\$87.00	\$95.70	-\$8.70	-9.1%
Dry P2O5	205	lb	\$0.48	\$98.40	\$106.00	-\$7.60	-7.2%
K2O	210	lb	\$0.41	\$86.10	\$105.00	-\$18.90	-18.0%
Sulfur	80	lb	\$0.25	\$20.00	\$20.00	\$0.00	0.0%
Micronutrients & Foliars	2	ac	\$19.00	\$38.00	\$38.00	\$0.00	0.0%
Liquid Nitrogen	105	lb	\$0.72	\$75.60	\$86.10	-\$10.50	-12.2%
Liquid P2O5	35	lb	\$0.61	\$21.35	\$26.60	-\$5.25	-19.7%
Pesticides & Chemicals:				\$275.50	\$295.42	-\$19.92	-6.7%
Seed Treatment	23.0	cwt	\$0.50	\$11.50	\$10.35	\$1.15	11.1%
Admire Pro	8.0	oz	\$1.60	\$12.80	\$18.40	-\$5.60	-30.4%
Quadris Flowable	8.0	fl oz	\$2.60	\$20.80	\$19.20	\$1.60	8.3%
Outlook GEC	20.0	fl oz	\$1.10	\$22.00	\$28.00	-\$6.00	-21.4%
Prowl 3.3 EC	2.0	pt	\$4.75	\$9.50	\$11.20	-\$1.70	-15.2%
Metribuzin 75DF	0.75	lb	\$14.35	\$10.76	\$9.56	\$1.20	12.6%
Endura	4.5	oz	\$5.40	\$24.30	\$22.95	\$1.35	5.9%
Dithane F45 Rainshield (2X)	3.2	qt	\$8.95	\$28.64	\$29.76	-\$1.12	-3.8%
Headline	6.0	fl oz	\$3.22	\$19.32	\$19.50	-\$0.18	-0.9%
Tanos	6.0	oz	\$2.75	\$16.50	\$15.60	\$0.90	5.8%
Gavel 75DF	2.0	lb	\$8.60	\$17.20	\$15.80	\$1.40	8.9%
Brigadier	16.0	fl oz	\$1.48	\$23.68	\$21.60	\$2.08	9.6%
Movento	5.0	fl oz	\$7.05	\$35.25	\$35.75	-\$0.50	-1.4%
Agri-Mek .75SC (2X)	5.0	fl oz	\$4.65	\$23.25	\$21.25	\$2.00	9.4%
Hero	0.0	fl oz	\$1.52	\$0.00	\$16.50	-\$16.50	-100.0%
Custom & Consultants:				\$93.65	\$88.75	\$4.90	5.5%
Custom Fertilize: 400 - 800 lbs	1	ac	\$8.75	\$8.75	\$8.00	\$0.75	9.4%
Custom Fertilize: 0 - 400 lbs	1	ac	\$7.90	\$7.90	\$7.50	\$0.40	5.3%
Custom Air Spray-7.5G	5	ac	\$11.00	\$55.00	\$51.25	\$3.75	7.3%
Consultant/Soil Testing	1	ac	\$22.00	\$22.00	\$22.00	\$0.00	0.0%
Irrigation:				\$109.32	\$109.56	-\$0.24	-0.2%
Water Assessment	1	ac	\$45.60	\$45.60	\$45.30	\$0.30	0.7%
Irrigation Power-CP	27	acin	\$1.86	\$50.22	\$51.30	-\$1.08	-2.1%
Irrigation Repairs	27	acin	\$0.50	\$13.50	\$12.96	\$0.54	4.2%
Machinery:				\$154.30	\$154.12	\$0.18	0.1%
Fuel - Gas	4.59	gal	\$3.55	\$16.29	\$16.52	-\$0.23	-1.4%
Fuel - Farm Diesel	18.80	gal	\$3.50	\$65.80	\$66.74	-\$0.94	-1.4%
Fuel - Road Diesel	2.13	gal	\$4.00	\$8.52	\$8.73	-\$0.21	-2.4%
Lube	1	ac	\$13.60	\$13.60	\$13.80	-\$0.20	-1.4%
Machinery Repairs	1	ac	\$50.09	\$50.09	\$48.33	\$1.76	3.6%
Field Labor:				\$170.67	\$167.87	\$2.80	1.7%
Equipment Operator Labor	4.40	hrs	\$18.10	\$79.64	\$78.32	\$1.32	1.7%
Truck Driver Labor	1.83	hrs	\$14.05	\$25.71	\$25.25	\$0.46	1.8%
Irrigation Labor: CP	1.08	hr	\$18.10	\$19.55	\$19.22	\$0.33	1.7%
Irrigation Labor: Chem-Fert	0.92	hr	\$18.10	\$16.65	\$16.38	\$0.27	1.7%
General Farm Labor	2.80	hr	\$10.40	\$29.12	\$28.70	\$0.42	1.5%
Sorting:				\$64.26	\$61.50	\$2.76	4.5%
Sorting Labor Costs	420	cwt	\$0.120	\$50.40	\$48.38	\$2.02	4.2%
Sorting Equip. Repairs & Power	420	cwt	\$0.033	\$13.86	\$13.12	\$0.74	5.6%
Other:				\$136.82	\$135.20	\$1.62	1.2%
Fees & Assessments	399	cwt	\$0.18	\$71.82	\$70.20	\$1.62	2.3%
Crop Insurance	1	ac	\$65.00	\$65.00	\$65.00	\$0.00	0.0%
Operating Interest @ 6.0%				\$55.52	\$54.83	\$0.69	1.3%
Total Operating Costs				\$1,818	\$1,870	-\$52.40	-2.8%
Operating Costs per Unit				\$4.33	\$4.56	-\$0.23	-5.1%
Net Returns Above Operating Expenses				\$1,227	\$900		

Table B-1. **2014** Costs to grow, harvest and sort southcentral Idaho irrigated Russet Burbank potatoes. No Costs for transloading and hauling to processor or for on-farm storage are included. Comparison with 2013.

Final 10/30/2014			
Comparison			
	\$5.02	\$0.18	3.6%
	\$177.00	\$3.00	1.7%
	\$63.00	\$1.00	1.6%
	\$600.00	\$0.00	0.0%
	\$46.75	-\$1.25	-2.7%
	\$138.00	-\$3.00	-2.2%
	\$1,030	-\$0.07	0.0%
	\$2.51	-\$0.06	-2.4%
	\$2,900	-\$52.47	-1.8%
	\$7.07	-\$0.29	-4.1%

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				\$5.20
Tractors & Equipment Depreciation & Interest				\$180.00
Potato Handling Equipment Deprec. & Interest				\$64.00
Land *				\$600.00
Overhead				\$45.50
Management Fee				\$135.00
Total Ownership Costs				\$1,030
Ownership Costs per Unit				\$2.45
Total Costs per Acre				\$2,847
Total Cost per Unit				\$6.78
Returns to Risk				\$198

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:	-	Base	+
	5%	Yield	5%
		Yield	
<u>Price</u>	399	420	441
Operating Cost Breakeven	\$4.56	\$4.33	\$4.12
Ownership Cost Breakeven	\$2.58	\$2.45	\$2.33
Total Cost Breakeven	\$7.14	\$6.78	\$6.46
		Price	
<u>Yield</u>	\$6.89	\$7.25	\$7.61
Operating Cost Breakeven	263.9	250.7	238.8
Ownership Cost Breakeven	149.5	142.0	135.3
Total Cost Breakeven	413.4	392.7	374.0

Table B-2. **2014** Cost per hundredweight to grow, harvest, sort and store southcentral Idaho irrigated Russet Burbank potato based on both field-run and paid yield.

	Ownership Costs	Operating Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield			420	
Paid Yield %		95%		399
Base Cost of Production: southcentral Idaho			\$6.78	\$7.14
Storage System Annual Ownership Costs	\$0.356		\$0.356	\$0.375
Base Cost + Storage Ownership Cost			\$7.14	\$7.51
Storage System Annual Repairs		\$0.039	\$0.039	\$0.041
Base + Storage System Ownership & Repairs			\$7.17	\$7.55
		Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October		\$0.204	\$7.38	\$7.77
November*		\$0.373	\$7.55	\$7.94
December		\$0.458	\$7.63	\$8.03
January		\$0.543	\$7.72	\$8.12
February		\$0.627	\$7.80	\$8.21
March		\$0.712	\$7.89	\$8.30
April*		\$0.897	\$8.07	\$8.50
May		\$1.002	\$8.18	\$8.61
June		\$1.122	\$8.30	\$8.73

Base cost of production includes cost to grow, harvest & sort potatoes, both operating and ownership.

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 the potatoes from storage.

* Indicates month when sprout inhibitor applied.

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

Appendix C
Eastern Idaho Southern Region
Irrigated Russet Burbank Potato

Table C-1. **2014** Costs to grow, harvest and sort eastern Idaho southern region irrigated Russet Burbank potatoes. No costs for transloading and hauling to processor or for on-farm storage. Comparison with 2013.

					Final 10/30/2014		
Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre	Comparison		
					2013	Yield Change	
Gross Returns					375	5	1.3%
Potatoes	380	cwt	\$7.25	\$2,755.00			
Operating Inputs							
Seed:					\$290.85		
G-3 Russet Burbank Seed S	21	cwt	\$12.20	\$256.20	\$285.60	\$5.25	1.8%
Potato Seed Cutting	21	cwt	\$1.65	\$34.65	\$250.95	\$5.25	2.1%
					\$34.65	\$0.00	0.0%
Fertilizer:					\$394.85		
Dry Nitrogen - Pre-plant	135	lb	\$0.58	\$78.30	\$449.75	-\$54.90	-12.2%
Dry P2O5	160	lb	\$0.48	\$76.80	\$89.10	-\$10.80	-12.1%
K2O	190	lb	\$0.41	\$77.90	\$84.80	-\$8.00	-9.4%
Sulfur	85	lb	\$0.25	\$21.25	\$95.00	-\$17.10	-18.0%
Liquid Nitrogen	100	lb	\$0.72	\$72.00	\$21.25	\$0.00	0.0%
Liquid P2O5	60	lb	\$0.61	\$36.60	\$82.00	-\$10.00	-12.2%
Micronutrients/Humic Acid - CP	1	acre	\$32.00	\$32.00	\$45.60	-\$9.00	-19.7%
					\$32.00	\$0.00	0.0%
Pesticides & Chemicals:					\$245.42		
Potato Seed Treatment	21.0	cwt	\$0.50	\$10.50	\$233.60	\$11.82	5.1%
Admire Pro	8.0	fl oz	\$1.60	\$12.80	\$9.45	\$1.05	11.1%
Metribuzin 75DF	0.67	lb	\$14.35	\$9.61	\$18.40	-\$5.60	-30.4%
Eptam 7E	3.5	pint	\$6.35	\$22.23	\$8.54	\$1.07	12.6%
Prowl 3.3EC	2.0	pint	\$4.75	\$9.50	\$21.88	\$0.34	1.6%
Moncut 700DF	1.0	lb	\$33.70	\$33.70	\$11.20	-\$1.70	-15.2%
Quadris Flowable	8.0	fl oz	\$2.60	\$20.80	\$32.60	\$1.10	3.4%
Omega 500DF	5.5	fl oz	\$3.50	\$19.25	\$19.20	\$1.60	8.3%
Bravo Weatherstik	1.0	pint	\$4.95	\$4.95	\$20.08	-\$0.83	-4.1%
Dithane F45 Rainshield (2x)	3.2	qt	\$8.95	\$28.64	\$4.55	\$0.40	8.8%
Gavel 75DF	2.0	lb	\$8.60	\$17.20	\$14.88	\$13.76	92.5%
Brigadier	16.0	fl oz	\$1.48	\$23.68	\$15.80	\$1.40	8.9%
Agri-Mek 0.75SC	2.25	fl oz	\$4.65	\$10.46	\$21.60	\$2.08	9.6%
Reglone	2.0	pint	\$11.05	\$22.10	\$10.62	-\$0.16	-1.5%
					\$24.80	-\$2.70	-10.9%
Custom & Consultants:					\$59.00		
Custom Fertilize: 400 - 800 lbs	1	acre	\$8.50	\$8.50	\$56.80	\$2.20	3.9%
Custom Fertilize: 0 - 400 lbs	1	acre	\$8.00	\$8.00	\$7.25	\$1.25	17.2%
Consultants/Soil Testing - CP	1	acre	\$22.00	\$22.00	\$6.75	\$1.25	18.5%
Custom Air Spray - 7.5 gal. rate	2	acre	\$10.25	\$20.50	\$22.00	\$0.00	0.0%
					\$20.80	-\$0.30	-1.4%
Irrigation:					\$91.64		
Irrigation Power - Center Pivot*	24	ac-in	\$1.86	\$44.64	\$92.12	-\$0.48	-0.5%
Irrigation Water Assessment-S	1	acre	\$35.00	\$35.00	\$45.60	-\$0.96	-2.1%
Irrigation Repairs - CP*	24	ac-in	\$0.50	\$12.00	\$35.00	\$0.00	0.0%
					\$11.52	\$0.48	4.2%
Machinery:					\$158.23		
Fuel - Gas	4.52	gal	\$3.50	\$15.82	\$158.04	\$0.19	0.1%
Fuel - Farm Diesel	20.47	gal	\$3.45	\$70.62	\$16.27	-\$0.45	-2.8%
Fuel - Road Diesel	1.92	gal	\$3.95	\$7.58	\$71.65	-\$1.03	-1.4%
Lube	1	acre	\$14.10	\$14.10	\$7.68	-\$0.10	-1.3%
Machinery Repair	1	acre	\$50.10	\$50.10	\$14.34	-\$0.24	-1.7%
					\$48.10	\$2.00	4.2%
Field Labor:					\$157.44		
Equipment Operator Labor	3.88	hrs	\$18.10	\$70.23	\$154.86	\$2.58	1.7%
Truck Driver Labor	1.86	hrs	\$14.05	\$26.13	\$69.06	\$1.17	1.7%
Irrigation Labor-CP	0.96	hrs	\$18.10	\$17.38	\$25.67	\$0.46	1.8%
Irrigation Labor: Chem-Fert	0.80	hr	\$18.10	\$14.48	\$17.09	\$0.29	1.7%
General Farm Labor	2.81	hrs	\$10.40	\$29.22	\$14.24	\$0.24	1.7%
					\$28.80	\$0.42	1.5%
Sorting:					\$58.14		
Sorting Labor Costs	380	cwt	\$0.120	\$45.60	\$56.06	\$2.08	3.7%
Sorting Equip. Repairs & Power	380	cwt	\$0.033	\$12.54	\$44.06	\$1.54	3.5%
					\$12.00	\$0.54	4.5%
Other:					\$144.98		
Crop Insurance: MP + Hail	1	acre	\$80.00	\$80.00	\$144.08	\$0.90	0.6%
Potato Fees & Assessments	361	cwt	\$0.18	\$64.98	\$80.00	\$0.00	0.0%
					\$64.08	\$0.90	1.4%
Operating Interest @ 6.00%				\$48.73	\$48.31	\$0.42	0.9%
Total Operating Costs				\$1,649	\$1,679	-\$29.94	-1.8%
Operating Costs per Unit				\$4.34	\$4.48	-\$0.14	-3.1%
Net Returns Above Operating Expenses				\$1,106	\$900		

Table C-1. **2014** Costs to grow, harvest and sort eastern Idaho southern region irrigated Russet Burbank potatoes. No costs for transloading and hauling to processor or for on-farm storage. Comparison with 2013.

Final 10/30/2014

Comparison			
	\$4.73	\$0.16	3.4%
	\$165.00	\$2.00	1.2%
	\$57.00	\$2.00	3.5%
	\$500.00	\$15.00	3.0%
	\$42.00	-\$0.75	-1.8%
	\$122.00	\$0.00	0.0%
<hr/>			
	\$891	\$18.41	2.1%
	\$2.38	\$0.02	0.7%
<hr/>			
	\$2,570	-\$11.53	-0.4%
	\$6.85	-\$0.12	-1.8%

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance			\$4.89	
Tractors & Equipment Depreciation & Interest			\$167.00	
Potato Handling Equipment Deprec. & Interest			\$59.00	
Land *			\$515.00	
Overhead			\$41.25	
Management Fee			\$122.00	
Total Ownership Costs				\$909
Ownership Costs per Unit				\$2.39
Total Costs per Acre				\$2,558
Total Cost per Unit				\$6.73
Returns to Risk				\$197

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:

	-	Base	+
	5%	Yield	5%
	361	380	399
Price	361	380	399
Operating Cost Breakeven	\$4.57	\$4.34	\$4.13
Ownership Cost Breakeven	\$2.52	\$2.39	\$2.28
Total Cost Breakeven	\$7.09	\$6.73	\$6.41
	361	380	399
	\$6.89	\$7.25	\$7.61
Yield	\$6.89	\$7.25	\$7.61
Operating Cost Breakeven	239.5	227.5	216.7
Ownership Cost Breakeven	132.0	125.4	119.4
Total Cost Breakeven	371.5	352.9	336.1

Table C-2. **2014** Cost to grow, harvest, sort, and store eastern Idaho irrigated Russet Burbank potato based on both field-run and paid yield.

	Ownership Costs	Operating Costs	Field-Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield			380	
Paid Yield %		95%		361
Base Cost of Production: Eastern Idaho southern region			\$6.73	\$7.09
Storage System Annual Ownership Costs	\$0.356		\$0.356	\$0.375
Base Cost + Storage Ownership Cost			\$7.09	\$7.46
Storage System Annual Repairs		\$0.039	\$0.039	\$0.04
Base + Storage System Ownership & Repairs			\$7.13	\$7.50
		Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October		\$0.204	\$7.33	\$7.72
November*		\$0.373	\$7.50	\$7.90
December		\$0.458	\$7.59	\$7.98
January		\$0.543	\$7.67	\$8.07
February		\$0.627	\$7.75	\$8.16
March		\$0.712	\$7.84	\$8.25
April*		\$0.897	\$8.02	\$8.45
May		\$1.002	\$8.13	\$8.56
June		\$1.122	\$8.25	\$8.68

Base cost of production includes the cost to grow, harvest & sort potatoes, both operating & ownership.

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 the potatoes from storage.

* Indicates month when sprout inhibitor applied.

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