Potato Cost of Production for Idaho
2018 With Comparisons to 2017

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Idaho Potato Commission

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Cost of Potato Production in Idaho

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

The following objectives are designed to meet the project goal:

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

I would like to acknowledge the cooperation and support that I receive from all segments of the Idaho potato industry, including growers, processors, equipment dealers, and input suppliers. I would also like to thank the Idaho Potato Commission for the funding received to support this project. This project has been funded 25 of the past 27 years.

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

Cost of Production Background

No procedural changes were made in terms of how data were collected and processed. The cost of production estimates presented in this report are consistent with those previously produced by the University of Idaho. The cost of production estimates show the typical or representative production costs by region based on documented production practices. These are not area averages. To simplify comparisons with historical cost of production estimates, the publication code used by the University of Idaho was used for the six commercial
potato budgets found in this report. Crop cost of production estimates and earlier reports can still be found at http://www.uidaho.edu/cals/idaho-agbiz

2018 Crop Input Costs
Prices used to value inputs in the 2018 potato CAR estimates based on data collected from input suppliers by the University of Idaho. Sources included irrigation districts and canal companies, agricultural lenders, crop insurance companies, trucking companies, aerial and other custom applicators, fuel suppliers, and chemical and fertilizer dealers. Information on seed potato prices and the cost to cut and treat potato seed was taken from a survey of Idaho seed potato growers and commercial growers. A charge for handling and transportation is added to the FOB seed farm-based seed potato prices to derive a seed potato cost for each region.

Machinery and equipment prices used in these cost of production estimates were mostly obtained from a survey of dealers conducted between August and December of 2010, and published in 2011 as PNW 346: The Cost of Owning and Operating Farm Machinery in the Pacific Northwest: 2011. These prices were increased based on the annual change in USDA’s Prices Paid Machinery Index from 2011 to 2018.

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

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

In general, operating costs are not influenced by farm size. However, ownership costs do change with farm size, primarily because of economies of size and scale with equipment. Equipment ownership costs per acre are strongly influenced by the number of acres over which these costs are spread. The more acres, the lower
the cost. In establishing the farm size and selecting the machinery 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 others are standardized for the entire state since they don’t vary consistently by region. Table 3 contains information on three such items: interest rates, labor wage and benefit rates, and power cost per acre-inch of water applied based on Idaho Power’s Irrigation Service Schedule 24. Table 3 presents values for 2015-2018, and the percentage changes from 2017 to 2018. In the costs and returns estimates, interest is charged from the time expenditures are made until the harvest month using the operating interest rate shown in Table 3. Operating interest is identified as a separate line item in the CAR estimates. The intermediate interest rate is used in calculating non-cash machinery costs. The labor used in crop production falls into one of the six classes shown in Table 3. Labor used to operate machinery, drive trucks, and manage pivot irrigation systems, including chemigation and fertigation, receive a higher wage than irrigation labor used on set-move systems (hand lines and wheel lines) and unskilled general farm labor used primarily during harvest to pick clods and rocks and to help with storage and trans-loading operations. Prior to 2012, irrigation labor was not differentiated between set-move and continuous move irrigation systems. The labor costs include the base wage rate plus payroll taxes and benefit costs, shown as a percentage. Additional labor information is included in the background and assumptions page that accompanies each CAR estimate.

While Idaho Power’s service area does not extend to all irrigated areas of southern Idaho, it is by far the largest supplier of power to Idaho farms and ranches and that is why it is used in the CAR estimates. The power rates shown in Table 3 are used with a center pivot irrigation system to derive the cost per acre-inch of water applied. The power demand used in the calculation is for pressurization only. The standard assumption for each region is that surface water is delivered to the farm from a canal.

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

Prior to 2008, fuel prices were determined by a survey conducted at a single point in time, which typically was in August. Since 2008, fuel prices 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 2015 through 2018 used in the CAR estimates, and the percentage changes from 2017 to 2018. 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 2018 commercial potato CAR estimates, as well as the previous four years. Some values are shown only as a reference and indicate the value we would use if the University of Idaho published a CAR estimate for that area and with those production practices. Only those values shown in bold type are used in CAR estimates.

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

Beginning in 2017 the USDA stopped calculating potato yields both for individual counties within a region and for the region itself. Prior to 2017 the yield estimates used in southwestern and southcentral Idaho CAR estimates were 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 2018 CAR estimates are 5 cwt higher than 2017 for southwestern Idaho, 5 cwt higher for southcentral Idaho, and unchanged for eastern-South Idaho. The potato yields for the fumigated 2018 CAR estimates are 5 cwt higher than 2017 for southwestern, 5 cwt higher for southcentral Idaho, and unchanged for eastern-South and eastern-North (See Table 6.) Note that the yield for Southwestern Idaho uses the Russet Burbank Adjusted Yield, which is 97% of the region’s average yield. The increasing use of higher yielding varieties, such as Ranger Russet, made this adjustment necessary.

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

**Fumigation Yield and Cost Allocation Dilemma**

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

Historic yields based on USDA data are too low if used in a CAR estimate with the full cost of fumigation included. Historic yields are too high if used in a CAR estimate when no fumigation cost is included. Including only a partial cost for fumigation would be appropriate in calculating average production costs, but not for calculating typical costs where fumigation is either used or it is not. In addition, the methods used by the University of Idaho to obtain farmer production practice data is not consistent with calculating average production costs for a region. Using the USDA yield data and including a partial fumigation cost in a typical budget is not appropriate as it gives the appearance that fumigation is less expensive than it actually is.

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

**Fumigation Yield Adjustment Factor**

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

Where \( Y \) = non-fumigation yield, 
\( FY \) = fumigation yield, and 
\( FY = Y + \text{fumigation yield adjustment} \)

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

\[
.4Y + .6 (Y+50) = 400
\]
\[
.4Y + .6Y + 30 = 400
\]
\[
1.0 Y + 30 = 400
\]
\[
Y = 370
\]

And \( FY = 420 \)

Check: \( .4 \times 370 + .6 \times 420 = 400 \)

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

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

Regardless of how the area potato yields are calculated, how does this yield compare to the grower’s paid yield? The answer will vary depending on whether the potatoes are sold in the fresh or in the process market. The yield data from USDA includes all tubers greater than 1-1/2 inches. Since the University of Idaho CAR estimates do not segment yield into size and grade components that would sell for different prices, the breakeven prices shown in the CAR estimates are what the grower would have to average if paid on a field-run yield in order to cover costs. The issue of paid yield is dealt with in the storage tables for each crop budget found in the Appendix: Tables A-2, B-2, C-2, D-2, E-2 and F-2. One column in each table shows the field-run breakeven prices and an adjacent column shows paid-yield breakeven prices for an assumed paid yield of 90%. Prior to 2017 the paid yield used was 95%.

2018 Cost of Potato Production Overview and Comparison

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

Table 10-A summarizes the dollar cost per acre and percentage changes from 2017 to 2018 for major input cost categories, total operating, total ownership, and total costs for the Idaho fumigated cost of production estimates. Table 10-B contains the same information for Idaho’s non-fumigated cost of potato production estimates.

Detailed cost of production estimates for 2017 and 2018 from which the data in Tables 10-A and 10-B were taken are found in the appendix. Appendix A, B, and C containing the fumigated cost of production estimates for southwestern, southcentral and the eastern south region, respectively, while Appendix D, E, and F contain the non-fumigated cost of production estimates for southcentral, eastern south, and eastern north regions, respectively.

In general, the cost of seed and cutting increased, and the cost of hauling seed was higher. Fertilizer, pesticides and chemicals were higher. The higher cost of pesticides and chemicals in most areas includes a mix of higher and lower prices of some products and a consistent number of foliar applications of insecticides and fungicides. Custom and consultants was slightly lower. The cost of power was slightly lower in 2018, because
of the decrease in the per kWh and PCA rate (See Table 3 for more detail.). No adjustment was made to the quantity of water applied and irrigation repair costs increased. Fuel costs were substantially higher (See Table 4 for more detail.). Higher repair costs on machinery and higher fuel costs kept overall machinery operating expenses higher in 2018. Labor costs were up approximately 7.0% across the board. Interest rates on borrowed capital also increased.

Overall, operating costs per acre and per hundredweight were higher in 2018. Operating costs per acre increased between $5 and $46 per acre, and varied from down 4 cents to up 11 cents per hundredweight. Ownership costs per acre were up in each region, reflecting both higher interest rates and equipment costs, which push up depreciation and interest (capital recovery), as well as increased land costs in some areas. Ownership costs per acre increased between $9 and $39 per acre, and varied from down 1 cent to up 9 cents per hundredweight.

Total costs per acre and per hundredweight were up in 5 of the 6 regions. Total costs per acre increases ranged from $14 to $74, while total cost per hundredweight changed by 4 cents lower to 18 cents higher.

Cost of Production Summaries and Comparisons by Region

Table 11-A and 11-B summarizes production costs for 2017 and 2018 for operating, ownership and total costs per acre, as well as per acre dollar and percentage changes between these years. Table 11-A presents the fumigated budgets and 11-B contains the non-fumigated budgets. Table 12-A and 12-B summarize production costs for 2017 and 2018 for operating, ownership and total costs per hundredweight, and the change per hundredweight and percentage between years. Because the yields used in budgets for 2018 were different than those used in 2017, the percentage changes per hundredweight were different than the percentage changes per acre.

The total cost to raise, harvest and sort potatoes in the three regions of southern Idaho for 2018 presented in this report ranged from a low of $2,345 per acre in eastern Idaho-north (non-fumigation) up to $3,569 in southwestern Idaho (with fumigation). (See Tables 11-A and 11-B.) There is a 35% difference from low to high. The range in values per hundredweight is not so extreme; only a 9% difference. The 2018 total cost to raise, harvest and sort potatoes ranged from $6.43 per hundredweight in eastern Idaho-north up to $7.07 in southwestern Idaho. (See Tables 12-A and 12-B.)

Adjustments for 2018

There were a number product changes in the potato cost of production estimates shown in this report, as well as quantity changes on some inputs.
Table 1. Idaho potato costs and returns estimates by region for 2018.

<table>
<thead>
<tr>
<th>Region/Publication No.</th>
<th>Variety</th>
<th>Fumigation</th>
<th>Storage Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Potatoes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southwestern:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBB2-Po2-18</td>
<td>Russet Burbank</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Southcentral:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBB3-Po2-18</td>
<td>Russet Burbank</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>EBB3-Po3-18</td>
<td>Russet Burbank</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Eastern - South Counties:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBB4-Po5-18</td>
<td>Russet Burbank</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>EBB4-Po6-18</td>
<td>Russet Burbank</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Eastern - North Counties:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBB4-Po2-18</td>
<td>Russet Burbank</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: the potato publication codes (EBB2-Po1-18 for example) are used in this report to simplify historical comparisons.

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

<table>
<thead>
<tr>
<th></th>
<th>2009 - 2012</th>
<th>2013 - 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farm</td>
<td>Potato</td>
</tr>
<tr>
<td>Southwestern</td>
<td>1200</td>
<td>300</td>
</tr>
<tr>
<td>Southcentral</td>
<td>1800</td>
<td>450</td>
</tr>
<tr>
<td>Eastern</td>
<td>1800</td>
<td>600</td>
</tr>
</tbody>
</table>

Eastern - South Counties: Bannock, Bingham and Power.
Eastern - North Counties: Bonneville and Madison; Jefferson County was dropped in 2012.
Table 3. Interest rates, labor charges and power rates used in CAR estimates: 2015 - 2018 and percentage changes from 2017 to 2018.

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Change</th>
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<tbody>
<tr>
<td>Operating Interest Rate</td>
<td>5.75%</td>
<td>6.00%</td>
<td>6.25%</td>
<td>6.75%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Intermediate Interest Rate</td>
<td>5.50%</td>
<td>5.75%</td>
<td>6.00%</td>
<td>6.50%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Labor Class (overhead)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment Operator Labor (25%)</td>
<td>$18.50</td>
<td>$19.15</td>
<td>$19.70</td>
<td>$21.10</td>
<td>7.1%</td>
</tr>
<tr>
<td>Truck Driver Labor (25%)</td>
<td>$14.40</td>
<td>$14.90</td>
<td>$15.35</td>
<td>$16.45</td>
<td>7.2%</td>
</tr>
<tr>
<td>Irrigation Labor: HL &amp; WL (30%)</td>
<td>$13.15</td>
<td>$13.60</td>
<td>$14.00</td>
<td>$15.00</td>
<td>7.1%</td>
</tr>
<tr>
<td>Irrigation Labor: CP (25%)</td>
<td>$18.50</td>
<td>$19.15</td>
<td>$19.70</td>
<td>$21.10</td>
<td>7.1%</td>
</tr>
<tr>
<td>Irrigation Labor: Chem-Fert (25%)</td>
<td>$18.50</td>
<td>$19.15</td>
<td>$19.70</td>
<td>$21.10</td>
<td>7.1%</td>
</tr>
<tr>
<td>General Farm Labor (15%)</td>
<td>$10.65</td>
<td>$11.00</td>
<td>$11.35</td>
<td>$12.15</td>
<td>7.0%</td>
</tr>
<tr>
<td>Power Rate: Idaho Power Irrigation Service Schedule 24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly Service Charge</td>
<td>$22.00</td>
<td>$22.00</td>
<td>$22.00</td>
<td>$22.00</td>
<td>0.0%</td>
</tr>
<tr>
<td>Demand Charge: irrigation season</td>
<td>$7.01</td>
<td>$7.01</td>
<td>$7.01</td>
<td>$6.97</td>
<td>-0.6%</td>
</tr>
<tr>
<td>Base Rate: per kWh</td>
<td>$0.05645</td>
<td>$0.05645</td>
<td>$0.05645</td>
<td>$0.05617</td>
<td>-0.5%</td>
</tr>
<tr>
<td>First 164 kWh per kW of Demand</td>
<td>$0.05792</td>
<td>$0.05792</td>
<td>$0.05792</td>
<td>$0.05763</td>
<td>-0.5%</td>
</tr>
<tr>
<td>All Other kWh per kW of Demand</td>
<td>$0.05499</td>
<td>$0.05499</td>
<td>$0.05499</td>
<td>$0.05471</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Power Cost Adjustment per kWh</td>
<td>$0.00444</td>
<td>$0.00567</td>
<td>$0.00567</td>
<td>$0.00435</td>
<td>-23.4%</td>
</tr>
<tr>
<td>Effective Rate: per kWh</td>
<td>$0.06089</td>
<td>$0.06212</td>
<td>$0.06212</td>
<td>$0.06052</td>
<td>-2.6%</td>
</tr>
<tr>
<td>Pumping Cost per Acre Inch</td>
<td>$1.90</td>
<td>$1.94</td>
<td>$1.94</td>
<td>$1.89</td>
<td>-2.6%</td>
</tr>
</tbody>
</table>

Pumping cost is calculated using Idaho Power Company rates for a 160-acre center pivot with a corner system: with 69% pumping plant efficiency and zero lift.
### Table 4-a. Current and historical fuel and water assessment prices for Southwestern Idaho: 2015 - 2018 and percentage change from 2017 to 2018.

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>$2.65</td>
<td>$2.35</td>
<td>$2.55</td>
<td>$3.15</td>
<td>23.5%</td>
</tr>
<tr>
<td>Off-Road Diesel</td>
<td>$2.45</td>
<td>$2.10</td>
<td>$2.35</td>
<td>$2.90</td>
<td>23.4%</td>
</tr>
<tr>
<td>Road Diesel</td>
<td>$2.95</td>
<td>$2.55</td>
<td>$2.85</td>
<td>$3.40</td>
<td>19.3%</td>
</tr>
<tr>
<td>Water Assessment</td>
<td>$50.60</td>
<td>$53.50</td>
<td>$53.50</td>
<td>$53.50</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

### Table 4-b. Current and historical fuel and water assessment prices for Southcentral Idaho: 2015 - 2018 and percentage change from 2017 to 2018.

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>$2.50</td>
<td>$2.20</td>
<td>$2.45</td>
<td>$3.05</td>
<td>24.5%</td>
</tr>
<tr>
<td>Off-Road Diesel</td>
<td>$2.30</td>
<td>$1.95</td>
<td>$2.20</td>
<td>$2.85</td>
<td>29.5%</td>
</tr>
<tr>
<td>Road Diesel</td>
<td>$2.85</td>
<td>$2.45</td>
<td>$2.80</td>
<td>$3.40</td>
<td>21.4%</td>
</tr>
<tr>
<td>Water Assessment</td>
<td>$45.60</td>
<td>$47.50</td>
<td>$47.50</td>
<td>$47.50</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

### Table 4-c. Current and historical fuel and water assessment prices for Eastern Idaho: 2015 - 2018 and percentage change from 2017 to 2018.

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>$2.50</td>
<td>$2.20</td>
<td>$2.45</td>
<td>$3.05</td>
<td>24.5%</td>
</tr>
<tr>
<td>Off-Road Diesel</td>
<td>$2.35</td>
<td>$2.00</td>
<td>$2.20</td>
<td>$2.80</td>
<td>27.3%</td>
</tr>
<tr>
<td>Road Diesel</td>
<td>$2.85</td>
<td>$2.45</td>
<td>$2.75</td>
<td>$3.30</td>
<td>20.0%</td>
</tr>
<tr>
<td>Water Assessment: All</td>
<td>$15.90</td>
<td>$16.70</td>
<td>$17.00</td>
<td>$17.00</td>
<td>0.0%</td>
</tr>
<tr>
<td>E. Idaho South District</td>
<td>$35.00</td>
<td>$37.00</td>
<td>$38.00</td>
<td>$38.00</td>
<td>0.0%</td>
</tr>
<tr>
<td>E. Idaho North District</td>
<td>$12.05</td>
<td>$12.50</td>
<td>$12.75</td>
<td>$12.75</td>
<td>0.0%</td>
</tr>
</tbody>
</table>
**Table 5. Current and historical fertilizer components prices for Southern Idaho: 2015 - 2018 and percentage change from 2017 to 2018.**

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Nitrogen (46-0-0)</td>
<td>$0.55</td>
<td>$0.41</td>
<td>$0.40</td>
<td>$0.41</td>
<td>2.5%</td>
</tr>
<tr>
<td>Liquid Nitrogen (32-0-0)</td>
<td>$0.73</td>
<td>$0.48</td>
<td>$0.50</td>
<td>$0.49</td>
<td>-2.0%</td>
</tr>
<tr>
<td>P2O5 Dry (11-52-0)*</td>
<td>$0.53</td>
<td>$0.37</td>
<td>$0.38</td>
<td>$0.43</td>
<td>13.2%</td>
</tr>
<tr>
<td>P2O5 Liquid (10-34-0)*</td>
<td>$0.72</td>
<td>$0.60</td>
<td>$0.56</td>
<td>$0.50</td>
<td>-10.7%</td>
</tr>
<tr>
<td>K2O (0-0-60)</td>
<td>$0.44</td>
<td>$0.29</td>
<td>$0.31</td>
<td>$0.32</td>
<td>3.2%</td>
</tr>
<tr>
<td>Sulfur</td>
<td>$0.27</td>
<td>$0.23</td>
<td>$0.22</td>
<td>$0.23</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

*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: 2014 - 2018.*

<table>
<thead>
<tr>
<th>Area</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cwt</td>
<td>cwt</td>
<td>cwt</td>
<td>cwt</td>
<td>cwt</td>
</tr>
<tr>
<td><strong>Southwest Region:</strong> Base Yield</td>
<td>530</td>
<td>522</td>
<td>512</td>
<td>508</td>
<td>515</td>
</tr>
<tr>
<td>Potatoes: No Fumigation</td>
<td>490</td>
<td>480</td>
<td>470</td>
<td>465</td>
<td>470</td>
</tr>
<tr>
<td>Potatoes: Fumigation</td>
<td>540</td>
<td>530</td>
<td>520</td>
<td>515</td>
<td>520</td>
</tr>
<tr>
<td>Adj. Russet Burbank: Fumigation</td>
<td>525</td>
<td>515</td>
<td>505</td>
<td>500</td>
<td>505</td>
</tr>
<tr>
<td><strong>Southcentral Region:</strong> Base Yield</td>
<td>443</td>
<td>449</td>
<td>456</td>
<td>447</td>
<td>455</td>
</tr>
<tr>
<td>Russet Burbank: No Fumigation</td>
<td>420</td>
<td>425</td>
<td>430</td>
<td>425</td>
<td>430</td>
</tr>
<tr>
<td>Russet Burbank: Fumigation</td>
<td>465</td>
<td>470</td>
<td>475</td>
<td>465</td>
<td>470</td>
</tr>
<tr>
<td><strong>Eastern Region:</strong> Russet Burbank:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Counties*: Base Yield</td>
<td>395</td>
<td>400</td>
<td>395</td>
<td>396</td>
<td>395</td>
</tr>
<tr>
<td>South: No Fumigation</td>
<td>380</td>
<td>385</td>
<td>380</td>
<td>380</td>
<td>385</td>
</tr>
<tr>
<td>South: Fumigation</td>
<td>420</td>
<td>425</td>
<td>420</td>
<td>420</td>
<td>420</td>
</tr>
<tr>
<td>North Counties*: Base Yield</td>
<td>368</td>
<td>373</td>
<td>374</td>
<td>379</td>
<td>380</td>
</tr>
<tr>
<td>North: No Fumigation</td>
<td>355</td>
<td>360</td>
<td>360</td>
<td>365</td>
<td>365</td>
</tr>
<tr>
<td>North: Fumigation</td>
<td>385</td>
<td>390</td>
<td>390</td>
<td>395</td>
<td>395</td>
</tr>
</tbody>
</table>

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 2013 - 2018

<table>
<thead>
<tr>
<th>Area</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017*</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwest Region</td>
<td>520</td>
<td>515</td>
<td>500</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Southcentral Region</td>
<td>465</td>
<td>447</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Eastern Region</td>
<td>388</td>
<td>395</td>
<td>386</td>
<td>409</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>South District</td>
<td>395</td>
<td>400</td>
<td>391</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>North District</td>
<td>364</td>
<td>383</td>
<td>375</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Statewide</td>
<td>415</td>
<td>415</td>
<td>405</td>
<td>430</td>
<td>435</td>
<td>440</td>
</tr>
</tbody>
</table>

Source: USDA-NASS.
Note: Yields for Eastern - North District are the revised yields that include only Bonneville and Madison Counties.
South District contains only Bingham County data. Power and Bannock not published.
*USDA ceased publishing all regional potato yield data in 2017.

Table 8. Historical potato yields published by USDA for the primary commercial potato counties in Eastern Idaho for 2013 - 2017 and historical 3-year average for crop year.*

<table>
<thead>
<tr>
<th>Area</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>3-Year Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>North District Counties</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonneville</td>
<td>359</td>
<td>381</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>370</td>
</tr>
<tr>
<td>Madison</td>
<td>369</td>
<td>384</td>
<td>379</td>
<td>na</td>
<td>na</td>
<td>377</td>
</tr>
<tr>
<td>2-County Average</td>
<td>364</td>
<td>383</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>374</td>
</tr>
<tr>
<td>Jefferson</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>South District Counties</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bannock</td>
<td>na</td>
<td>412</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>412</td>
</tr>
<tr>
<td>Bingham</td>
<td>395</td>
<td>400</td>
<td>391</td>
<td>409</td>
<td>na</td>
<td>400</td>
</tr>
<tr>
<td>Power</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>3-County Average</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: USDA-NASS.
Note: Jefferson County was dropped from the North District in 2012 (2011 potato crop year).
Values for previous years were re-calculated using only Bonneville and Madison Counties.
3-Year averages are based on the last three years where data was published.
Note: County-level data was not published for either Bannock or Power Counties for 2015-2016.
*USDA ceased publishing all regional potato yield data in 2017.
Table 9. Fumigation percentage by region and yield adjustment factors by region.

<table>
<thead>
<tr>
<th>Region</th>
<th>Acres Fumigated</th>
<th>Fumigation Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwestern</td>
<td>80%</td>
<td>+ 50 cwt</td>
</tr>
<tr>
<td>Southcentral</td>
<td>60%</td>
<td>+ 40 cwt</td>
</tr>
<tr>
<td>Southeastern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South District</td>
<td>50%</td>
<td>+ 35 cwt</td>
</tr>
<tr>
<td>North District</td>
<td>40%</td>
<td>+ 30 cwt</td>
</tr>
</tbody>
</table>

Notes:
Southwestern increased from 65% to 80% in 2013 and yield increase dropped from 65 to 50 cwt.
Southcentral increased from 55% to 60% in 2013 and yield increase dropped from 55 to 40 cwt.
South District increased from 45% to 50% in 2013 and yield increase dropped from 45 to 35 cwt.
North District increased from 30% to 45% in 2013 and yield increase dropped from 40 to 30 cwt.
Table 10-A. Change in per-acre cost of production by major cost category from 2017 to 2018 for fumigated Russet Burbank potatoes in three production regions of Idaho.

<table>
<thead>
<tr>
<th>Item</th>
<th>Southwestern Idaho Change from 2017 Fumigated EBB4-Po2</th>
<th>Southcentral Idaho Change from 2017 Fumigated EBB3-Po3</th>
<th>Eastern Idaho - S. Change from 2017 Fumigated EBB4-Po6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yield</td>
<td>Yield</td>
<td>Yield</td>
</tr>
<tr>
<td></td>
<td>5 1.0%</td>
<td>5 1.1%</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Operating Inputs</td>
<td>$ %</td>
<td>$ %</td>
<td>$ %</td>
</tr>
<tr>
<td>Seed &amp; Cutting</td>
<td>-$22.80 -6.1%</td>
<td>-$21.85 -6.2%</td>
<td>-$19.95 -6.4%</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>$11.20 2.8%</td>
<td>$12.20 3.3%</td>
<td>$9.45 2.8%</td>
</tr>
<tr>
<td>Chemicals &amp; Pesticides</td>
<td>-$6.99 -1.2%</td>
<td>$0.82 0.2%</td>
<td>$19.92 4.7%</td>
</tr>
<tr>
<td>Custom &amp; Consultants</td>
<td>-$2.75 -2.0%</td>
<td>-$2.75 -2.1%</td>
<td>-$2.75 -2.4%</td>
</tr>
<tr>
<td>Irrigation: Water, Power, Repairs</td>
<td>-$1.24 -1.0%</td>
<td>-$1.16 -1.0%</td>
<td>-$1.02 -1.0%</td>
</tr>
<tr>
<td>Machinery: Fuel &amp; Repairs</td>
<td>$21.98 14.4%</td>
<td>$20.89 16.9%</td>
<td>$20.23 16.2%</td>
</tr>
<tr>
<td>Field Labor</td>
<td>$16.88 7.1%</td>
<td>$13.36 7.1%</td>
<td>$11.96 7.1%</td>
</tr>
<tr>
<td>Sorting: Labor, Repairs &amp; Power</td>
<td>$6.81 9.1%</td>
<td>$6.39 9.2%</td>
<td>$5.04 8.0%</td>
</tr>
<tr>
<td>Other: Fees &amp; Crop Insurance</td>
<td>-$23.60 -15.2%</td>
<td>-$8.42 -5.6%</td>
<td>-$3.96 -2.6%</td>
</tr>
<tr>
<td>Operating Interest</td>
<td>$5.56 6.6%</td>
<td>$7.48 10.1%</td>
<td>$7.25 10.9%</td>
</tr>
<tr>
<td>Total Operating Costs</td>
<td>$5.05 0.2%</td>
<td>$26.96 1.3%</td>
<td>$46.17 2.5%</td>
</tr>
<tr>
<td>Operating Costs per Cwt</td>
<td>-$0.04 -0.8%</td>
<td>$0.01 0.2%</td>
<td>$0.11 2.5%</td>
</tr>
<tr>
<td>Ownership Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tractors, Trucks &amp; Field Equip.</td>
<td>$7.00 3.4%</td>
<td>$6.00 3.1%</td>
<td>$6.00 3.4%</td>
</tr>
<tr>
<td>Potato Handling Equipment</td>
<td>$2.00 2.5%</td>
<td>$2.00 2.8%</td>
<td>$2.00 3.1%</td>
</tr>
<tr>
<td>Land*</td>
<td>$0.00 0.0%</td>
<td>$25.00 4.0%</td>
<td>$0.00 0.0%</td>
</tr>
<tr>
<td>Overhead</td>
<td>$0.00 0.0%</td>
<td>$0.00 0.0%</td>
<td>$1.00 2.2%</td>
</tr>
<tr>
<td>Management Fee</td>
<td>$0.00 0.0%</td>
<td>$2.00 1.3%</td>
<td>$3.00 2.1%</td>
</tr>
<tr>
<td>Total Ownership Costs</td>
<td>$9.15 0.7%</td>
<td>$35.15 3.2%</td>
<td>$12.15 1.3%</td>
</tr>
<tr>
<td>Ownership Costs per Cwt</td>
<td>-$0.01 -0.3%</td>
<td>$0.05 2.1%</td>
<td>$0.03 1.3%</td>
</tr>
<tr>
<td>Total Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Costs per Acre</td>
<td>$14.20 0.4%</td>
<td>$62.11 2.0%</td>
<td>$58.32 2.1%</td>
</tr>
<tr>
<td>Total Costs per Cwt</td>
<td>-$0.04 -0.6%</td>
<td>$0.06 0.9%</td>
<td>$0.14 2.1%</td>
</tr>
</tbody>
</table>

Note: Cost of production refers to the cost to grow, harvest and sort potatoes. The cost of on-farm storage is not included. See appendix for detailed cost comparison and for storage costs by month.
Table 10-B. Change in per-acre cost of production by major cost category from 2017 to 2018 for non-fumigated Russet Burbank potatoes in three production regions of Idaho.

<table>
<thead>
<tr>
<th>Item</th>
<th>Southcentral Idaho Non-Fumigated EBB3-Po2</th>
<th>Eastern Idaho - S. Non-Fumigated EBB4-Po5</th>
<th>Eastern Idaho - N. Non-Fumigated EBB4-Po2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield</td>
<td>0 0.0%</td>
<td>5 1.3%</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Operating Inputs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed &amp; Cutting</td>
<td>-$21.85 -6.2%</td>
<td>-$19.95 -6.4%</td>
<td>-$19.95 -6.6%</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>$11.65 3.4%</td>
<td>$7.55 2.4%</td>
<td>$7.75 2.6%</td>
</tr>
<tr>
<td>Chemicals &amp; Pesticides</td>
<td>$5.75 2.1%</td>
<td>$3.22 1.4%</td>
<td>$1.03 0.5%</td>
</tr>
<tr>
<td>Custom &amp; Consultants</td>
<td>-$0.25 -0.3%</td>
<td>-$0.25 -0.4%</td>
<td>-$0.25 -0.4%</td>
</tr>
<tr>
<td>Irrigation: Water, Power, Repairs</td>
<td>-$1.08 -0.9%</td>
<td>-$0.96 -1.0%</td>
<td>-$0.92 -1.3%</td>
</tr>
<tr>
<td>Machinery: Fuel &amp; Repairs</td>
<td>$20.83 16.9%</td>
<td>$20.15 16.3%</td>
<td>$20.56 16.6%</td>
</tr>
<tr>
<td>Field Labor</td>
<td>$12.91 7.1%</td>
<td>$11.73 7.1%</td>
<td>$11.86 7.1%</td>
</tr>
<tr>
<td>Sorting: Labor, Repairs &amp; Power</td>
<td>$5.04 8.0%</td>
<td>$5.37 9.4%</td>
<td>$4.38 8.0%</td>
</tr>
<tr>
<td>Other: Fees &amp; Crop Insurance</td>
<td>-$3.78 -2.8%</td>
<td>-$2.52 -1.7%</td>
<td>$1.76 1.3%</td>
</tr>
<tr>
<td>Operating Interest</td>
<td>$5.67 11.0%</td>
<td>$3.91 8.2%</td>
<td>$4.80 10.8%</td>
</tr>
<tr>
<td>Total Operating Costs</td>
<td>$34.88 2.0%</td>
<td>$28.26 1.8%</td>
<td>$31.01 2.1%</td>
</tr>
<tr>
<td>Operating Costs per Cwt</td>
<td>$0.08 2.0%</td>
<td>$0.02 0.5%</td>
<td>$0.08 2.1%</td>
</tr>
<tr>
<td>Ownership Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tractors, Trucks &amp; Field Equip.</td>
<td>$6.00 3.1%</td>
<td>$6.00 3.4%</td>
<td>$6.00 3.4%</td>
</tr>
<tr>
<td>Potato Handling Equipment</td>
<td>$2.00 3.1%</td>
<td>$2.00 3.4%</td>
<td>$2.00 3.7%</td>
</tr>
<tr>
<td>Land*</td>
<td>$25.00 4.0%</td>
<td>$0.00 0.0%</td>
<td>$0.00 0.0%</td>
</tr>
<tr>
<td>Overhead</td>
<td>$2.00 4.8%</td>
<td>$1.00 2.6%</td>
<td>$1.50 4.1%</td>
</tr>
<tr>
<td>Management Fee</td>
<td>$4.00 2.9%</td>
<td>$2.00 1.6%</td>
<td>$2.50 2.2%</td>
</tr>
<tr>
<td>Total Ownership Costs</td>
<td>$39.15 3.7%</td>
<td>$11.15 1.2%</td>
<td>$12.15 1.5%</td>
</tr>
<tr>
<td>Ownership Costs per Cwt</td>
<td>$0.09 3.7%</td>
<td>$0.00 -0.1%</td>
<td>$0.03 1.5%</td>
</tr>
<tr>
<td>Total Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Costs per Acre</td>
<td>$74.03 2.7%</td>
<td>$39.41 1.6%</td>
<td>$43.16 1.9%</td>
</tr>
<tr>
<td>Total Costs per Cwt</td>
<td>$0.18 2.7%</td>
<td>$0.02 0.3%</td>
<td>$0.12 1.9%</td>
</tr>
</tbody>
</table>

Note: Cost of production refers to the cost to grow, harvest and sort potatoes. The cost of on-farm storage is not included. See appendix for detailed cost comparison and for storage costs by month.
Table 11-A. Cost of production per acre for irrigated Russet Burbank potatoes by region for 2017 and 2018 and change in costs between these years.

<table>
<thead>
<tr>
<th></th>
<th>Southwestern</th>
<th>Southcentral</th>
<th>Eastern - South</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Russet Burbank with Fumigation</td>
<td>Russet Burbank with Fumigation</td>
<td>Russet Burbank with Fumigation</td>
</tr>
<tr>
<td>Po2</td>
<td>$2,327</td>
<td>$2,064</td>
<td>$1,852</td>
</tr>
<tr>
<td>Po3</td>
<td>$2,332</td>
<td>$2,091</td>
<td>$1,898</td>
</tr>
<tr>
<td>Po6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017 Operating Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ Change</td>
<td>$5</td>
<td>$27</td>
<td>$46</td>
</tr>
<tr>
<td>% Change</td>
<td>0.2%</td>
<td>1.3%</td>
<td>2.5%</td>
</tr>
<tr>
<td>2017 Ownership Cost</td>
<td>$1,228</td>
<td>$1,108</td>
<td>$969</td>
</tr>
<tr>
<td>$ Change</td>
<td>$9</td>
<td>$35</td>
<td>$12</td>
</tr>
<tr>
<td>% Change</td>
<td>0.7%</td>
<td>3.2%</td>
<td>1.3%</td>
</tr>
<tr>
<td>2017 Total Cost</td>
<td>$3,555</td>
<td>$3,172</td>
<td>$2,821</td>
</tr>
<tr>
<td>2018 Total Cost</td>
<td>$3,569</td>
<td>$3,234</td>
<td>$2,880</td>
</tr>
<tr>
<td>$ Change</td>
<td>$14</td>
<td>$62</td>
<td>$58</td>
</tr>
<tr>
<td>% Change</td>
<td>0.4%</td>
<td>2.0%</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Note: values are rounded and may not add up.

Table 11-B. Cost of production per acre for irrigated Russet Burbank potatoes by region for 2017 and 2018 and change in costs between these years.

<table>
<thead>
<tr>
<th></th>
<th>Southcentral</th>
<th>Eastern - South</th>
<th>Eastern - North</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Russet Burbank with No Fumigation</td>
<td>Russet Burbank with No Fumigation</td>
<td>Russet Burbank with No Fumigation</td>
</tr>
<tr>
<td>Po2</td>
<td>$1,724</td>
<td>$1,553</td>
<td>$1,476</td>
</tr>
<tr>
<td>Po5</td>
<td>$1,759</td>
<td>$1,581</td>
<td>$1,507</td>
</tr>
<tr>
<td>Po2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017 Operating Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ Change</td>
<td>$35</td>
<td>$28</td>
<td>$31</td>
</tr>
<tr>
<td>% Change</td>
<td>2.0%</td>
<td>1.8%</td>
<td>2.1%</td>
</tr>
<tr>
<td>2017 Ownership Cost</td>
<td>$1,068</td>
<td>$937</td>
<td>$826</td>
</tr>
<tr>
<td>$ Change</td>
<td>$39</td>
<td>$11</td>
<td>$12</td>
</tr>
<tr>
<td>% Change</td>
<td>3.7%</td>
<td>1.2%</td>
<td>1.5%</td>
</tr>
<tr>
<td>2017 Total Cost</td>
<td>$2,791</td>
<td>$2,490</td>
<td>$2,302</td>
</tr>
<tr>
<td>2018 Total Cost</td>
<td>$2,865</td>
<td>$2,530</td>
<td>$2,345</td>
</tr>
<tr>
<td>$ Change</td>
<td>$74</td>
<td>$39</td>
<td>$43</td>
</tr>
<tr>
<td>% Change</td>
<td>2.7%</td>
<td>1.6%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Note: values are rounded and may not add up.
Table 12-A. Cost of production per cwt for irrigated Russet Burbank potatoes by region for 2017 and 2018 and change in costs between these years.

<table>
<thead>
<tr>
<th></th>
<th>Southwestern</th>
<th>Southcentral</th>
<th>Eastern - South</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Russet Burbank</td>
<td>Russet Burbank</td>
<td>Russet Burbank</td>
</tr>
<tr>
<td>Po2</td>
<td>$4.65</td>
<td>$4.44</td>
<td>$4.41</td>
</tr>
<tr>
<td>Po3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Po6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017 Operating Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018 Operating Cost</td>
<td>$4.62</td>
<td>$4.45</td>
<td>$4.52</td>
</tr>
<tr>
<td>$ Change</td>
<td>-$0.04</td>
<td>$0.01</td>
<td>$0.11</td>
</tr>
<tr>
<td>% Change</td>
<td>-0.8%</td>
<td>0.2%</td>
<td>2.5%</td>
</tr>
<tr>
<td>2017 Ownership Cost</td>
<td>$2.46</td>
<td>$2.38</td>
<td>$2.31</td>
</tr>
<tr>
<td>2018 Ownership Cost</td>
<td>$2.45</td>
<td>$2.43</td>
<td>$2.34</td>
</tr>
<tr>
<td>$ Change</td>
<td>-$0.01</td>
<td>$0.05</td>
<td>$0.03</td>
</tr>
<tr>
<td>% Change</td>
<td>-0.3%</td>
<td>2.1%</td>
<td>1.3%</td>
</tr>
<tr>
<td>2017 Total Cost</td>
<td>$7.11</td>
<td>$6.82</td>
<td>$6.72</td>
</tr>
<tr>
<td>2018 Total Cost</td>
<td>$7.07</td>
<td>$6.88</td>
<td>$6.86</td>
</tr>
<tr>
<td>$ Change</td>
<td>-$0.04</td>
<td>$0.06</td>
<td>$0.14</td>
</tr>
<tr>
<td>% Change</td>
<td>-0.6%</td>
<td>0.9%</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Note: values are rounded and may not add up.

Table 12-B. Cost of production per cwt for irrigated Russet Burbank potatoes by region for 2017 and 2018 and change in costs between these years.

<table>
<thead>
<tr>
<th></th>
<th>Southcentral</th>
<th>Eastern - South</th>
<th>Eastern - North</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Russet Burbank</td>
<td>Russet Burbank</td>
<td>Russet Burbank</td>
</tr>
<tr>
<td></td>
<td>with No Fumigation</td>
<td>with No Fumigation</td>
<td>with No Fumigation</td>
</tr>
<tr>
<td>Po2</td>
<td>$4.10</td>
<td>$4.09</td>
<td>$4.04</td>
</tr>
<tr>
<td>Po5</td>
<td></td>
<td>$0.02</td>
<td>$0.08</td>
</tr>
<tr>
<td>Po2</td>
<td></td>
<td>2.1%</td>
<td>1.5%</td>
</tr>
<tr>
<td>2017 Operating Cost</td>
<td></td>
<td>$4.19</td>
<td>$4.11</td>
</tr>
<tr>
<td>2018 Operating Cost</td>
<td>$4.19</td>
<td>$4.11</td>
<td>$4.13</td>
</tr>
<tr>
<td>$ Change</td>
<td>$0.08</td>
<td>$0.02</td>
<td>$0.08</td>
</tr>
<tr>
<td>% Change</td>
<td>2.0%</td>
<td>0.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>2017 Ownership Cost</td>
<td>$2.54</td>
<td>$2.47</td>
<td>$2.26</td>
</tr>
<tr>
<td>2018 Ownership Cost</td>
<td>$2.64</td>
<td>$2.46</td>
<td>$2.30</td>
</tr>
<tr>
<td>$ Change</td>
<td>$0.09</td>
<td>$0.00</td>
<td>$0.03</td>
</tr>
<tr>
<td>% Change</td>
<td>3.7%</td>
<td>-0.1%</td>
<td>1.5%</td>
</tr>
<tr>
<td>2017 Total Cost</td>
<td>$6.65</td>
<td>$6.55</td>
<td>$6.31</td>
</tr>
<tr>
<td>2018 Total Cost</td>
<td>$6.82</td>
<td>$6.57</td>
<td>$6.43</td>
</tr>
<tr>
<td>$ Change</td>
<td>$0.18</td>
<td>$0.02</td>
<td>$0.12</td>
</tr>
<tr>
<td>% Change</td>
<td>2.7%</td>
<td>0.3%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Note: values are rounded and may not add up.
Appendix A
Southwestern Idaho
Irrigated Russet Burbank Potato
Fumigated
## Table A-1. 2018 Costs to grow, harvest and sort Southwestern Idaho Russet Burbank potatoes with fumigation.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Value</th>
<th>Total Cost/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Returns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td>505.00</td>
<td>cwt</td>
<td></td>
<td>$3,353.00</td>
</tr>
<tr>
<td><strong>Total Gross Returns</strong></td>
<td></td>
<td></td>
<td></td>
<td>$3,353.00</td>
</tr>
<tr>
<td><strong>Operating Inputs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-3 Russet Burbank Seed</td>
<td>24.00</td>
<td>cwt</td>
<td>12.85</td>
<td>308.40</td>
</tr>
<tr>
<td>Seed Cutting</td>
<td>24.00</td>
<td>cwt</td>
<td>1.85</td>
<td>44.40</td>
</tr>
<tr>
<td><strong>Fertilizer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry Nitrogen - Preplant</td>
<td>175.00</td>
<td>lb</td>
<td>0.41</td>
<td>71.75</td>
</tr>
<tr>
<td>Dry P2O5</td>
<td>220.00</td>
<td>lb</td>
<td>0.43</td>
<td>94.60</td>
</tr>
<tr>
<td>K2O</td>
<td>255.00</td>
<td>lb</td>
<td>0.32</td>
<td>81.60</td>
</tr>
<tr>
<td>Sulfur</td>
<td>115.00</td>
<td>lb</td>
<td>0.23</td>
<td>26.45</td>
</tr>
<tr>
<td>Liquid Nitrogen</td>
<td>135.00</td>
<td>lb</td>
<td>0.49</td>
<td>66.15</td>
</tr>
<tr>
<td>Liquid P2O5</td>
<td>65.00</td>
<td>lb</td>
<td>0.50</td>
<td>32.50</td>
</tr>
<tr>
<td>Micronutrients &amp; Foliar</td>
<td>2.00</td>
<td>acre</td>
<td>22.00</td>
<td>44.00</td>
</tr>
<tr>
<td><strong>Pesticides &amp; Chemicals</strong></td>
<td></td>
<td></td>
<td></td>
<td>$568.31</td>
</tr>
<tr>
<td>Metam CLR (42%)</td>
<td>42.00</td>
<td>gal</td>
<td>5.23</td>
<td>219.66</td>
</tr>
<tr>
<td>Admire Pro</td>
<td>8.00</td>
<td>fl oz</td>
<td>1.44</td>
<td>11.52</td>
</tr>
<tr>
<td>Moncut 70DF</td>
<td>0.80</td>
<td>lb</td>
<td>29.00</td>
<td>23.20</td>
</tr>
<tr>
<td>Eptam 7E</td>
<td>4.00</td>
<td>pt</td>
<td>6.30</td>
<td>25.20</td>
</tr>
<tr>
<td>Metribuzin 75DF</td>
<td>0.75</td>
<td>lb</td>
<td>13.25</td>
<td>9.94</td>
</tr>
<tr>
<td>Proadax 70</td>
<td>2.00</td>
<td>pt</td>
<td>5.70</td>
<td>11.40</td>
</tr>
<tr>
<td>Endura (2x)</td>
<td>8.00</td>
<td>fl oz</td>
<td>1.25</td>
<td>10.00</td>
</tr>
<tr>
<td>Revus Top (2x)</td>
<td>12.00</td>
<td>fl oz</td>
<td>2.35</td>
<td>28.20</td>
</tr>
<tr>
<td>Bravo Weather Stik (2x)</td>
<td>3.00</td>
<td>pt</td>
<td>5.55</td>
<td>16.65</td>
</tr>
<tr>
<td>Manzate Pro-Stick</td>
<td>2.00</td>
<td>lb</td>
<td>3.75</td>
<td>7.50</td>
</tr>
<tr>
<td>Gavel 75DF</td>
<td>2.00</td>
<td>lb</td>
<td>8.95</td>
<td>17.90</td>
</tr>
<tr>
<td>Fulfill WDG</td>
<td>5.50</td>
<td>oz</td>
<td>6.50</td>
<td>35.75</td>
</tr>
<tr>
<td>Brigadier (2x)</td>
<td>12.00</td>
<td>fl oz</td>
<td>1.35</td>
<td>16.20</td>
</tr>
<tr>
<td>DNA Top</td>
<td>5.00</td>
<td>fl oz</td>
<td>8.60</td>
<td>43.00</td>
</tr>
<tr>
<td>Beleaf 505G</td>
<td>7.00</td>
<td>fl oz</td>
<td>2.50</td>
<td>17.50</td>
</tr>
<tr>
<td><strong>Custom &amp; Consultants:</strong></td>
<td></td>
<td></td>
<td></td>
<td>$132.50</td>
</tr>
<tr>
<td>Custom Fumigate - Deep Injection</td>
<td>1.00</td>
<td>acre</td>
<td>42.50</td>
<td>42.50</td>
</tr>
<tr>
<td>Custom Fertilize: 400 - 800 lbs</td>
<td>1.00</td>
<td>acre</td>
<td>8.00</td>
<td>8.00</td>
</tr>
<tr>
<td>Custom Fertilize: 0 - 400 lbs</td>
<td>1.00</td>
<td>acre</td>
<td>7.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Custom Air Spray - 5 gal</td>
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<td><strong>Net Returns Above Operating Costs</strong></td>
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$ Change % Change

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Yield Change

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<th>Yield Change</th>
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<td>500</td>
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<td>Item</td>
<td>Quantity Per Acre</td>
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<td>-------------------------------------------</td>
<td>-------------------</td>
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<tr>
<td>Ownership Costs:</td>
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<td>Tractors &amp; Equipment Insurance</td>
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<td>Management Fee</td>
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<td>Returns to Risk</td>
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<td>-$34.16</td>
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Notes:
*Includes irrigation system ownership costs.
Blue font indicates an increase.
Red font indicates a decrease.
A green font indicates a change in product or procedure to derive the cost.
Procedural changes can result in different costs than were published the previous year.

### Breakeven Analysis:

<table>
<thead>
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<th>Breakeven Analysis:</th>
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<th>+ Base 5%</th>
<th>Yield 5%</th>
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</thead>
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<tr>
<td>Price</td>
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<td>505</td>
<td>530.25</td>
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<td>Operating Cost Breakeven</td>
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<td>$4.62</td>
<td>$4.40</td>
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<td>Ownership Cost Breakeven</td>
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<td>$7.07</td>
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</table>

<table>
<thead>
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<th>+ Base 5%</th>
<th>Yield 5%</th>
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</thead>
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<tr>
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<td>$7.00</td>
<td>$7.35</td>
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<td>Operating Cost Breakeven</td>
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<td>333.1</td>
<td>317.3</td>
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<td>186.1</td>
<td>176.8</td>
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<td>536.7</td>
<td>509.9</td>
<td>485.6</td>
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### Table A-2. 2017 Cost per cwt to grow, harvest, sort and store Southwestern Idaho Russet Burbank potatoes with fumigation based on both field-run and paid yield.

<table>
<thead>
<tr>
<th></th>
<th>Storage Costs</th>
<th>Field Run Cost per Cwt</th>
<th>Paid Yield Cost per Cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field-Run Yield</td>
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<tr>
<td>Paid Yield %</td>
<td>90%</td>
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<td>454.5</td>
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#### Base Cost to Grow, Harvest & Sort

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<th>Field Run Cost per Cwt</th>
<th>Paid Yield Cost per Cwt</th>
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</thead>
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<tr>
<td>Storage System Annual Ownership Costs</td>
<td>$0.380</td>
<td>$0.380</td>
<td>$0.422</td>
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<tr>
<td>Base Cost + Storage Ownership Costs</td>
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<td>$7.45</td>
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<tr>
<td>Storage System Annual Repairs</td>
<td>$0.043</td>
<td>$0.043</td>
<td>$0.048</td>
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<tr>
<td>Base + Storage System Ownership &amp; Repairs</td>
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<td>$7.49</td>
<td>$8.32</td>
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<table>
<thead>
<tr>
<th></th>
<th>Cumulative Storage Op. Costs</th>
<th>Cumulative Base + All Storage Costs</th>
<th>Cumulative Base + All Storage Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>$0.237</td>
<td>$7.73</td>
<td>$8.59</td>
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<tr>
<td>November*</td>
<td>$0.432</td>
<td>$7.92</td>
<td>$8.80</td>
</tr>
<tr>
<td>December</td>
<td>$0.531</td>
<td>$8.02</td>
<td>$8.91</td>
</tr>
<tr>
<td>January</td>
<td>$0.629</td>
<td>$8.12</td>
<td>$9.02</td>
</tr>
<tr>
<td>February</td>
<td>$0.729</td>
<td>$8.22</td>
<td>$9.13</td>
</tr>
<tr>
<td>March</td>
<td>$0.827</td>
<td>$8.32</td>
<td>$9.24</td>
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<td>April</td>
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<tr>
<td>May</td>
<td>$1.162</td>
<td>$8.65</td>
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<td>June</td>
<td>$1.303</td>
<td>$8.79</td>
<td>$9.77</td>
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* Indicates month when sprout inhibitor applied.

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

Storage system includes: storage facility, air system, and the equipment used to place.

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

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

Cumulative storage operating expenses are calculated to the end of the month.
Appendix B
Southcentral Idaho
Irrigated Russet Burbank Potato
Fumigated
### Table B-1. 2018 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes with fumigation.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Cost</th>
<th>Value or Cost/Acre</th>
</tr>
</thead>
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<tr>
<td><strong>Gross Returns</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Potatoes</td>
<td>470.00</td>
<td>cwt</td>
<td>6.75</td>
<td>$3,172.50</td>
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<tr>
<td><strong>Total Gross Returns</strong></td>
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<tr>
<td><strong>Operating Inputs</strong></td>
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<td></td>
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</tr>
<tr>
<td>Seed:</td>
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<tr>
<td>G-3 Russet Burbank Seed</td>
<td>23.00</td>
<td>cwt</td>
<td>12.45</td>
<td>286.35</td>
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<td>Seed Cutting</td>
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<td>cwt</td>
<td>1.85</td>
<td>42.55</td>
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<td><strong>Fertilizer:</strong></td>
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<tr>
<td>Dry Nitrogen - Preplant</td>
<td>175.00</td>
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<td>0.41</td>
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<td>Dry P2O5</td>
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<td>0.43</td>
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<td>K2O</td>
<td>235.00</td>
<td>lb</td>
<td>0.32</td>
<td>75.20</td>
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<td>Sulfur</td>
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<td>0.23</td>
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<td>Liquid Nitrogen</td>
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<td>0.49</td>
<td>53.90</td>
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<td>Custom Fumigate</td>
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<td>10.50</td>
<td>22.50</td>
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<td>Micronutrients &amp; Foliers</td>
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<td>22.00</td>
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<td>Metam CLR (42%)</td>
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<td>Seed Treatment</td>
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<td>16.10</td>
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<td>Admire Pro</td>
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<td>11.52</td>
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<td>Tanos DF</td>
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<td>oz</td>
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<td>17.50</td>
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<td><strong>Region</strong></td>
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<td>pt</td>
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<td>16.90</td>
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<td>42.50</td>
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<td>acre</td>
<td>65.00</td>
<td>65.00</td>
</tr>
<tr>
<td>Fees &amp; Assessments</td>
<td>423.00</td>
<td>cwt</td>
<td>0.18</td>
<td>76.14</td>
</tr>
<tr>
<td><strong>Interest on Operating Capital at 6.75%</strong></td>
<td></td>
<td></td>
<td></td>
<td>$81.40</td>
</tr>
<tr>
<td><strong>Total Operating Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td>$2,091.17</td>
</tr>
<tr>
<td>Operating Costs per Unit</td>
<td></td>
<td></td>
<td></td>
<td>$4.45</td>
</tr>
<tr>
<td><strong>Net Returns Above Operating Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td>$1,081.33</td>
</tr>
</tbody>
</table>

**$ Change % Change**

<table>
<thead>
<tr>
<th>2017</th>
<th>Yield Change</th>
</tr>
</thead>
</table>
| 465  | 5            | 1.1%  

Russet Burbank potatoes with fumigation.

Yield Change
### Table B-1. 2018 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes with fumigation.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Value</th>
<th>Cost/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ownership Costs:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tractors &amp; Equipment Insurance</td>
<td>6.00</td>
<td></td>
<td>5.85</td>
<td>$0.15</td>
</tr>
<tr>
<td>Tractors &amp; Equipment Depreciation &amp; Interest</td>
<td>200.00</td>
<td></td>
<td>194.00</td>
<td>$6.00</td>
</tr>
<tr>
<td>Potato Handling Equipment Deprec. &amp; Interest</td>
<td>74.00</td>
<td></td>
<td>72.00</td>
<td>$2.00</td>
</tr>
<tr>
<td>Land*</td>
<td>650.00</td>
<td></td>
<td>625.00</td>
<td>$25.00</td>
</tr>
<tr>
<td>Overhead</td>
<td>52.00</td>
<td></td>
<td>52.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Management Fee</td>
<td>161.00</td>
<td></td>
<td>159.00</td>
<td>$2.00</td>
</tr>
<tr>
<td><strong>Total Ownership Costs:</strong></td>
<td></td>
<td></td>
<td>$1,143.00</td>
<td>$35.15</td>
</tr>
<tr>
<td><strong>Ownership Costs per Unit:</strong></td>
<td></td>
<td></td>
<td>$2.43</td>
<td>3.2%</td>
</tr>
<tr>
<td><strong>Total Costs per Acre:</strong></td>
<td>$3,234.17</td>
<td></td>
<td>$3,172.06</td>
<td>$62.11</td>
</tr>
<tr>
<td><strong>Total Cost per Unit:</strong></td>
<td>$6.88</td>
<td></td>
<td>$6.82</td>
<td>2.0%</td>
</tr>
<tr>
<td><strong>Returns to Risk:</strong></td>
<td></td>
<td></td>
<td>-$61.67</td>
<td>315.44</td>
</tr>
</tbody>
</table>

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

### Breakeven Analysis:

<table>
<thead>
<tr>
<th>Price</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Base (5%)</td>
<td>+ (5%)</td>
</tr>
</tbody>
</table>

- **Price**
  - Operating Cost Breakeven: $4.68 → $4.45 → $4.24
  - Ownership Cost Breakeven: $2.56 → $2.43 → $2.32
  - Total Cost Breakeven: $7.24 → $6.88 → $6.55

- **Yield**
  - Operating Cost Breakeven: $6.41 → $6.75 → $7.09
  - Ownership Cost Breakeven: 326.1 → 309.8 → 295.1
  - Total Cost Breakeven: 178.2 → 169.3 → 161.3
Table B-2. 2017 Cost per cwt to grow, harvest, sort and store Southcentral Idaho Russet Burbank potatoes with fumigation based on both field-run and paid yield.

<table>
<thead>
<tr>
<th></th>
<th>Storage Costs</th>
<th>Field Run Cost per Cwt</th>
<th>Paid Yield Cost per Cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field-Run Yield</td>
<td></td>
<td>470.00</td>
<td></td>
</tr>
<tr>
<td>Paid Yield %</td>
<td>90%</td>
<td>423.0</td>
<td></td>
</tr>
<tr>
<td><strong>Base Cost to Grow, Harvest &amp; Sort</strong></td>
<td></td>
<td>$6.88</td>
<td>$7.65</td>
</tr>
<tr>
<td>Storage System Annual Ownership Costs</td>
<td>$0.380</td>
<td>$0.380</td>
<td>$0.422</td>
</tr>
<tr>
<td>Base Cost + Storage Ownership Costs</td>
<td></td>
<td>$7.26</td>
<td>$8.07</td>
</tr>
<tr>
<td>Storage System Annual Repairs</td>
<td>$0.043</td>
<td>$0.043</td>
<td>$0.048</td>
</tr>
<tr>
<td>Base + Storage System Ownership &amp; Repairs</td>
<td></td>
<td>$7.30</td>
<td>$8.12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Cumulative Storage Op. Costs</th>
<th>Cumulative Base + All Storage Costs</th>
<th>Cumulative Base + All Storage Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>$0.231</td>
<td>$7.53</td>
<td>$8.37</td>
</tr>
<tr>
<td>November*</td>
<td>$0.421</td>
<td>$7.73</td>
<td>$8.58</td>
</tr>
<tr>
<td>December</td>
<td>$0.518</td>
<td>$7.82</td>
<td>$8.69</td>
</tr>
<tr>
<td>January</td>
<td>$0.614</td>
<td>$7.92</td>
<td>$8.80</td>
</tr>
<tr>
<td><strong>February</strong></td>
<td>$0.709</td>
<td><strong>$8.01</strong></td>
<td>$8.90</td>
</tr>
<tr>
<td>March</td>
<td>$0.805</td>
<td>$8.11</td>
<td>$9.01</td>
</tr>
<tr>
<td>April</td>
<td>$1.014</td>
<td>$8.32</td>
<td>$9.24</td>
</tr>
<tr>
<td>May</td>
<td>$1.132</td>
<td>$8.44</td>
<td>$9.37</td>
</tr>
<tr>
<td>June</td>
<td>$1.268</td>
<td>$8.57</td>
<td>$9.52</td>
</tr>
</tbody>
</table>

* Indicates month when sprout inhibitor applied.

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

Storage system includes: storage facility, air system, and the equipment used to place.

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

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

Cumulative storage operating expenses are calculated to the end of the month.
Appendix C
Eastern Idaho Southern Region
Irrigated Russet Burbank Potato
Fumigated
### Table C-1. 2018 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes with fumigation.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Cost</th>
<th>Value or Cost/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Returns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td>420.00</td>
<td>cwt</td>
<td>6.75</td>
<td>$2,835.00</td>
</tr>
<tr>
<td><strong>Total Gross Returns</strong></td>
<td></td>
<td></td>
<td></td>
<td>$2,835.00</td>
</tr>
<tr>
<td><strong>Operating Inputs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-3 Russet Burbank Seed</td>
<td>21.00</td>
<td>cwt</td>
<td>11.95</td>
<td>250.95</td>
</tr>
<tr>
<td>Seed Cutting</td>
<td>21.00</td>
<td>cwt</td>
<td>1.85</td>
<td>38.85</td>
</tr>
<tr>
<td><strong>Fertilizer:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry Nitrogen - Preplant</td>
<td>140.00</td>
<td>lb</td>
<td>0.41</td>
<td>57.40</td>
</tr>
<tr>
<td>Dry P2O5</td>
<td>185.00</td>
<td>lb</td>
<td>0.43</td>
<td>79.55</td>
</tr>
<tr>
<td>K2O</td>
<td>215.00</td>
<td>lb</td>
<td>0.32</td>
<td>68.80</td>
</tr>
<tr>
<td><strong>Sulfur</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Liquid Nitrogen</strong></td>
<td>120.00</td>
<td>lb</td>
<td>0.49</td>
<td>58.80</td>
</tr>
<tr>
<td><strong>Micronutrients-Humic Acid - CP</strong></td>
<td>1.00</td>
<td>acre</td>
<td>32.00</td>
<td>32.00</td>
</tr>
<tr>
<td><strong>Pesticides &amp; Chemicals:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metam CLR (42%)</td>
<td>40.00</td>
<td>gal</td>
<td>5.23</td>
<td>209.20</td>
</tr>
<tr>
<td>Seed Treatment</td>
<td>21.00</td>
<td>cwt</td>
<td>0.70</td>
<td>14.70</td>
</tr>
<tr>
<td><strong>Seed Crop Inputs:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Crop Insurance</strong></td>
<td>1.00</td>
<td>acre</td>
<td>80.00</td>
<td>80.00</td>
</tr>
<tr>
<td>Fees &amp; Assessments</td>
<td>378.00</td>
<td>cwt</td>
<td>0.18</td>
<td>68.04</td>
</tr>
<tr>
<td><strong>Operating Costs per Unit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Operating Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td>$1,898.22</td>
</tr>
<tr>
<td><strong>Operating Costs Above Operating Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td>$4,32</td>
</tr>
<tr>
<td><strong>Net Returns Above Operating Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td>$936.78</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2017</th>
<th>Yield Change</th>
<th>$ Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>420</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
</tbody>
</table>
Table C-1. 2018 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes with fumigation.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Price or Value or Cost/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractors &amp; Equipment Insurance</td>
<td>5.55</td>
<td>5.40 $0.15 2.8%</td>
</tr>
<tr>
<td>Tractors &amp; Equipment Depreciation &amp; Interest</td>
<td>184.00</td>
<td>178.00 $6.00 3.4%</td>
</tr>
<tr>
<td>Potato Handling Equipment Deprec. &amp; Interest</td>
<td>66.00</td>
<td>64.00 $2.00 3.1%</td>
</tr>
<tr>
<td>Land*</td>
<td>535.00</td>
<td>535.00 $0.00 0.0%</td>
</tr>
<tr>
<td>Overhead</td>
<td>47.00</td>
<td>46.00 $1.00 2.2%</td>
</tr>
<tr>
<td>Management Fee</td>
<td>144.00</td>
<td>141.00 $3.00 2.1%</td>
</tr>
</tbody>
</table>

Total Ownership Costs: $981.55 969.40 $12.15 1.3%
Ownership Costs per Unit: $2.34 2.31 $0.03 1.3%
Total Costs per Acre: $2,879.77 2,821.45 $58.32 2.1%
Total Cost per Unit: $6.86 6.72 $0.14 2.1%
Returns to Risk: -$44.77 328.55

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

Breakeven Analysis:

<table>
<thead>
<tr>
<th>Breakeven Analysis</th>
<th>- Base</th>
<th>+ 5%</th>
<th>+ 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>399</td>
<td>420</td>
<td>441</td>
</tr>
<tr>
<td>Operating Cost Breakeven</td>
<td>$4.76</td>
<td>$4.52</td>
<td>$4.30</td>
</tr>
<tr>
<td>Ownership Cost Breakeven</td>
<td>$2.46</td>
<td>$2.34</td>
<td>$2.23</td>
</tr>
<tr>
<td>Total Cost Breakeven</td>
<td>$7.22</td>
<td>$6.86</td>
<td>$6.53</td>
</tr>
</tbody>
</table>

| Yield             | $6.41  | $6.75 | $7.09 |
| Operating Cost Breakeven | 296.0  | 281.2 | 267.8 |
| Ownership Cost Breakeven | 153.1  | 145.4 | 138.5 |
| Total Cost Breakeven | 449.1  | 426.6 | 406.3 |
Table C-2. 2017 Cost per cwt to grow, harvest, sort and store Eastern Idaho Southern region Russet Burbank potatoes with fumigation based on both field-run and paid yield.

<table>
<thead>
<tr>
<th></th>
<th>Storage Costs</th>
<th>Field Run Cost per Cwt</th>
<th>Paid Yield Cost per Cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field-Run Yield</td>
<td></td>
<td>420.00</td>
<td></td>
</tr>
<tr>
<td>Paid Yield %</td>
<td>90%</td>
<td>378.0</td>
<td></td>
</tr>
</tbody>
</table>

**Base Cost to Grow, Harvest & Sort**

<table>
<thead>
<tr>
<th>Description</th>
<th>Field Run Cost per Cwt</th>
<th>Paid Yield Cost per Cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage System Annual Ownership Costs</td>
<td>$0.380</td>
<td>$0.380</td>
</tr>
<tr>
<td>Base Cost + Storage Ownership Costs</td>
<td>$7.24</td>
<td>$8.04</td>
</tr>
<tr>
<td>Storage System Annual Repairs</td>
<td>$0.043</td>
<td>$0.043</td>
</tr>
<tr>
<td>Base + Storage System Ownership &amp; Repairs</td>
<td>$7.28</td>
<td>$8.09</td>
</tr>
</tbody>
</table>

**Cumulative Storage Operating Costs**

<table>
<thead>
<tr>
<th>Month</th>
<th>Storage Op. Costs</th>
<th>Cumulative Base + All Storage Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>$0.237</td>
<td>$7.52</td>
</tr>
<tr>
<td>November*</td>
<td>$0.432</td>
<td>$7.71</td>
</tr>
<tr>
<td>December</td>
<td>$0.531</td>
<td>$7.81</td>
</tr>
<tr>
<td>January</td>
<td>$0.629</td>
<td>$7.91</td>
</tr>
<tr>
<td><strong>February</strong></td>
<td>$0.729</td>
<td><strong>$8.01</strong></td>
</tr>
<tr>
<td>March</td>
<td>$0.827</td>
<td>$8.11</td>
</tr>
<tr>
<td>April</td>
<td>$1.041</td>
<td>$8.32</td>
</tr>
<tr>
<td>May</td>
<td>$1.162</td>
<td>$8.44</td>
</tr>
<tr>
<td>June</td>
<td>$1.303</td>
<td>$8.58</td>
</tr>
</tbody>
</table>

* Indicates month when sprout inhibitor applied.

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

Storage system includes: storage facility, air system, and the equipment used to place.

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

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

Cumulative storage operating expenses are calculated to the end of the month.
Appendix D
Southcentral Idaho
Irrigated Russet Burbank Potato
Non-Fumigated
Table D-1. 2018 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Value</th>
<th>Cost/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Returns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td>420.00</td>
<td>cwt</td>
<td>6.75</td>
<td>$2,835.00</td>
</tr>
<tr>
<td><strong>Total Gross Returns</strong></td>
<td></td>
<td></td>
<td></td>
<td>$2,835.00</td>
</tr>
<tr>
<td><strong>Operating Inputs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed:</td>
<td></td>
<td></td>
<td>$328.90</td>
<td></td>
</tr>
<tr>
<td>G-3 Russet Burbank Seed</td>
<td>23.00</td>
<td>cwt</td>
<td>12.45</td>
<td>286.35</td>
</tr>
<tr>
<td>Seed Cutting</td>
<td>23.00</td>
<td>cwt</td>
<td>1.85</td>
<td>42.55</td>
</tr>
<tr>
<td><strong>Fertilizer:</strong></td>
<td></td>
<td></td>
<td>$353.00</td>
<td></td>
</tr>
<tr>
<td>Dry Nitrogen - Preplant</td>
<td>155.00</td>
<td>lb</td>
<td>0.41</td>
<td>63.55</td>
</tr>
<tr>
<td>Dry P2O5</td>
<td>205.00</td>
<td>lb</td>
<td>0.43</td>
<td>88.15</td>
</tr>
<tr>
<td>K2O</td>
<td>215.00</td>
<td>lb</td>
<td>0.32</td>
<td>68.80</td>
</tr>
<tr>
<td>Sulfur</td>
<td>85.00</td>
<td>lb</td>
<td>0.23</td>
<td>19.55</td>
</tr>
<tr>
<td>Liquid Nitrogen</td>
<td>105.00</td>
<td>lb</td>
<td>0.49</td>
<td>51.45</td>
</tr>
<tr>
<td>Liquid P2O5</td>
<td>35.00</td>
<td>lb</td>
<td>0.50</td>
<td>17.50</td>
</tr>
<tr>
<td>Micronutrients &amp; Folars</td>
<td>2.00</td>
<td>acre</td>
<td>22.00</td>
<td>44.00</td>
</tr>
<tr>
<td><strong>Pesticides &amp; Chemicals:</strong></td>
<td></td>
<td></td>
<td>$281.75</td>
<td></td>
</tr>
<tr>
<td>Seed Treatment</td>
<td>23.00</td>
<td>cwt</td>
<td>0.70</td>
<td>16.10</td>
</tr>
<tr>
<td>Adime Pro</td>
<td>8.00</td>
<td>oz</td>
<td>1.44</td>
<td>11.52</td>
</tr>
<tr>
<td>Quadris Fl owable</td>
<td>8.00</td>
<td>fl oz</td>
<td>1.25</td>
<td>10.00</td>
</tr>
<tr>
<td>Outlook 6EC</td>
<td>20.00</td>
<td>fl oz</td>
<td>1.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Prowl H2O</td>
<td>2.00</td>
<td>pt</td>
<td>5.70</td>
<td>11.40</td>
</tr>
<tr>
<td>Metribuzin 75DF</td>
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<td>13.25</td>
<td>9.94</td>
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<tr>
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<td>5.50</td>
<td>oz</td>
<td>4.25</td>
<td>23.38</td>
</tr>
<tr>
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<td>qt</td>
<td>8.75</td>
<td>32.81</td>
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<tr>
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<td>17.90</td>
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<td>Regione</td>
<td>2.00</td>
<td>pt</td>
<td>8.45</td>
<td>16.90</td>
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<td><strong>Custom &amp; Consultants:</strong></td>
<td></td>
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<td>$85.00</td>
<td></td>
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<tr>
<td>Custom Fertilize: 400 - 800 lbs</td>
<td>1.00</td>
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<td>8.00</td>
<td>8.00</td>
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<td>7.00</td>
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<td>Interest on Operating Capital at 6.75%</td>
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<td>51.73</td>
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<td>11.0%</td>
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<td>Operating Costs per Unit</td>
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<td>Price or Value or Item</td>
<td>Per Acre</td>
<td>Unit Cost</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-------------------</td>
<td>------------------------</td>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
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<td></td>
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<td>5.90</td>
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<tr>
<td>Tractors &amp; Equipment Insurance</td>
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<td>Land*</td>
<td>66.00</td>
<td>64.00</td>
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<td>3.1%</td>
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<td>Overhead</td>
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<td>625.00</td>
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<td>Management Fee</td>
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<td>42.00</td>
<td>2.00</td>
<td>4.8%</td>
</tr>
<tr>
<td></td>
<td>143.00</td>
<td>139.00</td>
<td>4.00</td>
<td>2.9%</td>
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<tr>
<td><strong>Total Ownership Costs</strong></td>
<td><strong>$1,106.90</strong></td>
<td><strong>1,067.75</strong></td>
<td><strong>$39.15</strong></td>
<td><strong>3.7%</strong></td>
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<tr>
<td>Ownership Costs per Unit</td>
<td><strong>$2.64</strong></td>
<td><strong>2.54</strong></td>
<td><strong>$0.09</strong></td>
<td><strong>3.7%</strong></td>
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<td><strong>Total Costs per Acre</strong></td>
<td><strong>$2,865.44</strong></td>
<td><strong>2,791.41</strong></td>
<td><strong>$74.03</strong></td>
<td><strong>2.7%</strong></td>
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<tr>
<td><strong>Total Cost per Unit</strong></td>
<td><strong>$6.82</strong></td>
<td><strong>6.65</strong></td>
<td><strong>$0.18</strong></td>
<td><strong>2.7%</strong></td>
</tr>
<tr>
<td><strong>Returns to Risk</strong></td>
<td>-$30.44</td>
<td>358.59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Breakeven Analysis:</th>
<th>- 5%</th>
<th>Base</th>
<th>+ 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
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<td>420</td>
<td>441</td>
</tr>
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<td>Operating Cost Breakeven</td>
<td>$4.41</td>
<td>$4.19</td>
<td>$3.99</td>
</tr>
<tr>
<td>Ownership Cost Breakeven</td>
<td>$2.77</td>
<td>$2.64</td>
<td>$2.51</td>
</tr>
<tr>
<td>Total Cost Breakeven</td>
<td>$7.18</td>
<td>$6.82</td>
<td>$6.50</td>
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</table>

<table>
<thead>
<tr>
<th>Yield</th>
<th>$6.41</th>
<th>$6.75</th>
<th>$7.09</th>
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</thead>
<tbody>
<tr>
<td>Operating Cost Breakeven</td>
<td>274.2</td>
<td>260.5</td>
<td>248.1</td>
</tr>
<tr>
<td>Ownership Cost Breakeven</td>
<td>172.6</td>
<td>164.0</td>
<td>156.2</td>
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<tr>
<td>Total Cost Breakeven</td>
<td>446.9</td>
<td>424.5</td>
<td>404.3</td>
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</table>
Table D-2. 2017 Cost per cwt to grow, harvest, sort and store Southcentral Idaho Russet Burbank potatoes based on both field-run and paid yield.

<table>
<thead>
<tr>
<th></th>
<th>Storage Costs</th>
<th>Field Run Cost per Cwt</th>
<th>Paid Yield Cost per Cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field-Run Yield</td>
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<td>420.00</td>
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</tr>
<tr>
<td>Paid Yield %</td>
<td>90%</td>
<td></td>
<td>378.0</td>
</tr>
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<td><strong>Base Cost to Grow, Harvest &amp; Sort</strong></td>
<td></td>
<td>$6.82</td>
<td>$7.58</td>
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<tr>
<td>Storage System Annual Ownership Costs</td>
<td>$0.380</td>
<td>$0.380</td>
<td>$0.422</td>
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<tr>
<td>Base Cost + Storage Ownership Costs</td>
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<td>$7.20</td>
<td>$8.00</td>
</tr>
<tr>
<td>Storage System Annual Repairs</td>
<td>$0.043</td>
<td>$0.043</td>
<td>$0.048</td>
</tr>
<tr>
<td><strong>Base + Storage System Ownership &amp; Repairs</strong></td>
<td></td>
<td>$7.25</td>
<td>$8.05</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Cumulative Storage Op. Costs</th>
<th>Cumulative Base + All Storage Costs</th>
<th>Cumulative Base + All Storage Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>$0.231</td>
<td>$7.48</td>
<td>$8.31</td>
</tr>
<tr>
<td>November*</td>
<td>$0.421</td>
<td>$7.67</td>
<td>$8.52</td>
</tr>
<tr>
<td>December</td>
<td>$0.518</td>
<td>$7.76</td>
<td>$8.63</td>
</tr>
<tr>
<td>January</td>
<td>$0.614</td>
<td>$7.86</td>
<td>$8.73</td>
</tr>
<tr>
<td><strong>February</strong></td>
<td>$0.709</td>
<td><strong>$7.95</strong></td>
<td><strong>$8.84</strong></td>
</tr>
<tr>
<td>March</td>
<td>$0.805</td>
<td>$8.05</td>
<td>$8.94</td>
</tr>
<tr>
<td>April</td>
<td>$1.014</td>
<td>$8.26</td>
<td>$9.18</td>
</tr>
<tr>
<td>May</td>
<td>$1.132</td>
<td>$8.38</td>
<td>$9.31</td>
</tr>
<tr>
<td>June</td>
<td>$1.268</td>
<td>$8.51</td>
<td>$9.46</td>
</tr>
</tbody>
</table>

* Indicates month when sprout inhibitor applied.

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

Storage system includes: storage facility, air system, and the equipment used to place.

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

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

Cumulative storage operating expenses are calculated to the end of the month.
Appendix E
Eastern Idaho Southern Region
Irrigated Russet Burbank Potato
Non-Fumigated
Table E-1. 2018 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Value</th>
<th>Value or Cost/Acre</th>
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</thead>
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<td>Total Gross Returns</td>
<td></td>
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<td>$2,598.75</td>
</tr>
<tr>
<td>Operating Inputs</td>
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<tr>
<td>Seed:</td>
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</tr>
<tr>
<td>G-3 Russet Burbank Seed</td>
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<td>cwt</td>
<td>11.95</td>
<td>250.95</td>
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<td>Seed Cutting</td>
<td>21.00</td>
<td>cwt</td>
<td>1.85</td>
<td>38.35</td>
</tr>
<tr>
<td>Fertilizer:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dry Nitrogen - Preplant</td>
<td>135.00</td>
<td>lb</td>
<td>0.41</td>
<td>55.35</td>
</tr>
<tr>
<td>Dry P2O5</td>
<td>160.00</td>
<td>lb</td>
<td>0.43</td>
<td>68.80</td>
</tr>
<tr>
<td>K2O</td>
<td>195.00</td>
<td>lb</td>
<td>0.32</td>
<td>62.40</td>
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<tr>
<td>Sulfur</td>
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<td>lb</td>
<td>0.23</td>
<td>19.55</td>
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<tr>
<td>Liquid Nitrogen</td>
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<td>49.00</td>
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<td>28.00</td>
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<td>lb</td>
<td>8.95</td>
<td>17.90</td>
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<td>Agri-Mek 75SC</td>
<td>3.50</td>
<td>fl oz</td>
<td>2.50</td>
<td>8.75</td>
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<tr>
<td>Brigadier</td>
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<td>fl oz</td>
<td>1.35</td>
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<td>Reglone</td>
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<td>8.00</td>
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<td>7.00</td>
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<td>38.00</td>
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<tr>
<td>Irrigation Repairs - Center Pivot</td>
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<td>acre-inch</td>
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<td>12.96</td>
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<td></td>
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</tr>
<tr>
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<td>13.79</td>
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<td>2.80</td>
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<td>$</td>
<td>56.05</td>
<td>56.05</td>
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<tr>
<td>Labor:</td>
<td></td>
<td></td>
<td></td>
<td>$176.82</td>
</tr>
<tr>
<td>Equipment Operator Labor</td>
<td>3.88</td>
<td>hrs</td>
<td>21.10</td>
<td>81.76</td>
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<td>Truck Driver Labor</td>
<td>1.86</td>
<td>hrs</td>
<td>16.45</td>
<td>30.60</td>
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<td>Irrigation Labor - Center Pivot</td>
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<tr>
<td>Irrigation Labor - Chem-Fert</td>
<td>0.80</td>
<td>hrs</td>
<td>21.10</td>
<td>16.88</td>
</tr>
<tr>
<td>General Farm Labor</td>
<td>2.24</td>
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<td>27.22</td>
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<td>$62.37</td>
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<tr>
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<td>cwt</td>
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<td>48.51</td>
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<td>Sorting Equipment Repairs &amp; Power</td>
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<td>cwt</td>
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<td>13.86</td>
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<td>Crop Insurance</td>
<td>1.00</td>
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<td>80.00</td>
<td>80.00</td>
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<td>Fees &amp; Assessments</td>
<td>347.00</td>
<td>cwt</td>
<td>0.18</td>
<td>62.46</td>
</tr>
<tr>
<td>Interest on Operating Capital at 6.75%</td>
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<td></td>
<td></td>
<td>$1.65</td>
</tr>
<tr>
<td>Total Operating Costs</td>
<td></td>
<td></td>
<td></td>
<td>$1,581.19</td>
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<tr>
<td>Operating Costs per Unit</td>
<td></td>
<td></td>
<td></td>
<td>$4.11</td>
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<tr>
<td>Net Returns Above Operating Costs</td>
<td></td>
<td></td>
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Table E-1. 2018 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Value</th>
<th>Cost/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership Costs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tractors &amp; Equipment Insurance</td>
<td>5.50</td>
<td></td>
<td>5.35</td>
<td>$0.15</td>
</tr>
<tr>
<td>Tractors &amp; Equipment Depreciation &amp; Interest</td>
<td>182.00</td>
<td></td>
<td>176.00</td>
<td>$6.00</td>
</tr>
<tr>
<td>Potato Handling Equipment Deprec. &amp; Interest</td>
<td>60.00</td>
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<td>58.00</td>
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</tr>
<tr>
<td>Land*</td>
<td>535.00</td>
<td></td>
<td>535.00</td>
<td>$0.00</td>
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<tr>
<td>Overhead</td>
<td>40.00</td>
<td></td>
<td>39.00</td>
<td>$1.00</td>
</tr>
<tr>
<td>Management Fee</td>
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<td>124.00</td>
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<td><strong>Total Ownership Costs</strong></td>
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<td><strong>$937.35</strong></td>
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<td><strong>Ownership Costs per Unit</strong></td>
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<td></td>
<td><strong>2.47</strong></td>
<td><strong>$0.00</strong></td>
</tr>
<tr>
<td><strong>Total Costs per Acre</strong></td>
<td><strong>$2,529.69</strong></td>
<td></td>
<td><strong>2,490.28</strong></td>
<td><strong>$39.41</strong></td>
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<td><strong>Total Cost per Unit</strong></td>
<td><strong>$6.57</strong></td>
<td></td>
<td><strong>6.55</strong></td>
<td><strong>$0.02</strong></td>
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<tr>
<td><strong>Returns to Risk</strong></td>
<td><strong>$69.06</strong></td>
<td></td>
<td><strong>359.72</strong></td>
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</table>

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

Breakeven Analysis:

<table>
<thead>
<tr>
<th></th>
<th>Price</th>
<th>Yield</th>
<th>Base</th>
<th>+</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>365.75</td>
<td>385</td>
<td>404.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Cost Breakeven</td>
<td>$4.32</td>
<td>$4.11</td>
<td>$3.91</td>
<td></td>
<td></td>
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<tr>
<td>Ownership Cost Breakeven</td>
<td>$2.59</td>
<td>$2.46</td>
<td>$2.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Cost Breakeven</td>
<td>$6.92</td>
<td>$6.57</td>
<td>$6.26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Price $6.41 $6.75 $7.09
- Yield 246.6 234.3 223.1
- Operating Cost Breakeven 147.9 140.5 133.8
- Ownership Cost Breakeven 394.5 374.8 356.9
Table E-2. 2017 Cost per cwt to grow, harvest, sort and store Eastern Idaho Southern region Russet Burbank potatoes based on both field-run and paid yield.

<table>
<thead>
<tr>
<th></th>
<th>Storage Costs</th>
<th>Field Run Cost per Cwt</th>
<th>Paid Yield Cost per Cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field-Run Yield</td>
<td></td>
<td>385.00</td>
<td></td>
</tr>
<tr>
<td>Paid Yield %</td>
<td>90%</td>
<td></td>
<td>346.5</td>
</tr>
<tr>
<td><strong>Base Cost to Grow, Harvest &amp; Sort</strong></td>
<td></td>
<td>$6.57</td>
<td>$7.30</td>
</tr>
<tr>
<td>Storage System Annual Ownership Costs</td>
<td>$0.380</td>
<td>$0.380</td>
<td>$0.422</td>
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<tr>
<td>Base Cost + Storage Ownership Costs</td>
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<td>$6.95</td>
<td>$7.72</td>
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<tr>
<td>Storage System Annual Repairs</td>
<td>$0.043</td>
<td>$0.043</td>
<td>$0.048</td>
</tr>
<tr>
<td>Base + Storage System Ownership &amp; Repairs</td>
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<td>$6.99</td>
<td>$7.77</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Cumulative Storage Op. Costs</th>
<th>Cumulative Base + All Storage Costs</th>
<th>Cumulative Base + All Storage Costs</th>
</tr>
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<tbody>
<tr>
<td>October</td>
<td>$0.237</td>
<td>$7.23</td>
<td>$8.03</td>
</tr>
<tr>
<td>November*</td>
<td>$0.432</td>
<td>$7.43</td>
<td>$8.25</td>
</tr>
<tr>
<td>December</td>
<td>$0.531</td>
<td>$7.52</td>
<td>$8.36</td>
</tr>
<tr>
<td>January</td>
<td>$0.629</td>
<td>$7.62</td>
<td>$8.47</td>
</tr>
<tr>
<td><strong>February</strong></td>
<td>$0.729</td>
<td>$7.72</td>
<td>$8.58</td>
</tr>
<tr>
<td>March</td>
<td>$0.827</td>
<td>$7.82</td>
<td>$8.69</td>
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<tr>
<td>April</td>
<td>$1.041</td>
<td>$8.03</td>
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</tr>
<tr>
<td>May</td>
<td>$1.162</td>
<td>$8.16</td>
<td>$9.06</td>
</tr>
<tr>
<td>June</td>
<td>$1.303</td>
<td>$8.30</td>
<td>$9.22</td>
</tr>
</tbody>
</table>

* Indicates month when sprout inhibitor applied.

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

Storage system includes: storage facility, air system, and the equipment used to place.

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

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

Cumulative storage operating expenses are calculated to the end of the month.
Appendix F
Eastern Idaho Northern Region
Irrigated Russet Burbank Potato
Non-Fumigated
Table F-1. 2018 Costs to grow, harvest and sort Eastern Idaho Northern region Russet Burbank potatoes.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Value or Cost/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Returns</strong></td>
<td></td>
<td></td>
<td>$$2,372.50$$</td>
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<tr>
<td>Potatoes</td>
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<td>cwt</td>
<td>6.50</td>
</tr>
<tr>
<td><strong>Total Gross Returns</strong></td>
<td></td>
<td></td>
<td>$$2,372.50$$</td>
</tr>
<tr>
<td><strong>Operating Inputs</strong></td>
<td></td>
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<tr>
<td>Seed:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>G-3 Russet Burbank Seed</td>
<td>21.00</td>
<td>cwt</td>
<td>11.50</td>
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<td>Seed Cutting</td>
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<td>cwt</td>
<td>38.85</td>
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<td><strong>Fertilizer:</strong></td>
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<tr>
<td>Dry Nitrogen - Preplant</td>
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<td>0.41</td>
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<tr>
<td>Dry P2O5</td>
<td>155.00</td>
<td>lb</td>
<td>0.43</td>
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<tr>
<td>K2O</td>
<td>160.00</td>
<td>lb</td>
<td>0.32</td>
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<tr>
<td>Sulfur</td>
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<td>lb</td>
<td>0.23</td>
</tr>
<tr>
<td>Liquid Nitrogen</td>
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<td>0.49</td>
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<tr>
<td>Liquid P2O5</td>
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<td>lb</td>
<td>0.50</td>
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<tr>
<td>Micronutrients-Humic Acid - CP</td>
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<td>acre</td>
<td>40.00</td>
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<td><strong>Pesticides &amp; Chemicals:</strong></td>
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<tr>
<td>Seed Treatment</td>
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<td>cwt</td>
<td>0.70</td>
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<tr>
<td>Admire Pro</td>
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<td>fl oz</td>
<td>1.44</td>
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<tr>
<td>Regent 4SC</td>
<td>3.20</td>
<td>fl oz</td>
<td>9.23</td>
</tr>
<tr>
<td>Metribuzin 75DF</td>
<td>0.75</td>
<td>lb</td>
<td>13.25</td>
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<td>Outlook 8EC</td>
<td>18.00</td>
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<td>Prowl H2O</td>
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<td>Quadris Flowable</td>
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<td>Bravo Weather Silk</td>
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<tr>
<td>Endura</td>
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<td>oz</td>
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<td>Dithane F45 Rainsheld</td>
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<tr>
<td>Revus Top</td>
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<td>Brigadier</td>
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<td>fl oz</td>
<td>1.35</td>
</tr>
<tr>
<td>Fulfill WDG</td>
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<td>fl oz</td>
<td>6.50</td>
</tr>
<tr>
<td>Reglone</td>
<td>2.00</td>
<td>pt</td>
<td>8.45</td>
</tr>
<tr>
<td><strong>Custom &amp; Consultants:</strong></td>
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<td>Custom Fertilize: 400 - 800 lbs</td>
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<td>8.00</td>
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<tr>
<td>Custom Fertilize: 0 - 400 lbs</td>
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<td>7.00</td>
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<tr>
<td>Custom Air Spray - 5.0 gal</td>
<td>2.00</td>
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<td>Water Assessment</td>
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<td>acre</td>
<td>12.75</td>
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<td>Irrigation Repairs - Center Pivot</td>
<td>23.00</td>
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<td>Irrigation Power - Center Pivot</td>
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<td>Fuel - Gas</td>
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<td>Fuel - Farm Diesel</td>
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<td>Fuel - Road Diesel</td>
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<tr>
<td>Lube</td>
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<td>10.86</td>
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<tr>
<td>Machinery Repairs</td>
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<tr>
<td><strong>Labor:</strong></td>
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<td>4.03</td>
<td>hrs</td>
<td>21.10</td>
</tr>
<tr>
<td>Truck Driver Labor</td>
<td>1.86</td>
<td>hrs</td>
<td>16.45</td>
</tr>
<tr>
<td>Irrigation Labor - Center Pivot</td>
<td>0.92</td>
<td>hrs</td>
<td>21.10</td>
</tr>
<tr>
<td>Irrigation Labor - Chem-Fert</td>
<td>0.76</td>
<td>hrs</td>
<td>21.10</td>
</tr>
<tr>
<td>General Farm Labor</td>
<td>2.27</td>
<td>hrs</td>
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<tr>
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<tr>
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</tr>
<tr>
<td>Sorting Equipment Repairs &amp; Power</td>
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<td>cwt</td>
<td>0.036</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
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<td>Fees &amp; Assessments</td>
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<td><strong>Total Operating Costs</strong></td>
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<td>Operating Costs per Unit</td>
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</tr>
<tr>
<td>Net Returns Above Operating Costs</td>
<td></td>
<td></td>
<td>$$865.60$$</td>
</tr>
</tbody>
</table>
Table F-1. 2018 Costs to grow, harvest and sort Eastern Idaho Northern region Russet Burbank potatoes.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Value</th>
<th>Item</th>
<th>Quantity Per Acre</th>
<th>Unit</th>
<th>Price or Value</th>
</tr>
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<tbody>
<tr>
<td>Ownership Costs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Tractors &amp; Equipment Insurance</td>
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<tr>
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<td>Potato Handling Equipment Deprec. &amp; Interest</td>
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<td>3.7%</td>
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</tr>
<tr>
<td>Land*</td>
<td>440.00</td>
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<td>440.00</td>
<td>$0.00</td>
<td>0.0%</td>
<td></td>
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</tr>
<tr>
<td>Overhead</td>
<td>38.00</td>
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<td>4.1%</td>
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<tr>
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<td></td>
<td>838.50</td>
<td>826.35</td>
<td>$12.15</td>
<td>1.5%</td>
<td></td>
</tr>
<tr>
<td>Ownership Costs per Unit</td>
<td></td>
<td></td>
<td>$22.30</td>
<td>2.26</td>
<td>$0.03</td>
<td>1.5%</td>
<td></td>
</tr>
<tr>
<td>Total Costs per Acre</td>
<td></td>
<td></td>
<td>$2,345.40</td>
<td>2,302.24</td>
<td>$43.16</td>
<td>1.9%</td>
<td></td>
</tr>
<tr>
<td>Total Cost per Unit</td>
<td></td>
<td></td>
<td>$6.43</td>
<td>6.31</td>
<td>$0.12</td>
<td>1.9%</td>
<td></td>
</tr>
<tr>
<td>Returns to Risk</td>
<td></td>
<td></td>
<td>$27.10</td>
<td>344.01</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Breakeven Analysis:

<table>
<thead>
<tr>
<th>Price Breakeven</th>
<th>5% Base</th>
<th>5% Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Cost</td>
<td>$4.35</td>
<td>$4.13</td>
</tr>
<tr>
<td>Ownership Cost</td>
<td>$2.42</td>
<td>$2.30</td>
</tr>
<tr>
<td>Total Cost</td>
<td>$6.76</td>
<td>$6.43</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Price Breakeven</th>
<th>$6.18</th>
<th>$6.50</th>
<th>$6.83</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Cost</td>
<td>244.0</td>
<td>231.8</td>
<td>220.8</td>
</tr>
<tr>
<td>Ownership Cost</td>
<td>135.8</td>
<td>129.0</td>
<td>122.9</td>
</tr>
<tr>
<td>Total Cost</td>
<td>379.8</td>
<td>360.8</td>
<td>343.6</td>
</tr>
</tbody>
</table>
Table F-2. 2017 Cost per cwt to grow, harvest, sort and store Eastern Idaho Northern region Russet Burbank potatoes based on both field-run and paid yield.

<table>
<thead>
<tr>
<th></th>
<th>Storage Costs</th>
<th>Field Run Cost per Cwt</th>
<th>Paid Yield Cost per Cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field-Run Yield</td>
<td>365.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paid Yield %</td>
<td>90%</td>
<td>328.5</td>
<td></td>
</tr>
<tr>
<td><strong>Base Cost to Grow, Harvest &amp; Sort</strong></td>
<td></td>
<td>$6.43</td>
<td>$7.14</td>
</tr>
<tr>
<td>Storage System Annual Ownership Costs</td>
<td>$0.380</td>
<td>$0.380</td>
<td>$0.422</td>
</tr>
<tr>
<td>Base Cost + Storage Ownership Costs</td>
<td>$6.81</td>
<td></td>
<td>$7.56</td>
</tr>
<tr>
<td>Storage System Annual Repairs</td>
<td>$0.043</td>
<td>$0.043</td>
<td>$0.048</td>
</tr>
<tr>
<td>Base + Storage System Ownership &amp; Repairs</td>
<td>$6.85</td>
<td>$7.61</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Cumulative Storage Op. Costs</th>
<th>Cumulative Base + All Storage Costs</th>
<th>Cumulative Base + All Storage Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>$0.237</td>
<td>$7.09</td>
<td>$7.87</td>
</tr>
<tr>
<td>November*</td>
<td>$0.432</td>
<td>$7.28</td>
<td>$8.09</td>
</tr>
<tr>
<td>December</td>
<td>$0.531</td>
<td>$7.38</td>
<td>$8.20</td>
</tr>
<tr>
<td>January</td>
<td>$0.629</td>
<td>$7.48</td>
<td>$8.31</td>
</tr>
<tr>
<td><strong>February</strong></td>
<td>$0.729</td>
<td>$7.58</td>
<td>$8.42</td>
</tr>
<tr>
<td>March</td>
<td>$0.827</td>
<td>$7.68</td>
<td>$8.53</td>
</tr>
<tr>
<td>April</td>
<td>$1.041</td>
<td>$7.89</td>
<td>$8.77</td>
</tr>
<tr>
<td>May</td>
<td>$1.162</td>
<td>$8.01</td>
<td>$8.90</td>
</tr>
<tr>
<td>June</td>
<td>$1.303</td>
<td>$8.15</td>
<td>$9.06</td>
</tr>
</tbody>
</table>

* Indicates month when sprout inhibitor applied.

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

Storage system includes: storage facility, air system, and the equipment used to place.

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

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

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