

2013 Cost of Potato Production for Idaho With Comparisons to 2012

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The Cost of Potato Production Advisory Committee,
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Copies of the report and 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 20 of the past 22 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/idaahoagbiz/> 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.

2013 Crop Input Costs

Prices used to value inputs in the 2013 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 2013* 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 10% based on the annual change in USDA's Prices Paid Machinery Index from 2010 to 2012. 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 production regions. The current format, adopted in 2013, shows the cost to grow and harvest the crop in the base budget, with transloading and storage costs shown in separate tables. 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 2013 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 2013, the previous 3 years and the percentage change from 2012 to 2013. In the costs and returns estimates, interest is charged from the time

an expenditure is 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 2011 through 2013 used in the CAR estimates, and the percentage changes from 2012 to 2013. 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 transloading costs which are calculated on a hundredweight basis. Table 6 shows the potato yields used in the University of Idaho's 2013 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 2013 CAR estimates, yield data for the 2010, 2011 and 2012 crops were used. The 2013 county-level data for Idaho will not be published until October 2014, 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 2013 CAR estimates are the same as 2012 for southwestern and eastern Idaho, and 5 cwt lower for southcentral Idaho. The potato yields for the fumigated 2013 CAR estimates are the same as 2012 for southwestern, 10 cwt lower for eastern-South, and 25 cwt lower for southcentral. (See Table 6.) The decline in the fumigated yields resulted from a change in assumptions shown in Table 9. Note that for the second year, the yield for Southwestern Idaho was switched to a Russet Burbank Adjusted Yield, which is 96% 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 fumigated, 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} .

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

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 transloading and storage tables for each crop budget: Tables A-2, B-2 and C-2 of the Appendix for transloading, and Tables A-3, B-3 and C-3 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.

2013 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. Because transloading and storage costs were moved to separate tables and are no longer included in the base cost of production, comparisons with years prior to 2013 should only be made after these costs are removed from the earlier cost of production estimates.

Table 10 summarizes the dollar cost per acre and percentage changes from 2012 to 2013 by region for the major input cost categories. The detailed cost of production estimates for 2013 and 2012 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, seed and fertilizer costs were lower, while most other operating costs were higher. Irrigation costs showed the biggest percentage increase, driven primarily by substantially higher power costs, as

well as higher water assessment fees. The increase in machinery costs was driven primarily by higher repair costs. Labor costs, fees and insurance also increased in 2013. Overall, however, operating costs per acre and per hundredweight were down slightly in 2013 because the drop in seed and fertilizer more than offset the price increases in other input categories. Ownership costs increased slightly both per acres and per hundredweight, driven mostly by higher ownership costs on equipment because machinery prices were about 5% higher than the previous year. Total costs per acre were down in all three regions, and total costs per hundredweight were down in southwestern and eastern Idaho, but up slightly in southcentral Idaho.

Cost of Production Summaries and Comparisons by Region

Table 11 summarizes production costs for 2012 and 2013 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 2012 and 2013 for operating, ownership and total costs per hundredweight, and the change per hundredweight and percentage between years. Because the yields used in the southwestern and eastern Idaho crops budgets were the same each year, the percentage change measured per acre and per hundredweight are the same. Since the yield in southcentral Idaho was lower in 2013, the percentage change per hundredweight showed an increase, rather than a decrease.

The total cost to raise and harvest potatoes in the three regions of southern Idaho presented in this report ranged from \$2,445 per acre in eastern Idaho (nonfumigation) up to \$3,597 in southwestern Idaho (with fumigation). (See Table 11.) The range in values per hundredweight is not so extreme. The total cost to raise and harvest potatoes ranged from \$6.52 per hundredweight in eastern Idaho up to \$6.79 in southwestern Idaho. (See Table 12.)

Adjustments for 2013

Two major changes were made in 2013. First, the model farm size and the acres devoted to potatoes increased in all three production regions. These changes are shown in Table 2. These changes influence machinery costs because different and often larger equipment is now part of the machinery compliment, compared to 2012.

Second, non-storage and storage potato budgets were combined into a single budget. A base cost of production is calculated, which includes the cost to grow and harvest potatoes. The non-storage (transload and haul to processor) and on-farm storage budgets are shown as options with a separate table for each. The base budgets for southwestern Idaho, southcentral Idaho and eastern Idaho southern region are shown in Tables A-1, B-1, and C-1, respectively. These are in the appendix. The non-storage (transload and haul) and storage options are tables B-1 through B-3 and C-1 through C-3, respectively.

Assumptions used to calculate miles on pickups and trucks were revised based on data from the 2012 grower surveys, which resulted in a fairly large increase in gasoline fuel use. Since pickups are the only non-diesel vehicles (except for 4-wheelers), it is easy to see how much fuel they use.

The labor component for chemigation and fertigation that was previously included in the irrigation labor was separated. The total hours of irrigation labor remained unchanged, unless there was a change in the amount of water applied. The irrigation labor and the chemigation-fertigation labor are now shown on separate lines.

There were a number of product changes in each region. These were primarily associated with fungicides and insecticides. Changes in products or in procedures used to calculate costs are typically shown in a green font in the detailed costs and returns estimates found in the appendix (Tables A-1, B-1, and C-1).

Custom fertilizer applications were classified by the amount of fertilizer being applied, since most custom applicators vary the rate based on the quantity applied.

The quantity of fuel (gallons per acre) for the different types of fuel in the original 2012 costs of production estimates were changed to the quantities in the 2013 cost of production estimates, so that the change reflects on the change in price between the two years. The change in farm size and equipment used for various field operations reduced fuel use. The coefficient in the budget generator software used to calculate fuel consumption for tractors based on horsepower was also changed based on recent data from the ASAE (American Society of Agricultural Engineers).

The management fee, which has historically been calculated at 5% of gross revenue, is now calculated at 5% of total costs. Extreme fluctuations in commodity prices in recent years made the management fee highly variable. The change in the base will provide a more stable estimate.

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Table 1. Idaho potato costs and returns estimates by region for 2013.

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

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	
	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: 2010 – 2013 and percentage changes from 2012 to 2013.

	2010	2011	2012	2013	Change
Operating Interest Rate	7.0%	6.75%	6.0%	5.75%	-4.2%
Intermediate Interest Rate	7.5%	7.0%	6.25%	6.0%	-4.0%
<u>Labor Class (overhead)</u>					
Equipment Operator Labor (25%)	\$15.80	\$16.25	\$17.50	\$17.80	+1.7%
Truck Driver Labor	\$12.50	\$13.00	\$13.50	\$13.80	+2.2%
Irrigation Labor: HL & WL (30%)		\$11.55	\$12.35	\$12.60	+2.0%
Irrigation Labor: CP (25%)		\$16.25	\$17.50	\$17.80	+1.7%
Irrigation Labor: Chem-Fert (25%)				\$17.80	
General Farm Labor (15%)	\$9.30	\$9.55	\$10.05	\$10.25	+2.0%
<u>Power Rate: Idaho Power Irrigation Service Schedule 24</u>					
Monthly Service Charge	\$17.92	\$18.18	\$22.00	\$22.00	+0%
Demand Charge: irrigation season	\$ 5.57	\$5.65	\$6.54	\$7.01	+7.2%
Base Rate: per kWh	4.4822¢	4.6168¢	4.584¢	4.9133	+7.2%
Power Cost Adjustment per kWh	0.3114¢	0.0114¢	0.1295¢	1.1767	+809%
Effective Rate: per kWh	4.7936¢	4.6282¢	4.7135¢	6.090	+29%
Pumping Cost per Acre Inch	\$1.50	\$1.47	\$1.56	\$1.90	+22%

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: 2010 – 2013 and percentage change from 2012 to 2013.

	2010	2011	2012	2013	Change
Gasoline	\$3.00	\$3.50	\$3.60	\$3.70	+2.8%
Off-Road Diesel	\$2.65	\$3.50	\$3.55	\$3.60	+1.4%
Road Diesel	\$3.15	\$4.00	\$4.05	\$4.10	+1.2%
Water Assessment	\$45.55	\$45.85	\$45.85	\$48.85	+6.5%

Table 4-b. Current and historical fuel and water assessment prices for southcentral Idaho: 2010 – 2013 and percentage change from 2012 to 2013.

	2010	2011	2012	2013	Change
Gasoline	\$3.00	\$3.50	\$3.55	\$3.60	+1.4%
Off-Road Diesel	\$2.60	\$3.45	\$3.50	\$3.55	+1.4%
Road Diesel	\$3.10	\$3.95	\$4.00	\$4.10	+2.5%
Water Assessment	\$42.20	\$41.30	\$44.15	\$45.30	+2.6%

Table 4-c. Current and historical fuel and water assessment prices for eastern Idaho: 2010 – 2013 and percentage change from 2012 to 2013.

	2010	2011	2012	2013	Change
Gasoline	\$2.90	\$3.45	\$3.50	\$3.60	+2.90%
Off-Road Diesel	\$2.55	\$3.35	\$3.50	\$3.50	+0%
Road Diesel	\$3.05	\$3.85	\$4.00	\$4.00	+0%
Water Assessment	\$14.80	\$14.60	\$14.70	\$15.80	+7.5%
E. Idaho South District	\$25.00	\$30.00	\$30.00	\$35.00	+16.7%
E. Idaho North District	\$11.40	\$11.55	\$11.65	\$11.95	+2.6%

Table 5. Current and historical fertilizer component prices for southern Idaho: 2010 – 2013 and percentage change from 2012 to 2013.

	2010	2011	2012	2013	Change
Dry Nitrogen (46-0-0)	\$0.47	\$0.61	\$0.69	\$0.66	-4.3%
Liquid Nitrogen (32-0-0)	\$0.48	\$0.70	\$0.75	\$0.82	+9.3%
P ₂ O ₅ Dry (11-52-0)*	\$0.34	\$0.57	\$0.60	\$0.53	-11.7%
P ₂ O ₅ Liquid (10-34-0)*	\$0.50	\$0.76	\$0.91	\$0.76	-16.5%
K ₂ O (0-0-60)	\$0.43	\$0.51	\$0.57	\$0.50	-12.3%
Sulfur	\$0.17	\$0.22	\$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: 2009 - 2013. *

Area	2009	2010	2011	2012	2013
	cwt	cwt	cwt	cwt	
<u>Southwest Region: Base Yield</u>	500	510	530	530	540
Potatoes: No Fumigation	465	470	490	485	490
Potatoes: Fumigation	530	535	555	550	550
Adj. Russet Burbank: Fumigation	515	515	530	530	530
<u>Southcentral Region: Base Yield</u>	435	445	445	440	431
Russet Burbank: No Fumigation	410	415	420	415	410
Russet Burbank: Fumigation	465	470	475	470	445
<u>Eastern Region: Russet Burbank: Base</u>					
South Counties* : Base Yield	370	385	385	395	392
South: No Fumigation	350	365	365	375	375
South: Fumigation	395	410	410	420	410
North Counties*: Base Yield			345	360	360
North: No Fumigation			335	350	350
North: Fumigation			375	390	380

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 2008 - 2012 and the 3-year averages based on the most recent published data.

Area	2008	2009	2010	2011	2012	3-Year Average
Southwest Region	540	500	545	540	534	540
Southcentral Region	445	466	428	429	435	431
Eastern Region	350	390	357	383	394	378
South District	376	405	375	399	403	392
North District	325	377	339	369	372	360
Statewide	383	415	384	412	421	406

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 2008 - 2012 and historical 3-year average for crop year.

Area	2008	2009	2010	2011	2012	3-Year Average
<u>North District Counties:</u>						
Bonneville	330	373	355	370	360	362
Madison	319	381	323	367	385	358
2-county Average	325	377	339	369	372	360
Jefferson	391	472	412	471	na	452
<u>South District Counties:</u>						
Bannock	386	409	367	na	400	392
Bingham	367	385	367	384	406	386
Power	376	422	391	414	na	409
3-county Average	376	405	375	399	403	392

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.

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
Southeastern		
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 2012 to 2013 for irrigated Russet Burbank potatoes in three production regions of Idaho.

Item	Southwestern Idaho Change from 2012		Southcentral Idaho Change from 2012		Eastern Idaho Change from 2012	
Yield	0	0.0%	-5	-1.2%	0	0.0%
<u>Operating Inputs</u>	\$	%	\$	%	\$	%
Seed:	-\$18.00	-4.9%	-\$17.25	-5.0%	-\$15.75	-5.2%
Fertilizer:	-\$43.15	-6.5%	-\$32.95	-6.5%	-\$30.55	-6.4%
Pesticides & Chemicals:	-\$25.04	-4.0%	\$5.15	1.8%	\$4.95	2.2%
Custom & Consultants:	\$3.00	2.4%	\$0.00	0.0%	\$0.35	0.6%
Irrigation:	\$13.88	12.5%	\$10.33	10.4%	\$13.16	16.7%
Machinery: Fuel & Repairs	\$5.03	2.8%	\$3.93	2.6%	\$2.92	1.9%
Labor	\$3.95	1.9%	\$3.02	1.8%	\$2.81	1.8%
Other: Fees & Crop Insurance	\$10.03	6.7%	\$9.75	7.8%	\$8.56	6.3%
Operating Interest	-\$4.57	-5.1%	-\$2.17	-3.8%	-\$2.69	-5.3%
Total Operating Costs	-\$54.87	-2.2%	-\$20.18	-1.1%	-\$16.24	-1.0%
Operating Costs per Unit	-\$0.10	-2.2%	\$0.00	0.1%	-\$0.04	-1.0%
<u>Ownership Costs:</u>						
Tractors & Equipment	\$9.00	4.9%	\$9.00	5.4%	\$8.00	5.1%
Land *	\$0.00	0.0%	\$0.00	0.0%	\$0.00	0.0%
Overhead	-\$1.00	-1.6%	-\$1.00	-2.2%	-\$1.00	-2.4%
Management Fee	-\$3.00	-1.7%	-\$1.00	-0.8%	-\$1.00	-0.9%
Total Ownership Costs	\$5.28	0.5%	\$7.22	0.8%	\$6.23	0.8%
Ownership Costs per Unit	\$0.01	0.5%	\$0.05	2.0%	\$0.02	0.8%
<u>Total Costs:</u>						
Total Costs per Acre	-\$49.59	-1.4%	-\$12.96	-0.5%	-\$10.01	-0.4%
Total Cost per Unit	-\$0.09	-1.4%	\$0.05	0.7%	-\$0.03	-0.4%

Note: Cost of production refers to the cost to grow and harvest potatoes. The cost to transload and haul to a processor, or the cost of on-farm storage are not included.

See appendix for detailed cost comparison and for transloading and storage costs.

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Table 11. Cost of production per acre for irrigated Russet Burbank potatoes by region for 2012 and 2013 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
	Po1	Po1	Po1
2012 Operating Cost	\$2,520	\$1,826	\$1,636
2013 Operating Cost	\$2,465	\$1,804	\$1,620
\$ Change	-\$55	-\$22	-\$16
% Change	-2.2%	-1.2%	-1.0%
2012 Ownership Cost	\$1,127	\$951	\$819
2013 Ownership Cost	\$1,132	\$958	\$825
\$ Change	\$5	\$7	\$6
% Change	0.4%	0.7%	0.7%
2012 Total Cost	\$3,647	\$2,777	\$2,455
2013 Total Cost	\$3,597	\$2,762	\$2,445
\$ Change	-\$50	-\$15	-\$10
% Change	-1.4%	-0.5%	-0.4%

Note: values are rounded and may not add up.

Note: Cost of production refers to the cost to grow and harvest potatoes. Cost to transload and haul to a processor, or cost of on-farm storage are not included.

See appendix for detailed cost comparison and for transloading and storage costs.

Table 12. Cost of production per hundredweight for irrigated Russet Burbank potatoes by region for 2012 and 2013 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
	Po1	Po1	Po1
2012 Operating Cost	\$4.75	\$4.40	\$4.36
2013 Operating Cost	\$4.65	\$4.40	\$4.32
\$ Change	-\$0.10	\$0.00	-\$0.04
% Change	-2.1%	0.0%	-0.9%
2012 Ownership Cost	\$2.13	\$2.29	\$2.18
2013 Ownership Cost	\$2.14	\$2.34	\$2.20
\$ Change	\$0.01	\$0.05	\$0.02
% Change	0.5%	2.2%	0.9%
2012 Total Cost	\$6.88	\$6.69	\$6.54
2013 Total Cost	\$6.79	\$6.74	\$6.52
\$ Change	-\$0.09	\$0.05	-\$0.02
% Change	-1.3%	0.7%	-0.3%

Note: values are rounded and may not add up.

Note: Cost of production refers to the cost to grow and harvest potatoes. Cost to transload and haul to a processor, or cost of on-farm storage are not included.

See appendix for detailed cost comparison and for transloading and storage costs.

Appendix A
Southwestern Idaho
Irrigated Russet Burbank Potato

Table A-1. **2013** Costs to grow and harvest 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 2012.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre	Comparison		
Gross Returns					2012	Yield Change	
Potatoes	530	cwt	\$7.50	\$3,975.00	530	0	0.0%
Operating Inputs						\$ Change	% Change
Seed:							
G-3 Burbank Potato Seed	24	cwt	\$13.00	\$312.00	\$369.60	-\$18.00	-4.9%
Seed Cutting	24	cwt	\$1.65	\$39.60	\$330.00	-\$18.00	-5.5%
					\$39.60	\$0.00	0.0%
Fertilizer:							
Dry Nitrogen - Preplant	175	lb	\$0.66	\$115.50	\$662.20	-\$43.15	-6.5%
Dry P2O5	230	lb	\$0.53	\$121.90	\$120.75	-\$5.25	-4.3%
K2O	265	lb	\$0.50	\$132.50	\$138.00	-\$16.10	-11.7%
Sulfur	115	lb	\$0.25	\$28.75	\$151.05	-\$18.55	-12.3%
Micronutrients & Foliars	2	ac	\$24.00	\$48.00	\$28.75	\$0.00	0.0%
Liquid Nitrogen	150	lb	\$0.82	\$123.00	\$52.00	-\$4.00	-7.7%
Liquid P2O5	65	lb	\$0.76	\$49.40	\$112.50	\$10.50	9.3%
					\$59.15	-\$9.75	-16.5%
Pesticides & Chemicals:							
Vapam HL 42%	42	gal	\$5.55	\$233.10	\$625.23	-\$25.04	-4.0%
Potato Seed Treatment	24	cwt	\$0.45	\$10.80	\$258.30	-\$25.20	-9.8%
Admire Pro	8.0	fl oz	\$2.30	\$18.40	\$10.80	\$0.00	0.0%
Moncut 70DF	0.8	lb	\$32.60	\$26.08	\$21.20	-\$2.80	-13.2%
Eptam 7E	4.0	pt	\$6.25	\$25.00	\$26.60	-\$0.52	-2.0%
Metribuzin 75DF	0.75	lb	\$12.75	\$9.56	\$25.00	\$0.00	0.0%
Prowl 3.3EC	2.0	pt	\$5.60	\$11.20	\$9.45	\$0.11	1.2%
Ridomil Gold MZ	2.5	lb	\$16.40	\$41.00	\$10.10	\$1.10	10.9%
Fulfill WDG	5.50	oz	\$7.15	\$39.33	\$38.75	\$2.25	5.8%
Movento (2x)	10.00	fl oz	\$7.15	\$71.50	\$37.68	\$1.65	4.4%
Endura	6.00	oz	\$5.10	\$30.60	\$70.00	\$1.50	2.1%
Revus Top	5.5	fl oz	\$2.25	\$12.38	\$38.70	-\$8.10	-20.9%
Agri-Mek 0.15EC (2x)	24.0	fl oz	\$0.75	\$18.00	\$14.30	-\$1.93	-13.5%
Bravo Weather Stik	3.0	pint	\$4.55	\$13.65	\$22.80	-\$4.80	-21.1%
Gavel 75DF	2.0	lb	\$7.90	\$15.80	\$13.95	-\$0.30	-2.2%
Athena	17.0	fl oz	\$1.40	\$23.80	\$16.20	-\$0.40	-2.5%
Reglone				\$0.00	\$11.40	\$12.40	108.8%
Custom & Consultants:							
Custom Fumigate: Deep Inject	1	ac	\$38.00	\$38.00	\$122.70	\$3.00	2.4%
Custom Fertilize: 400 - 800 lbs	1	ac	\$8.50	\$8.50	\$35.00	\$3.00	8.6%
Custom Fertilize: 0 - 400 lbs	1	ac	\$8.00	\$8.00	\$8.50	\$0.00	0.0%
Custom Air Spray-5G	2	ac	\$9.15	\$18.30	\$8.00	\$0.00	0.0%
Custom Air Spray-8G	3	ac	\$10.30	\$30.90	\$18.30	\$0.00	0.0%
Consultant & Soil Test	1	ac	\$22.00	\$22.00	\$30.90	\$0.00	0.0%
					\$22.00	\$0.00	0.0%
Irrigation:							
Water Assessment	1	ac	\$48.85	\$48.85	\$111.13	\$13.88	12.5%
Irrigation Power-CP *	32	acin	\$1.90	\$60.80	\$45.85	\$3.00	6.5%
Irrigation Repairs-CP *	32	acin	\$0.48	\$15.36	\$49.92	\$10.88	21.8%
					\$15.36	\$0.00	0.0%
Machinery:							
Fuel - Gas	5.32	gal	\$3.70	\$19.68	\$178.15	\$5.03	2.8%
Fuel - Farm Diesel	22.37	gal	\$3.60	\$80.53	\$19.15	\$0.53	2.8%
Fuel - Road Diesel	2.32	gal	\$4.10	\$9.51	\$79.41	\$1.12	1.4%
Lube	1	ac	\$16.46	\$16.46	\$9.40	\$0.11	1.2%
Machinery Repairs	1	ac	\$56.99	\$56.99	\$16.19	\$0.27	1.7%
					\$54.00	\$2.99	5.5%
Labor:							
Equipment Operator Labor	4.78	hr	\$17.80	\$85.08	\$210.22	\$3.95	1.9%
Truck Driver Labor	3.6	hr	\$13.80	\$49.68	\$83.65	\$1.43	1.7%
Irrigation Labor: CP*	1.28	hr	\$17.80	\$22.78	\$48.60	\$1.08	2.2%
Irrigation Labor: Chem-Fert	1.2	hr	\$17.80	\$21.36	\$22.40	\$0.38	1.7%
General Farm Labor	3.44	hr	\$10.25	\$35.26	\$21.00	\$0.36	1.7%
					\$34.57	\$0.69	2.0%
Other:							
Crop Insurance	1	ac	\$70.00	\$70.00	\$150.51	\$10.03	6.7%
Fees & Assessments	503	cwt	\$0.18	\$90.54	\$65.00	\$5.00	7.7%
					\$85.51	\$5.03	5.9%
Operating Interest @ 5.75%				\$85.43	\$90.00	-\$4.57	-5.1%
Total Operating Costs				\$2,465	\$2,520	-\$54.87	-2.2%
Operating Costs per Unit				\$4.65	\$4.75	-\$0.10	-2.2%
Net Returns Above Operating Expenses				\$1,510	\$1,148		

Table A-1. **2013** Costs to grow and harvest 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 2012.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				\$5.43
Tractors & Equipment Depreciation & Interest				\$194.00
Land **				\$700.00
Overhead				\$62.00
Management Fee				\$171.00
Total Ownership Costs				\$1,132
Ownership Costs per Unit				\$2.14
Total Costs per Acre				\$3,597
Total Cost per Unit				\$6.79
Returns to Risk				\$378

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:

	- 5%	Base	+ 5%
		Yield	
<u>Price</u>	503.5	530	556.5
Operating Cost Breakeven	\$4.90	\$4.65	\$4.43
Ownership Cost Breakeven	\$2.25	\$2.14	\$2.03
Total Cost Breakeven	\$7.14	\$6.79	\$6.46
		Price	
<u>Yield</u>	\$7.13	\$7.50	\$7.88
Operating Cost Breakeven	345.9	328.6	313.0
Ownership Cost Breakeven	158.9	151.0	143.8
Total Cost Breakeven	504.9	479.6	456.8

Final 11/15/2013

Comparison

\$5.15	\$0.28	5.4%
\$185.00	\$9.00	4.9%
\$700.00	\$0.00	0.0%
\$63.00	-\$1.00	-1.6%
\$174.00	-\$3.00	-1.7%
\$1,127	\$5.28	0.5%
\$2.13	\$0.01	0.5%
\$3,647	-\$49.59	-1.4%
\$6.88	-\$0.09	-1.4%

Table A-2. **2013** Cost per hundredweight to grow, harvest, transload and haul to processor southwestern Idaho irrigated Russet Burbank potato based on both field-run and paid yield.

11/15/13 FINAL	Ownership Costs	Operating Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield			530	
Paid Yield %		95%		503.5
Base Cost of Production: southwestern Idaho			\$6.79	\$7.14
Transloading System Annual Ownership Costs	\$0.157			
Base Cost + Transloading Ownership Cost			\$6.94	\$7.30
Transloading System Annual Repairs		\$0.029		
Base + Transloading System Ownership & Repairs			\$6.97	\$7.33
Transloading Operating Costs		\$0.129	\$7.10	\$7.46
Custom Hauling Cost		\$0.35		
Total Production, Transloading & Hauling Costs			\$7.45	\$7.81

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

Transloading system includes equipment used when moving potatoes from field trucks to a semi trailer to haul to a processor (even flow bin, sizer, dirt eliminator, piler, etc.

Transloading operating costs include: repairs (shown separately), plus labor and power.

Table A-3. **2013** Cost per hundredweight to grow, harvest, and store Southwestern Idaho irrigated Russet Burbank potato based on both field-run and paid yield.

11/15/13 FINAL		Ownership Costs	Operating Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield				530	
Paid Yield %			95%		503.5
Base Cost of Production: southwestern Idaho				\$6.79	\$7.14
Storage System Annual Ownership Costs		\$0.509			
Base Cost + Storage Ownership Cost				\$7.30	\$7.65
Storage System Annual Repairs			\$0.067		
Base + Storage System Ownership & Repairs				\$7.36	\$7.72
			Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October			\$0.358	\$7.65	\$8.08
November*			\$0.527	\$7.82	\$8.25
December			\$0.611	\$7.91	\$8.33
January			\$0.695	\$7.99	\$8.42
February			\$0.778	\$8.07	\$8.50
March			\$0.862	\$8.16	\$8.58
April*			\$1.046	\$8.34	\$8.77
May			\$1.149	\$8.45	\$8.87
June			\$1.269	\$8.57	\$8.99

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. **2013** Costs to grow and harvest southcentral Idaho irrigated Russet Burbank potatoes. No Costs for transloading and hauling to processor or for on-farm storage are included. Comparison with 2012.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre	Comparison		
Gross Returns					2012	Yield Change	
Potatoes	410	cwt	\$7.25	\$2,972.50	415	-5	-1.2%
Operating Inputs						\$ Change	% Change
Seed:							
G-3 Burbank Potato Seed	23	cwt	\$12.50	\$287.50	\$342.70	-\$17.25	-5.0%
Seed Cutting	23	cwt	\$1.65	\$37.95	\$304.75	-\$17.25	-5.7%
					\$37.95	\$0.00	0.0%
Fertilizer:							
				\$477.40	\$510.35	-\$32.95	-6.5%
Dry Nitrogen - Preplant	145	lb	\$0.66	\$95.70	\$100.05	-\$4.35	-4.3%
Dry P2O5	200	lb	\$0.53	\$106.00	\$120.00	-\$14.00	-11.7%
K2O	210	lb	\$0.50	\$105.00	\$119.70	-\$14.70	-12.3%
Sulfur	80	lb	\$0.25	\$20.00	\$20.00	\$0.00	0.0%
Micronutrients & Foliars	2	ac	\$19.00	\$38.00	\$40.00	-\$2.00	-5.0%
Liquid Nitrogen	105	lb	\$0.82	\$86.10	\$78.75	\$7.35	9.3%
Liquid P2O5	35	lb	\$0.76	\$26.60	\$31.85	-\$5.25	-16.5%
Pesticides & Chemicals:							
				\$292.17	\$287.02	\$5.15	1.8%
Seed Treatment	23.0	cwt	\$0.45	\$10.35	\$10.35	\$0.00	0.0%
Admire Pro	8.0	oz	\$2.30	\$18.40	\$21.20	-\$2.80	-13.2%
Quadris Flowable	8.0	fl oz	\$2.40	\$19.20	\$22.00	-\$2.80	-12.7%
Outlook 6EC	20.0	fl oz	\$1.40	\$28.00	\$30.00	-\$2.00	-6.7%
Prowl 3.3 EC	2.0	pt	\$5.60	\$11.20	\$10.10	\$1.10	10.9%
Metribuzin 75DF	0.75	lb	\$12.75	\$9.56	\$9.64	-\$0.07	-0.8%
Endura	4.5	oz	\$5.10	\$22.95	\$29.03	-\$6.08	-20.9%
Dithane F45 Rainshield (2X)	3.2	qt	\$9.30	\$29.76	\$27.20	\$2.56	9.4%
Headline	6.0	fl oz	\$3.25	\$19.50	\$18.30	\$1.20	6.6%
Tanos	6.0	oz	\$2.60	\$15.60	\$18.00	-\$2.40	-13.3%
Gavel 75DF	2.0	lb	\$7.90	\$15.80	\$0.00	\$15.80	
Brigadier	16.0	fl oz	\$1.35	\$21.60	\$25.60	-\$4.00	-15.6%
Movento	5.0	fl oz	\$7.15	\$35.75	\$35.00	\$0.75	2.1%
Agri-Mek .15EC (2X)	24.0	fl oz	\$0.75	\$18.00	\$21.60	-\$3.60	-16.7%
Hero	10.0	fl oz	\$1.65	\$16.50	\$9.00	\$7.50	83.3%
Reglone				\$0.00			
Custom & Consultants:							
				\$88.75	\$88.75	\$0.00	0.0%
Custom Fertilize: 400 - 800 lbs	1	ac	\$8.00	\$8.00	\$8.00	\$0.00	0.0%
Custom Fertilize: 400 - 800 lbs	1	ac	\$7.50	\$7.50	\$7.50	\$0.00	0.0%
Custom Air Spray-7.5G	5	ac	\$10.25	\$51.25	\$51.25	\$0.00	0.0%
Consultant/Soil Testing	1	ac	\$22.00	\$22.00	\$22.00	\$0.00	0.0%
Irrigation:							
				\$109.56	\$99.23	\$10.33	10.4%
Water Assessment	1	ac	\$45.30	\$45.30	\$44.15	\$1.15	2.6%
Irrigation Power-CP	27	acin	\$1.90	\$51.30	\$42.12	\$9.18	21.8%
Irrigation Repairs	27	acin	\$0.48	\$12.96	\$12.96	\$0.00	0.0%
Machinery:							
				\$154.13	\$150.20	\$3.93	2.6%
Fuel - Gas	4.59	gal	\$3.60	\$16.52	\$16.29	\$0.23	1.4%
Fuel - Farm Diesel	18.80	gal	\$3.55	\$66.74	\$65.80	\$0.94	1.4%
Fuel - Road Diesel	2.13	gal	\$4.10	\$8.73	\$8.52	\$0.21	2.5%
Lube	1	ac	\$13.80	\$13.80	\$13.59	\$0.21	1.5%
Machinery Repairs	1	ac	\$48.33	\$48.33	\$46.00	\$2.33	5.1%
Labor:							
				\$167.87	\$164.85	\$3.02	1.8%
Equipment Operator Labor	4.4	hrs	\$17.80	\$78.32	\$77.00	\$1.32	1.7%
Truck Driver Labor	1.83	hrs	\$13.80	\$25.25	\$24.71	\$0.54	2.2%
Irrigation Labor: CP	1.08	hr	\$17.80	\$19.22	\$18.90	\$0.32	1.7%
Irrigation Labor: Chem-Fert	0.92	hr	\$17.80	\$16.38	\$16.10	\$0.28	1.7%
General Farm Labor	2.80	hr	\$10.25	\$28.70	\$28.14	\$0.56	2.0%
Other:							
				\$135.20	\$125.45	\$9.75	7.8%
Fees & Assessments	390	cwt	\$0.18	\$70.20	\$65.45	\$4.75	7.3%
Crop Insurance	1	ac	\$65.00	\$65.00	\$60.00	\$5.00	8.3%
Operating Interest @ 5.75%				\$54.83	\$57.00	-\$2.17	-3.8%
Total Operating Costs				\$1,805	\$1,826	-\$20.18	-1.1%
Operating Costs per Unit				\$4.40	\$4.40	\$0.00	0.1%
Net Returns Above Operating Expenses				\$1,167	\$900		

Table B-1. **2013** Costs to grow and harvest southcentral Idaho irrigated Russet Burbank potatoes. No Costs for transloading and hauling to processor or for on-farm storage are included. Comparison with 2012.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
Ownership Costs:				
Tractors & Equipment Insurance				\$5.02
Tractors & Equipment Depreciation & Interest				\$177.00
Land *				\$600.00
Overhead				\$45.00
Management Fee				\$131.00
Total Ownership Costs				\$958
Ownership Costs per Unit				\$2.34
Total Costs per Acre				\$2,763
Total Cost per Unit				\$6.74
Returns to Risk				\$209

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.

Break-even Analysis:

	- 5%	Base	+ 5%
		Yield	
<u>Price</u>	389.5	410	430.5
Operating Cost Breakeven	\$4.64	\$4.40	\$4.19
Ownership Cost Breakeven	\$2.46	\$2.34	\$2.23
Total Cost Breakeven	\$7.09	\$6.74	\$6.42
		Price	
<u>Yield</u>	\$6.89	\$7.25	\$7.61
Operating Cost Breakeven	262.1	249.0	237.2
Ownership Cost Breakeven	139.1	132.1	125.8
Total Cost Breakeven	401.2	381.2	363.0

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Comparison

\$4.80	\$0.22	4.6%
\$168.00	\$9.00	5.4%
\$600.00	\$0.00	0.0%
\$46.00	-\$1.00	-2.2%
\$132.00	-\$1.00	-0.8%
\$951	\$7.22	0.8%
\$2.29	\$0.05	2.0%
\$2,776	-\$12.96	-0.5%
\$6.69	\$0.05	0.7%

Table B-2. **2013** Cost per hundredweight to grow, harvest, transload and haul to processor southcentral Idaho irrigated Russet Burbank potato based on both field-run and paid yield.

11/15/13 FINAL	Ownership Costs	Operating Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield			530	
Paid Yield %		95%		503.5
Base Cost of Production: southcentral Idaho			\$6.74	\$7.09
Transloading System Annual Ownership Costs	\$0.157			
Base Cost + Transloading Ownership Cost			\$6.90	\$7.25
Transloading System Annual Repairs		\$0.029		
Base + Transloading System Ownership & Repairs			\$6.93	\$7.28
Transloading Operating Costs		\$0.129	\$7.05	\$7.41
Hauling Cost		\$0.35		
Total Production, Transloading & Hauling Costs			\$7.40	\$7.76

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

Transloading system includes equipment used when moving potatoes from field trucks to a semi trailer to haul to a processor (even flow bin, sizer, dirt eliminator, piler, etc.

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

Table B-3. **2013** Cost per hundredweight to grow, harvest, and store southcentral Idaho irrigated Russet Burbank potato based on both field-run and paid yield.

11/15/13 FINAL		Ownership Costs	Operating Costs	Field Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield				530	
Paid Yield %			95%		503.5
Base Cost of Production: southcentral Idaho				\$6.74	\$7.09
Storage System Annual Ownership Costs		\$0.509			
Base Cost + Storage Ownership Cost				\$7.25	\$7.60
Storage System Annual Repairs			\$0.067		
Base + Storage System Ownership & Repairs				\$7.32	\$7.67
			Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October			\$0.357	\$7.61	\$8.03
November*			\$0.526	\$7.77	\$8.20
December			\$0.609	\$7.86	\$8.28
January			\$0.692	\$7.94	\$8.36
February			\$0.776	\$8.02	\$8.45
March			\$0.859	\$8.11	\$8.53
April*			\$1.042	\$8.29	\$8.71
May			\$1.145	\$8.39	\$8.82
June			\$1.264	\$8.51	\$8.93

Base cost of production includes cost to grow and harvest potatoes only, 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 C
Eastern Idaho Southern Region
Irrigated Russet Burbank Potato

Table C-1. **2013** Costs to grow and harvest eastern Idaho southern region irrigated Russet Burbank potatoes. No costs for transloading and hauling to processor or for on-farm storage. Comparison with 2012.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre	Comparison		
Gross Returns					2012	Yield Change	
Potatoes	375	cwt	\$7.25	\$2,718.75	375	0	0.0%
Operating Inputs						\$ Change	% Change
Seed:					\$301.35	-\$15.75	-5.2%
G-3 Russet Burbank Seed S	21	cwt	\$11.95	\$250.95	\$266.70	-\$15.75	-5.9%
Potato Seed Cutting	21	cwt	\$1.65	\$34.65	\$34.65	\$0.00	0.0%
Fertilizer:					\$480.30	-\$30.55	-6.4%
Dry Nitrogen - Pre-plant	135	lb	\$0.66	\$89.10	\$93.15	-\$4.05	-4.3%
Dry P2O5	160	lb	\$0.53	\$84.80	\$96.00	-\$11.20	-11.7%
K2O	190	lb	\$0.50	\$95.00	\$108.30	-\$13.30	-12.3%
Sulfur	85	lb	\$0.25	\$21.25	\$21.25	\$0.00	0.0%
Liquid Nitrogen	100	lb	\$0.82	\$82.00	\$75.00	\$7.00	9.3%
Liquid P2O5	60	lb	\$0.76	\$45.60	\$54.60	-\$9.00	-16.5%
Micronutrients/Humic Acid - CP	1	acre	\$32.00	\$32.00	\$32.00	\$0.00	0.0%
Pesticides & Chemicals:					\$225.52	\$4.95	2.2%
Potato Seed Treatment	21.0	cwt	\$0.45	\$9.45	\$9.45	\$0.00	0.0%
Admire Pro	8.0	fl oz	\$2.30	\$18.40	\$21.20	-\$2.80	-13.2%
Metribuzin 75DF	0.67	lb	\$12.75	\$8.54	\$8.32	\$0.23	2.7%
Eptam 7E	3.5	pint	\$6.25	\$21.88	\$21.88	\$0.00	0.0%
Prowl 3.3EC	2.0	pint	\$5.60	\$11.20	\$10.10	\$1.10	10.9%
Moncut 700DF	1.0	lb	\$32.60	\$32.60	\$0.00	\$32.60	
Quadris Flowable	8.0	fl oz	\$2.40	\$19.20	\$22.00	-\$2.80	-12.7%
Omega 500DF	5.5	fl oz	\$3.65	\$20.08	\$31.20	-\$11.13	-35.7%
Bravo Weatherstik	1.0	pint	\$4.55	\$4.55	\$0.00	\$4.55	
Dithane F45 Rainshield	1.6	qt	\$9.30	\$14.88	\$13.60	\$1.28	9.4%
Gavel 75DF	2.0	lb	\$7.90	\$15.80	\$18.30	-\$2.50	-13.7%
Brigadier	16.0	fl oz	\$1.35	\$21.60	\$37.68	-\$16.08	-42.7%
Agri-Mek 0.15EC	10.0	fl oz	\$0.75	\$7.50	\$9.00	-\$1.50	-16.7%
Reglone	2.0	pint	\$12.40	\$24.80	\$22.80	\$2.00	8.8%
Custom & Consultants:					\$56.45	\$0.35	0.6%
Custom Fertilize: 400 - 800 lbs	1	acre	\$7.25	\$7.25	\$7.15	\$0.10	1.4%
Custom Fertilize: 0 - 400 lbs	1	acre	\$6.75	\$6.75	\$6.50	\$0.25	3.8%
Consultants/Soil Testing - CP	1	acre	\$22.00	\$22.00	\$22.00	\$0.00	0.0%
Custom Air Spray - 7.5 gal. rate	2	acre	\$10.40	\$20.80	\$20.80	\$0.00	0.0%
Irrigation:					\$78.96	\$13.16	16.7%
Irrigation Power - Center Pivot*	24	ac-in	\$1.90	\$45.60	\$37.44	\$8.16	21.8%
Irrigation Water Assessment-S	1	acre	\$35.00	\$35.00	\$30.00	\$5.00	16.7%
Irrigation Repairs - CP*	24	ac-in	\$0.48	\$11.52	\$11.52	\$0.00	0.0%
Machinery:					\$155.12	\$2.92	1.9%
Fuel - Gas	4.52	gal	\$3.60	\$16.27	\$15.82	\$0.45	2.9%
Fuel - Farm Diesel	20.47	gal	\$3.50	\$71.65	\$71.65	-\$0.01	0.0%
Fuel - Road Diesel	1.92	gal	\$4.00	\$7.68	\$7.68	\$0.00	0.0%
Lube	1	acre	\$14.34	\$14.34	\$14.27	\$0.07	0.5%
Machinery Repair	1	acre	\$48.10	\$48.10	\$45.70	\$2.40	5.3%
Labor:					\$152.05	\$2.81	1.8%
Equipment Operator Labor	3.88	hrs	\$17.80	\$69.06	\$67.90	\$1.16	1.7%
Truck Driver Labor	1.86	hrs	\$13.80	\$25.67	\$25.11	\$0.56	2.2%
Irrigation Labor-CP	0.96	hrs	\$17.80	\$17.09	\$16.80	\$0.29	1.7%
Irrigation Labor: Chem-Fert	0.80	hr	\$17.80	\$14.24	\$14.00	\$0.24	1.7%
General Farm Labor	2.81	hrs	\$10.25	\$28.80	\$28.24	\$0.56	2.0%
Other:					\$135.52	\$8.56	6.3%
Crop Insurance: MP + Hail	1	acre	\$80.00	\$80.00	\$75.00	\$5.00	6.7%
Potato Fees & Assessments	356	cwt	\$0.18	\$64.08	\$60.52	\$3.56	5.9%
Operating Interest @ 5.75%				\$48.31	\$51.00	-\$2.69	-5.3%
Total Operating Costs				\$1,620	\$1,636	-\$16.24	-1.0%
Operating Costs per Unit				\$4.32	\$4.36	-\$0.04	-1.0%
Net Returns Above Operating Expenses				\$1,099	\$900		

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Table C-1. **2013** Costs to grow and harvest eastern Idaho southern region irrigated Russet Burbank potatoes. No costs for transloading and hauling to processor or for on-farm storage. Comparison with 2012.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre	Comparison		
Ownership Costs:							
Tractors & Equipment Insurance				\$4.73	\$4.50	\$0.23	5.1%
Tractors & Equipment Depreciation & Interest				\$165.00	\$157.00	\$8.00	5.1%
Land *				\$500.00	\$500.00	\$0.00	0.0%
Overhead				\$40.00	\$41.00	-\$1.00	-2.4%
Management Fee				\$115.00	\$116.00	-\$1.00	-0.9%
Total Ownership Costs				\$825	\$819	\$6.23	0.8%
Ownership Costs per Unit				\$2.20	\$2.18	\$0.02	0.8%
Total Costs per Acre				\$2,445	\$2,455	-\$10.01	-0.4%
Total Cost per Unit				\$6.52	\$6.55	-\$0.03	-0.4%
Returns to Risk				\$274			
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%		5%				
		Yield					
<u>Price</u>	356.25	375	393.75				
Operating Cost Breakeven	\$4.55	\$4.32	\$4.11				
Ownership Cost Breakeven	\$2.32	\$2.20	\$2.09				
Total Cost Breakeven	\$6.86	\$6.52	\$6.21				
		Price					
<u>Yield</u>	\$6.89	\$7.25	\$7.61				
Operating Cost Breakeven	235.2	223.5	212.8				
Ownership Cost Breakeven	119.7	113.8	108.3				
Total Cost Breakeven	355.0	337.2	321.2				

Table C-2. **2013** Cost per hundredweight to grow, harvest, transload and haul to processor eastern Idaho irrigated Russet Burbank potato based on both field-run and paid yield.

11/15/13 FINAL	Ownership Costs	Operating Costs	Field-Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield			375	
Paid Yield %		95%		356.25
Base Cost of Production: eastern Idaho southern region			\$6.52	\$6.86
Transloading System Annual Ownership Costs	\$0.157			
Base Cost + Transloading Ownership Cost			\$6.68	\$7.02
Transloading System Annual Repairs		\$0.029		
Base + Transloading System Ownership & Repairs			\$6.71	\$7.05
Transloading Operating Costs		\$0.129	\$6.83	\$7.18
Hauling Cost		\$0.35		
Total Production, Transloading & Hauling Costs			\$7.18	\$7.53

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

Transloading system includes equipment used when moving potatoes from field trucks to a semi trailer to haul to a processor (even flow bin, sizer, dirt eliminator, piler, etc.

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

Table C-3. **2013** Cost to grow, harvest, and store eastern Idaho irrigated Russet Burbank potato based on both field-run and paid yield.

11/15/13 FINAL		Ownership Costs	Operating Costs	Field-Run Cost per Cwt	Paid Yield Cost per Cwt
Field-Run Yield				375	
Paid Yield %			95%		356
Base Cost of Production: eastern Idaho southern region				\$6.52	\$6.86
Storage System Annual Ownership Costs		\$0.509			
Base Cost + Storage Ownership Cost				\$7.03	\$7.37
Storage System Annual Repairs			\$0.067		
Base + Storage System Ownership & Repairs				\$7.10	\$7.44
			Cumulative Storage Op. Costs	Cumulative Base + All Storage Costs	Cumulative Base + All Storage Costs
October			\$0.351	\$7.38	\$7.79
November*			\$0.517	\$7.55	\$7.96
December			\$0.598	\$7.63	\$8.04
January			\$0.678	\$7.71	\$8.12
February			\$0.759	\$7.787	\$8.20
March			\$0.839	\$7.87	\$8.28
April*			\$1.019	\$8.05	\$8.46
May			\$1.119	\$8.15	\$8.56
June			\$1.234	\$8.26	\$8.67

Base cost of production includes the 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.