

Cost of Onion Production in Idaho and Eastern Oregon 2021

General Procedure

A link to a survey of production practices is distributed to Idaho-Eastern Oregon Onion growers by the first week of December each year. Results from the anonymous survey are combined with information from crop consultants, ag supply companies, and extension personnel to develop a set of production practices for use in the annual cost of production estimates.

Preliminary hard copy cost of production reports are distributed to Idaho Eastern Oregon onion growers by mid-February of each year. Adjusting entries are recorded based on feedback from industry. Questions or comments pertaining to the report can be submitted to greenwayresearch@outlook.com. Final cost of production reports and downloadable spreadsheets are made available electronically in spring of each year.

The following adjustments were made after the IEO meeting in held in Feb of 2022:

- Field run budgets without storage costs were added to the cost of production documents for Idaho and Malheur County
- The sensitivity analyses at the bottom of the budgets were adjusted from a factor of 5% to a factor of 10%
- The packing charges were adjusted from \$3.50 per 50# sack to \$4.00 per 50# sack in Malheur County and Idaho
- The methodology used for collecting and reporting yield was put to discussion and is under review. Methodological changes that would help to capture more representative yields are being evaluated.

Yield Adjustments/Representative Yield Dilemma:

Difficult weather conditions in 2021 resulted in the need for yield adjustments. Typically, historical 3-year average yield estimates are used in the budgets. The field run yields are then adjusted to arrive at an estimate of marketable yields by size class. Since official yield estimates for the 2021 crop year were not released until mid-February of 2022 and the impacts of heat and haze were significant, I applied an **initial** 12% downward adjustment to the three-year historical average field run yield for each region. Additionally, I adjusted the size profile and percentage of culls to capture marketable yields more accurately. Yields were again adjusted following the release of USDA yield estimates. Final yields reported in the 2021 budget are based on the 2021 yields reported by the USDA and are discussed in detail in the yield and price considerations section of the budget. Regardless of yield source, the weather anomalies resulted in extreme variation atypical to the region. Marketable yields by size class were also adjusted following release of USDA data and are further discussed in the yield and price considerations section of the budget.

Procedural Changes from the 2020 to the 2021 production cycle

Direct comparisons with previously published estimates should not be made without accounting for differences in procedures, product use, and assumptions. A number of changes were made from 2020 to 2021. Separate budgets for Idaho and Malheur County were estimated for the 2021 production cycle and the budgets will be estimated separately in future years. This change is primarily for the purpose of properly capturing the difference in yields and labor costs between Idaho and Malheur County. USDA yield reports for Malheur County are applied to the Malheur County budget, Idaho yields reported by the USDA are reported in the Idaho budget. Cash land rents will also be region specific. Prices (Shipping point and field run) will remain pooled.

The percentage allocation to overhead costs (office expenses, accounting fees, and utilities) increased from 2.5% of total operating costs to 3% of total operating costs.

The 2021 budgets include an increase in the overall number of acres planted to onions in the model farm. In 2021, onion acres were increased by 25 and will continue to be added in increments of 25 acres each year until a more representative model farm is achieved. It is always my goal to accurately capture ownership costs in an economically efficient manner. Equipment that is under-utilized results high fixed costs, while equipment with too many hours of use results in unrealistically low ownership costs.

Other Changes

The use of hand weeding crews was up in 2021, the budget includes use of hand crews three times throughout the season at a cost of \$100 per acre. The overall number of insecticide applications was down in 2021 when compared to 2020. The 2020 budget estimated costs based on using a total of seven applications, in 2021 six applications were included in the budget, one application of Lannate was omitted.

Due to market uncertainty no equipment was replaced in 2020, instead the budget was adjusted to reflect higher repair costs characteristic of older machinery. In 2021, I replaced a fully depreciated tractor with a newer model used tractor of the same horsepower. All equipment values were brought up to market value using the USDA prices paid index and the repair factor was adjusted downward from the figure reported in 2020.

Objectives and Limitations

The goal of this project is to provide consistently calculated unbiased estimates of the cost of growing onions in Idaho and Malheur County and to provide industry stakeholders tools for estimating and understanding the costs incurred by onion producers. The first budget (Appendix A) is representative of Malheur County, is based on **marketable yields** and includes the cost of storage and packing. Appendix C is based on **marketable yields**, includes the cost of storage and packing and is representative of Idaho. Budgets represented in (Appendix B Malheur County, and Appendix D Idaho) are based on **field run yields** and **include the cost of storage** but omit packing charges. **As a result of industry feedback**

Appendix E (Field Run No Storage Malheur County) and Appendix F (Field Run No Storage Idaho) were added to the document and included as downloadable spreadsheets.

The estimates developed in this document are intended to capture typical production practices and input use of Treasure Valley onion growers but **cannot capture the exact cost structure and resource use of each individual farm**. Prices and yields used in these documents are based on **adjusted historical averages**. Practices outlined in this document are not endorsements or recommendations for any particular product or practice used in the production of onions. Farm size, **acres planted to onions**, equipment choice, rotation, irrigation practices, and management will vary and are unique to each individual operation.

Farm Size and Rotations

The costs and returns estimates for Treasure Valley onion production estimated in this document are based on a hypothetical 1,200 acre “model” farm. The hypothetical farm produces onions on 175 acres irrigated with a drip system designed for a “conventional” bed. In addition to onions, the model farm represented in this budget produces sugarbeets, dry beans, corn, and wheat. Choice of rotation crops and length of rotation will vary by producer, field conditions, and the whole farm plan.

Yield and Price Considerations

Yields vary based on soil type, variety, location, and weather. Yields used in the Malheur County field run budget (Appendix B and E) and the Idaho field run budget (Appendix D and F) are based on the 2021 yields reported by the United States Department of Agriculture National Agricultural Statistics Service (USDA-NASS). Yields reported by NASS for Malheur County were 695 cwt/acre. Reported yields for Idaho were 680 cwt/acre. Unusual growing conditions resulted in extreme variation in yields across the valley during the 2021 production cycle. **As a result, the average yields reported in the budget may deviate from actual yields on individual fields by a more significant degree than is typical.**

Marketable yields used in (Appendix A Malheur County) and (Appendix C Idaho) are calculated by adjusting the field run yields discussed above. Adjustments are based the assumption that on average in 2021, 5% of the crop graded in the super colossal size class, 10% of the crop graded in the colossal size class, 30% of the crop graded in the jumbo size class, 37% of the crop graded in the medium size class and 18% of the crop was culled.

Prices used in Appendix A are based on **season averages** from the USDA **Agricultural Marketing Service Market News Reports**. The simple average of weekly high and low (FOB prices) by size class for **50# sacks** of yellow onions shipped from Idaho and Malheur County Oregon from October of 2019 through December 2 of 2021 are reported under the price heading of the budget. Actual price received will depend on **timing of sales** and can deviate **above or below the simple average reported** in the budget. **When using this document, caution must be exercised to apply pricing that is representative and accurate to each individual operation being considered.**

Historical Three-year average (**2019-2021**) USDA-NASS marketing year average prices for Idaho and Malheur County Oregon reported in **dollars per hundredweight** are used as a proxy for a field run prices (Appendixes B D E F).

Seed

Seed costs will vary based on variety, seeding rate, treatment and coating applied. Seed costs were budgeted at \$603.90 per acre, up \$11.88 per acre (2%) when compared to the \$592.02 per acre estimate reported in 2020.

Fertilizer

Fertility needs will vary with location and soil type. Soil tests are required to determine precise nutrient needs for individual producers. The cost of soil testing in 2021 was budgeted at \$5 per acre, no change from the 2020 production cycle. Overall fertilizer requirements were estimated based on use of nitrogen, phosphorous, and potassium. A small allowance was made to capture the cost of micronutrients and/or use of sulfuric acid. The actual price paid in 2021 will vary by individual producer and will be highly dependent on the timing of the purchase. In 2021 total fertilizer costs were estimated to be about \$240.90 per acre, an increase of 18% when compared to the \$204.30 per acre budgeted for the 2020 crop year.

Plant Protection

Fumigation

The price of Vapam was budgeted at \$7.50 per gallon, a \$0.50 per gallon increase over the fall of 2020. Growers using Chloropicrin could expect to pay around \$80.00 per gallon no change from fall of 2020. Custom fumigation services were budgeted at \$45.00 per acre, no change in comparison to 2020. The custom application charge appears in the “Custom and Consultants” section of the budget.

Weed Control

Herbicides

In this budget, a combination of chemical applications, mechanical cultivation, and use of hand crews are assumed for suppression of weeds. A total of \$109.41 per acre was budgeted for herbicides in 2020. In 2021 herbicide costs were budgeted at \$101.54 per acre, the \$7.87 decrease is due to a drop in price of a commonly applied herbicide. Adjuvants represent an important consideration within the overall plant protection plan. The

cost of adjuvants will depend on the product used, the 2021 budget increases the cost of adjuvants by \$1.50 per pint and is found in the last line of the Plant Protection section of the budget.

Cultivating

In 2021 the onions were assumed to be cultivated 3 times for weed control, no change in comparison to the 2020 production cycle. Tractor hours and fuel use are estimated based on using a 160 horsepower (HP) wheel tractor and a 4 bed onion cultivator. Fuel, labor, and machinery costs for cultivating are accounted for and discussed in the "Machinery" and "Labor" sections of the budget.

Hand Weeding

The 2020 budget assumed hand weeding crews were used once during the 2020 growing season at a charge of \$120 per acre. The 2021 budget assumed use of hand crews three times throughout the growing season, at an estimated charge of \$100 per acre. Overall hand weeding costs were estimated \$180 per acre higher in 2021 when compared to 2020. The cost of hand crews for weeding appears in the "Custom and Consultants" section of the budget and can vary widely based on location and individual farm.

Insects

For Treasure Valley Onion growers one of the most serious concerns is thrips and thrips transmitted Iris yellow spot virus (IYSV). Thrips pressure will vary from year to year, field to field, by location, and with environmental factors. Management costs will depend on severity of pressure, and choice of products used. The 2021 production cycle assumed the one less insecticide application when compared to 2020. One application of Lannate was omitted from the budget, the other products used were the same as 2020. The total cost of insecticides in 2021 was estimated at \$306.96 per acre, a decrease of \$25.93 per acre when compared to the \$332.89 per acre recorded in the 2020 production cycle.

Diseases & Other Treatments

There was no change in the number of budgeted fungicide applications when comparing 2020 to 2021. A total of \$136.70 was budgeted to the fungicide category in 2020, whereas \$129.90 was budgeted in 2021. The \$6.80 per acre decrease in fungicide costs in 2021 is attributable to changes in product pricing.

Use of chlorine dioxide for maintenance of the drip lines was budget at \$32 per acre in 2021, a \$2 per acre increase when compared to the \$30 per acre budgeted for this expense in 2020. One application of MH-30 at a cost of \$32.59 was budgeted in 2021 to help with control of in storage sprouting. The cost of MH-30 in 2021 was up \$0.66 when compared to the \$31.93 budgeted for this expense in 2020.

Year over Year Comparisons Plant Protection Category

In 2020 total plant protection costs (herbicides, insecticides, fungicides and other treatments-MH-30 and Chlorine Dioxide) were estimated to be about \$942.92 per acre. In the 2021 production cycle plant protection costs were estimated to be \$941.48 per acre. Overall, expenses in the plant protection category were estimated to decrease \$1.44 per acre a 0.2% decrease when compared to the 2020 production cycle.

Fuel

All fuel charges that appear in the budget are estimated using pricing from the United States Energy Information Administration. Wholesale pricing for Number 2 diesel is used as a proxy for the dyed (off road) diesel price. Fuel prices often fluctuate, and **actual price paid will depend on when fuel is purchased**. To arrive at a representative figure for fuel pricing and to help smooth variation associated with the timing of fuel purchases, a nine-month average is used in the budget. The calculated nine (Jan 2020-Sept 2020) month average of \$1.27 per gallon was used in the 2020 budget, the 2021 budget uses an adjusted (Jan 2021-Sept 2021) nine month average of \$2.25 per gallon, a \$0.98 per gallon increase in comparison to the 2020 production cycle. **Moving into the 2022 production season we have again seen a high degree of volatility in fuel pricing. Those utilizing this document should adjust fuel pricing to match current market conditions.**

On road diesel was estimated using the nine-month (Jan 2021-Sept 2021) retail average price of \$3.27 per gallon, a \$0.73 per gallon increase when compared to the 2020 production cycle. On road gasoline pricing was based on the nine month (Jan 2021-Sept 2021) retail average price of regular gas in the Rocky Mountain region of \$3.06 per gallon, a \$0.81 per gallon increase in comparison to the 2020 production cycle.

Irrigation

Water Assessment

Surface water assessments are based on fees charged by irrigation districts in the region. A charge of \$66.75 per acre was budgeted for irrigation assessments in the 2020 production cycle. In the 2021 production cycle a charge of \$69.00 per acre is budgeted for Malheur County, while a charge of \$61.66 is budgeted for Idaho.

Pumping Charge

This budget assumes the pump used to supply the drip system with water is powered by a diesel engine. Energy requirements for operating the pump are estimated using standard agricultural engineering formulas that relate PSI, pumping lift, and irrigation application rates to the Nebraska Performance Criteria (NPC) water horsepower value for diesel fuel. Onions receive 30-acre inches of water throughout the growing season. A minimum of 20 gallons of diesel fuel per acre would be needed to power the pump. Applying the \$2.25 per gallon dyed diesel charge to the 20

gallons of fuel results in a total charge of \$45 per acre dedicated to fuel for powering the pump, an increase of \$19.59 per acre when compared to the 2020 season.

Irrigation Repair

Repair and maintenance on the pump are estimated to cost \$5.00 per acre, no change from the 2020 production cycle.

Drip Supplies and Labor for Setting Up the Drip System

Drip tape and supplies are budgeted at \$267.50 per acre, a \$17.50 (7%) increase from the 2020 production cycle. Labor for setting up and removing the drip irrigation system is budgeted at 8 hours per acre, no change from the 2020 production cycle. While the number of budgeted hours did not change from the 2020 production cycle to the 2021 production cycle the hourly rate did increase in both Idaho and Malheur County. In the 2021 budget the **effective** rate for H-2A labor used to set up the drip irrigation system is estimated to be \$20.43 per hour in Malheur County, and \$18.19 per hour in Idaho. Detailed descriptions of wage rates are outlined in the "labor" section of this document. The \$12 per acre charge to cover drip tape disposal expenses is up \$2 per acre from the 2020 production cycle.

Machinery

Variable Costs of Machinery

The operating or variable cost categories that appear under the Machinery heading in the budget include charges allocated to off road diesel for tillage, spraying, planting, and harvest operations. A small charge to cover road gas and diesel for pickups and service trucks used on the farm is allocated to the budget. Machinery repairs, lube, and custom hauling charges also appear under the machinery heading of the budget.

Tillage and Harvest Practices Used to Calculate Fuel Requirements

Tillage and harvest practices used to calculate fuel requirements were assumed to be the same in the 2021 production cycle when compared to the 2020 cycle.

Fuel Consumption Calculations Appearing in the Machinery Section of the Budget

Fuel consumption per hour for all field and harvest operations that are not custom applied are estimated using agricultural engineering equations. Horsepower is related to fuel consumption per hour using a factor of 0.044 for diesel. An example calculation for per hour fuel consumption is provided for a 160 HP tractor ($160 \times 0.044 = 7.04$ gallons per hour of use). Fuel costs per hour are calculated by using the estimated fuel consumption of each operation multiplied by the cost of diesel fuel. Using our previous example ($\$2.25 \times 7.04 = \15.84 per hour).

Acres per hour calculations are used as intermediary step in estimation of final costs used in the budget and apply the following agricultural engineering formula.

Speed (mph) x machine width (ft) x machines field efficiency (%)

8.25

In the budget, all machinery hours (tractor + implement) are aggregated to arrive at a single per acre value before applying the cost of diesel fuel. In 2021, estimated fuel use was budgeted at 41.67 gallons per acre. The \$2.25 per gallon price for diesel is applied to arrive at an estimated cost of \$93.76 per acre for fuel in the 2021 growing season. The estimated charge represents an increase of \$40.84 per acre when compared to the 2020 production cycle.

Repairs & Maintenance

The repair factor was \$18.45 per acre lower in the 2021 crop cycle when compared to the 2020 cycle. Due to market uncertainty in 2020 no equipment was replaced. In 2021 fully depreciated equipment was replaced and the repair factor was adjusted downward to capture the effects of newer equipment being added to the farm.

Lube

Lubrication costs are estimated using the standard ag engineering coefficient of 15 percent of estimated fuel costs. In 2021 the costs were estimated to be about \$16.45 per acre, an increase of \$6.69 per acre when compared to the 2020 production cycle.

Hauling Charge

In 2020 the custom hauling charge was budgeted to be \$7.00 per ton, in 2021 the charge increased to \$9.00 per ton.

Overall, the fuel, lube, repair, and hauling charges appearing in the machinery category were budgeted at \$518.40, a \$78.62 per acre increase over the \$439.78 per acre budgeted for the same category in the 2020 production cycle. The 17.9% increase in total variable machinery costs is attributable to an increase in fuel prices and hauling charges.

Labor

Assumed wages include a base hourly rate plus adjustments for payroll taxes, workman's compensation, and benefits. Base H2-A hourly rates were \$14.55 in Idaho, and \$16.34 in Oregon in the 2021 growing season. In the 2020 budget the average (Idaho and Oregon) H-2A rate of \$14.77 per hour was used. Malheur County and Idaho budgets are now reported separately, and the rates are accurate to each state eliminating the error of underestimating labor costs for Oregon producers, while overestimating labor costs for Idaho producers.

For locally sourced labor used in the general labor and irrigator category, a base rate of \$15.55 is used for Idaho. In Oregon, locally sourced general labor and irrigators are paid a base rate of \$16.34. The estimated wage rate for the same class of labor in 2020 was \$14.40, an average of Idaho and Oregon rates. The rate for locally sourced truck drivers in Idaho and Oregon are factored at \$17.50 per hour, in 2020 this class of labor was paid \$15.81 per hour in both states. Sorters and pickers are paid at a base rate of \$14.55 per hour in Idaho, and 16.34 in Oregon. In the 2020 budget sorters and pickers were paid \$11.33 per hour. Locally sourced machinery (tractor and harvest equipment operators) are paid a base rate of \$19.75 in both Idaho and Oregon in 2021. The increases in labor costs reflect the competitiveness and scarcity of labor in 2021 and are calculated using local data and information from the USDA farm labor report.

All base labor rates are adjusted by the appropriate percentage overhead factor to capture the EFFECTIVE wage rate being paid. The H-2A labor rate is adjusted by a factor of 25%, a 5% increase over the 2020 production cycle. The adjustment is made to cover meals, transportation, and housing resulting in an effective rate of \$18.19 per hour in Idaho, and a \$20.43 per hour effective rate in Oregon in the 2021 budget. A 15% adjustment (to cover payroll taxes and workman's compensation) is applied to the base rate for general labor and irrigators, truck driver labor, and sorting labor categories resulting in effective rates of \$17.88, \$20.13, and \$16.73 per hour in the 2021 budget, for Idaho. The effective rates for the same labor classes in Oregon are estimated to be \$18.79, \$20.13, and \$18.79 respectively. The labor rate for machinery (tractor and harvest equipment) operators is adjusted by a factor of 25% to cover workman's compensation and payroll taxes resulting in an effective wage rate of \$24.69 per hour in 2021. The tractor/harvest equipment labor is classified as skilled labor and based on the assumption that the rate is representative of market conditions for skilled operators in both Idaho and Oregon and is applied to the machinery labor category in both the Malheur County and Idaho Budgets.

Extreme caution needs to be exercised when making direct comparisons in labor costs between the 2020 and 2021 production cycles. Since an average wage for both states had been reported for 2020 and the methodology changed in the 2021 production cycle, comparisons will be skewed. The change in methodology will allow for accurate year over year comparisons by state moving forward.

Storage & Packing

Storage and packing costs were unchanged from the 2020 to the 2021 production cycle. The budgeted charge for bin rental and storage operating costs was \$1.00 per cwt stored. The charge for packing was estimated at \$4.00 per **50# sack**.

Fees & Crop Insurance

The allocations for crop insurance and assessments remained unchanged from the 2020 to the 2021 production cycle. Crop Insurance was budgeted at \$84.00 per acre. The assessment fee for onions grown under the federal marketing order in the Idaho-Eastern Oregon region was \$0.05 per cwt. The budget included a \$12 per acre allocation to cover the costs of compliance with GAP audits, a \$2 increase over the 2020 production cycle.

Operating Interest

Operating Interest is based on a borrowing period of 6 months and is calculated at 5.0% of total operating costs. Operating interest in 2021 was 0.45% lower than the 5.45% rate applied to the 2020 production cycle.

Overall Operating Costs per acre in Appendix A were estimated to be \$79.43 per acre lower in 2021 for Malheur County when compared to the estimates calculated in Appendix A of the 2020 production cycle, **BUT the operating cost were \$1.52 per 50# sack higher when compared on a per sack basis**. The lower per acre cost is primarily driven by reduced yields resulting in lower storage and packing costs. In Idaho, overall operating costs per acre in Appendix C were estimated to be \$245.60 per acre lower in 2021 when compared to Appendix A of the 2020 production cycle, **BUT the operating costs were \$1.55 per PAID 50# sack higher when compared on a per sack basis**. The lower per acre cost is driven primarily by reduced yields resulting in lower storage and packing costs. Caution must be exercised to not misinterpret the per acre figure. **Actual yields will vary by location and those using this document should apply yields representative of their operation.**

Overall operating costs in Appendix B and D (field run budgets) were estimated to be \$330.43 per acre higher in Malheur County when compared to the estimates calculated in Appendix B of the 2020 production cycle. In Idaho overall operating costs were \$266.76 per acre higher in 2021 when compared to the estimates calculated in Appendix B of the 2020 production cycle. The 7.8% increase in Malheur County and the 6.3% increase in Idaho was driven primarily by increases in fertilizer costs, increases in budgeted use of hand weeding crews, higher fuel costs, and higher labor costs. When compared on a hundredweight basis, 2021 operating costs in Malheur County were \$1.18 higher than in the 2020 production cycle, in Idaho costs were \$1.23 per cwt higher than the 2020 production cycle, however, the budgets in 2020 were based on an aggregate figure for Idaho and Malheur County while this years budgets provide separate estimates, so caution must be used when comparing the two production cycles.

Fixed Costs

Fixed costs categories for onion production in the Treasure Valley include:

(1) Depreciation and interest on machinery

(2) Machinery insurance and housing

(3) Land Rent

Equipment values are representative of a mix of new and used equipment. The USDA Prices Paid Index for farm machinery was used to make valuation adjustments from the 2020 to the 2021 production cycle. In 2021, I replaced a fully depreciated tractor with a newer model used tractor of the same horsepower.

Interest is an opportunity cost of capital and is charged for all capital outlay not just the amount borrowed. The interest rate in the fixed cost section of the budgets is estimated at 4.25%, a 0.61% decrease when compared to the 4.86% rate used in 2020 production cycle.

Housing and Insurance are estimated at 1% of the Average Annual Investment calculated for each piece of equipment used on the farm.

Land Rent

The cash land rent in the 2020 production cycle was budgeted to be \$321 per acre in Malheur County and \$328 in Idaho and is based on USDA cash land rent surveys and local land rent surveys. The cash land rent does not accurately capture the costs associated with land ownership.

Overhead Cost & Management Fee

Overhead costs are calculated at 3% of total operating costs, an increase of 0.5% over the 2.5% budgeted in the 2020 production cycle. The overhead allocation accounts for office expenses, accounting fees, and utilities. The allocation to management is estimated at 5% of operating costs. The management fees in appendix A and C are based on adjusted variable costs (variable costs – packing charges).

Total Costs

Total (Fixed + Operating) costs in Malheur County (Appendix A-marketable yield with packing costs) were estimated to be \$10,688.44 per acre, an increase of \$26.14 per acre when compared to the 2020 production cycle. Total costs were \$1.84 per PAID 50# sack higher when compared on a per sack basis. Total (Fixed + Operating) costs in Idaho (Appendix C) were estimated to be \$10,520.98 per acre, a decrease of \$141.33 per acre when compared to the 2020 production cycle. When compared on a PAID 50# sack basis, costs were \$1.90 per sack higher than in the 2020 production cycle. Total (Fixed + Operating) costs in Malheur County (Appendix B) were estimated to be \$5,868.52 an increase of \$423.91 per acre when compared to the 2020 production cycle. When compared on a per hundredweight basis, costs were \$1.52 per cwt higher than in the 2020 production cycle. In Idaho, total (Fixed + Operating) costs (Appendix D) were estimated to be \$5,806.76, an increase of \$362.15 per acre when compared to the 2020 production cycle. When compared on a per hundredweight basis, costs were \$1.61 per cwt higher than in the 2020 production cycle.

Acknowledgements

I want to extend my most sincere appreciation to all segments of the onion industry for providing information to support this work. Funding provided by the Idaho-Eastern Oregon Research Committee makes this analysis possible.

Appendix A Cost of Production with Storage and Packing, **Marketable Yields Malheur County**

	Quantity	Unit	Price	\$/acre
Super Colossal	70	50 # Sack	\$12.73	\$891.41
Colossal	139	50 # Sack	\$10.64	\$1,479.34
Jumbo	417	50 # Sack	\$9.09	\$3,792.59
Medium	514	50 # Sack	\$6.74	\$3,464.61
Total	1,140	50 # Sack	\$8.45	\$9,627.94
Seed				
Seed	0.33	pail	\$ 1,830.00	\$603.90
Subtotal Seed				\$603.90
Fertilizer:				
Dry Nitrogen - Pre-plant	50	lb	\$0.60	\$30.00
Dry P2O5	115	lb	\$0.66	\$75.90
Micronutrients/Sulfuric Acid	1	ac	\$27.00	\$27.00
K20	100	lb	\$0.42	\$42.00
Liquid Nitrogen	100	lb	\$0.66	\$66.00
				\$240.90
Plant Protection:				
Vapam	40.0	gal	\$7.50	\$300.00
Select	16.0	fl oz	\$0.94	\$15.04
Dual Magnum	2.0	pint	\$12.13	\$24.26
Roundup	22.0	fl oz	\$0.16	\$3.52
Outlook (2x)	21.0	fl oz	\$1.20	\$25.20
Buctril	1.5	pint	\$6.88	\$10.32
Goal Tender (2x)	10	fl oz	\$0.97	\$9.70
Prowl H2O (2x)	2	pint	\$6.75	\$13.50
Radiant (2x)	16	fl oz	\$7.18	\$114.88
Lannate LV (1x)	3	pint	\$10.88	\$32.63
Movento (2X)	10	fl oz	\$11.33	\$113.28
AZA-Direct	16	fl oz	\$1.87	\$29.92
M-Pede	1	qt	\$16.25	\$16.25
Manzate Max (2X)	4.8	qt	\$10.00	\$48.00
Zing	30	fl oz	\$0.73	\$21.90
Pristine	16	fl oz	\$3.75	\$60.00
Chlorine Dioxide (drip lines)	1	gal	\$32.00	\$32.00
MH30 Sprout Inhibitor	1.33	gal	\$24.50	\$32.59
Adjuvants (11X)	11	pint	\$3.50	\$38.50
				\$941.48
Custom & Consultants:				
Custom Fertilize	2	ac	\$10.00	\$20.00
Custom Fumigate - Deep	1	ac	\$45.00	\$45.00
Hand Weed	3	ac	\$100.00	\$300.00
Soil Testing	1	ac	\$5.00	\$5.00
Custom Aerial Application	2	ac	\$15.00	\$30.00
				\$400.00
Irrigation				
Water Assessment	1.00	acre	\$69.00	\$69.00
Irrigation Fuel pump (diesel)	20.00	gal	\$2.25	\$45.00
Irrigation Repair (pump)	1.00	ac	\$5.00	\$5.00
Drip Tape/Supplies	1.00	ac	\$267.50	\$267.50
Irrigation Set-up/Removal Labor	8.00	hrs	\$20.43	\$163.44
Drip Tape recycling/haul away	1.00	ac	\$12.00	\$12.00
Total Irrigation				\$561.94
Machinery				
Equipment Fuel	41.67	gal	\$ 2.25	\$93.76
Road Gas	2.00	gal	\$ 3.06	\$6.11
Road Diesel	3.00	gal	\$ 3.27	\$9.80
Repairs	1.00	ac	\$ 71.43	\$71.43
Lube				\$16.45
Hauling charge	695	cwt	\$0.45	\$312.75
Total Fuel, Lube, Repairs				\$510.30
Labor				
Equipment Labor	5.22	hrs	\$24.69	\$128.98
Irrigation Labor	1.50	hrs	\$18.79	\$28.19
Sorting/Pickers Labor	2.50	hrs	\$18.79	\$46.98
Truck Driver Labor	5.00	hrs	\$20.13	\$100.65
General Labor	3.50	hrs	\$20.43	\$71.51
Total General, Equipment & Harvest Labor				\$376.30
Storage and Packing :				
Bin Rental	695.00	cwt	\$1.00	\$695.00
Packing	1,140.00	50#	\$4.00	\$4,560.00
Storage & Packing Subtotal				\$5,255.00
Other (Fees and Insurance):				
Crop Insurance	1	ac	\$84.00	\$84.00
Assessments	695	cwt	\$0.05	\$34.75
GAP Audit	1	ac	\$12.00	\$12.00
Subtotal Fees				\$130.75
Subtotal Variable Costs				\$9,020.56
Interest on Operating Capital				\$225.51
Total Operating Costs				\$9,246.08

Appendix A (Continued) Cost of Production with Storage and Packing, Marketable Yields Malheur County

Fixed Costs			
Depreciation, Interest, Housing & Insurance On Equipment			\$609.68
Land	1.00	\$321.00	\$321.00
Management			\$234.30
Overhead			\$277.38
Total Fixed Costs			\$1,442.37
Total Operating and Fixed Costs			\$10,688.44
Returns over operating costs			\$381.87
Returns over Total Costs			-\$1,060.50
Operating Cost (Per PAID 50# sack)			\$8.11
Total Cost (per PAID 50# sack)			\$9.38
	-		+
Price	10%	Paid Yield	10%
Breakeven Yield 50# sack	1026	1140	1254
Operating Cost 50# sack	\$9.01	\$8.11	\$7.37
Ownership Cost 50 # sack	\$1.41	\$1.27	\$1.15
TC	\$10.42	\$9.38	\$8.52
		Price	
Yield	\$7.60	\$8.45	\$9.29
Operating Cost 50# sacks	1216	1095	995
Ownership Cost 50# sacks	190	171	155
TC	1406	1266	1151

Appendix B. Field Run Cost of Production with Storage NO Packing Malheur County

	Quantity	Unit	Price	\$/acre
Field Run Yield	695	cwt	\$ 6.67	\$4,635.65
Seed				
Seed	0.33	pail	\$ 1,830.00	\$603.90
Subtotal Seed				\$603.90
Fertilizer:				
Dry Nitrogen - Pre-plant	50	lb	\$0.60	\$30.00
Dry P2O5	115	lb	\$0.66	\$75.90
Micronutrients/Sulfuric Acid	1	ac	\$27.00	\$27.00
K20	100	lb	\$0.42	\$42.00
Liquid Nitrogen	100	lb	\$0.66	\$66.00
				\$240.90
Plant Protection:				
Vapam	40.0	gal	\$7.50	\$300.00
Select	16.0	fl oz	\$0.94	\$15.04
Dual Magnum	2.0	pint	\$12.13	\$24.26
Roundup	22.0	fl oz	\$0.16	\$3.52
Outlook (2x)	21.0	fl oz	\$1.20	\$25.20
Brox	1.5	pint	\$6.88	\$10.32
Goal Tender (2x)	10.0	fl oz	\$0.97	\$9.70
Prowl H2O (2x)	2	pint	\$6.75	\$13.50
Radiant (2x)	16	fl oz	\$7.18	\$114.88
Lannate LV (1X)	3	pint	\$10.88	\$32.63
Movento (2X)	10	fl oz	\$11.33	\$113.28
AZA-Direct	16	fl oz	\$1.87	\$29.92
M-Pede	1	qt	\$16.25	\$16.25
Manzate Max (2X)	4.8	qt	\$10.00	\$48.00
Zing	30	fl oz	\$0.73	\$21.90
Pristine	16	fl oz	\$3.75	\$60.00
Chlorine Dioxide (drip lines)	1	gal	\$32.00	\$32.00
MH30 Sprout Inhibitor	1.33	gal	\$24.50	\$32.59
Adjuvants (11X)	11.0	pint	\$3.50	\$38.50
				\$941.48
Custom & Consultants:				
Custom Fertilize	2	ac	\$10.00	\$20.00
Custom Fumigate - Deep	1	ac	\$45.00	\$45.00
Hand Weed	3	ac	\$100.00	\$300.00
Soil Testing	1	ac	\$5.00	\$5.00
Custom Aerial Application	2	ac	\$15.00	\$30.00
				\$400.00
Irrigation				
Water Assessment	1.00	acre	\$69.00	\$69.00
Irrigation Fuel pump (diesel)	20.0	gal	\$2.25	\$45.00
Irrigation Repair (pump)	1.00	ac	\$5.00	\$5.00
Drip Tape/Supplies	1.00	ac	\$267.50	\$267.50
Irrigation Set-up/Removal Labor	8.00	hrs	\$20.43	\$163.44
Drip Tape recycling/haul away	1.00	ac	\$12.00	\$12.00
Total Irrigation				\$561.94
Machinery				
Equipment Fuel	41.67	gal	\$2.25	\$93.76
Road Gas	2.00	gal	\$3.06	\$6.11
Road Diesel	3.00	gal	\$3.27	\$9.80
Repairs	1.00	ac	\$71.43	\$71.43
Lube				\$16.45
Hauling charge	695	cwt	\$0.45	\$312.75
Total Fuel, Lube, Repairs				\$510.30
Labor				
Equipment Labor	5.22	hrs	\$24.69	\$128.98
Irrigation Labor	1.50	hrs	\$18.79	\$28.19
Sorting/Pickers Labor	2.50	hrs	\$18.79	\$46.98
Truck Driver Labor	5.00	hrs	\$20.13	\$100.65
General Labor	3.50	hrs	\$20.43	\$71.51
Total General, Equipment & Harvest Labor				\$376.30
Storage:				
Bin Rental	695.00	cwt	\$1.00	\$695.00
Storage Subtotal				\$695.00
Other (Fees and Insurance):				
Crop Insurance	1	ac	\$84.00	\$84.00
Assessments	695	cwt	\$0.05	\$34.75
GAP Audit	1	ac	\$12.00	\$12.00
Subtotal Fees				\$130.75
Subtotal Variable Costs				\$4,460.56
Interest on Operating Capital				\$111.51
Total Operating Costs				\$4,572.08

Appendix B. Continued **Field Run** Cost of Production with Storage NO Packing Charge Malheur County

Fixed Costs			
Depreciation, Interest, Housing & Insurance On Equipment			\$609.68
Land	1.00	\$321.00	\$321.00
Management			\$228.60
Overhead			\$137.16
Total Fixed Costs			\$1,296.45
Total Operating and Fixed Costs			\$5,868.52
Returns over operating costs			\$63.57
Returns over Total Costs			-\$1,232.87
Operating Cost (Per Cwt)			\$6.58
Total Cost (per cwt)			\$8.44
	-		+
Price	10%	Yield	10%
Breakeven	626	695	765
Operating Cost	\$7.31	\$6.58	\$5.98
Ownership Cost	\$2.07	\$1.87	\$1.70
TC	\$9.38	\$8.44	\$7.68
		Price	
Yield	\$6.00	\$6.67	\$7.34
Operating Cost	762	685	623
Ownership Cost	216	194	177
TC	978	880	800

Appendix C Cost of Production with Storage and Packing, **Marketable Yields Idaho**

	Quantity	Unit	Price	\$/acre
Super Colossal	68	50 # Sack	\$12.73	\$865.94
Colossal	136	50 # Sack	\$10.64	\$1,447.41
Jumbo	408	50 # Sack	\$9.09	\$3,710.73
Medium	503	50 # Sack	\$6.74	\$3,390.46
Total	1,115	50 # Sack	\$8.44	\$9,414.55
Seed				
Seed	0.33	pail	\$ 1,830.00	\$603.90
Subtotal Seed				\$603.90
Fertilizer:				
Dry Nitrogen - Pre-plant	50	lb	\$0.60	\$30.00
Dry P2O5	115	lb	\$0.66	\$75.90
Micronutrients/Sulfuric Acid	1	ac	\$27	\$27.00
K20	100	lb	\$0.42	\$42.00
Liquid Nitrogen	100	lb	\$0.66	\$66.00
				\$240.90
Plant Protection:				
Vapam	40.0	gal	\$7.50	\$300.00
Select	16.0	fl oz	\$0.94	\$15.04
Dual Magnum	2.0	pint	\$12.13	\$24.26
Roundup	22.0	fl oz	\$0.16	\$3.52
Outlook (2x)	21.0	fl oz	\$1.20	\$25.20
Buctril	1.5	pint	\$6.88	\$10.32
Goal Tender (2x)	10	fl oz	\$0.97	\$9.70
Prowl H2O (2x)	2	pint	\$6.75	\$13.50
Radiant (2x)	16	fl oz	\$7.18	\$114.88
Lannate LV (1x)	3	pint	\$10.88	\$32.63
Movento (2X)	10	fl oz	\$11.33	\$113.28
AZA-Direct	16	fl oz	\$1.87	\$29.92
M-Pede	1	qt	\$16.25	\$16.25
Manzate Max (2X)	4.8	qt	\$10.00	\$48.00
Zing	30	fl oz	\$0.73	\$21.90
Pristine	16	fl oz	\$3.75	\$60.00
Chlorine Dioxide (drip lines)	1	gal	\$32.00	\$32.00
MH30 Sprout Inhibitor	1.33	gal	\$24.50	\$32.59
Adjuvants (11X)	11	pint	\$3.50	\$38.50
				\$941.48
Custom & Consultants:				
Custom Fertilize	2	ac	\$10.00	\$20.00
Custom Fumigate - Deep	1	ac	\$45.00	\$45.00
Hand Weed	3	ac	\$100.00	\$300.00
Soil Testing	1	ac	\$5.00	\$5.00
Custom Aerial Application	2	ac	\$15.00	\$30.00
				\$400.00
Irrigation				
Water Assessment	1.00	acre	\$61.66	\$61.66
Irrigation Fuel pump (diesel)	20.00	gal	\$2.25	\$45.00
Irrigation Repair (pump)	1.00	ac	\$5.00	\$5.00
Drip Tape/Supplies	1.00	ac	\$267.50	\$267.50
Irrigation Set-up/Removal Labor	8.00	hrs	\$18.19	\$145.52
Drip Tape recycling/haul away	1.00	ac	\$12.00	\$12.00
Total Irrigation				\$536.68
Machinery				
Equipment Fuel	41.67	gal	\$ 2.25	\$93.76
Road Gas	2.00	gal	\$ 3.06	\$6.11
Road Diesel	3.00	gal	\$ 3.27	\$9.80
Repairs	1.00	ac	\$ 71.43	\$71.43
Lube				\$16.45
Hauling charge	680	cwt	\$0.45	\$306.00
Total Fuel, Lube, Repairs				\$503.55
Labor				
Equipment Labor	5.22	hrs	\$24.69	\$128.98
Irrigation Labor	1.50	hrs	\$17.88	\$26.82
Sorting/Pickers Labor	2.50	hrs	\$16.73	\$41.83
Truck Driver Labor	5.00	hrs	\$20.13	\$100.65
General Labor	3.50	hrs	\$18.19	\$63.67
Total General, Equipment & Harvest Labor				\$361.94
Storage and Packing :				
Bin Rental	680.00	cwt	\$1.00	\$680.00
Packing	1,115.00	50#	\$4.00	\$4,460.00
Storage & Packing Subtotal				\$5,140.00
Other (Fees and Insurance):				
Crop Insurance	1	ac	\$84.00	\$84.00
Assessments	680	cwt	\$0.05	\$34.00
GAP Audit	1	ac	\$12.00	\$12.00
Subtotal Fees				\$130.00
Subtotal Variable Costs				\$8,858.45
Interest on Operating Capital				\$221.46
Total Operating Costs				\$9,079.91

Appendix C (Continued) Cost of Production with Storage and Packing, Marketable Yields Idaho

Fixed Costs			
Depreciation, Interest, Housing & Insurance On Equipment			\$609.68
Land	1.00	\$328.00	\$328.00
Management			\$231.00
Overhead			\$272.40
Total Fixed Costs			\$1,441.07
Total Operating and Fixed Costs			\$10,520.98
Returns over operating costs			\$334.64
Returns over Total Costs			-\$1,106.44
Operating Cost (Per PAID 50# sack)			\$8.14
Total Cost (per PAID 50# sack)			\$9.44
	-		+
Price	10%	Paid Yield	10%
Breakeven Yield 50# sack	1004	1115	1227
Operating Cost 50# sack	\$9.05	\$8.14	\$7.40
Ownership Cost 50 # sack	\$1.44	\$1.29	\$1.17
TC	\$10.48	\$9.44	\$8.58
		Price	
Yield	\$7.60	\$8.44	\$9.29
Operating Cost 50# sacks	1195	1075	978
Ownership Cost 50# sacks	190	171	155
TC	1384	1246	1133

Appendix D. **Field Run** Cost of Production with Storage NO Packing Idaho

	Quantity	Unit	Price	\$/acre
Field Run Yield	680	cwt	\$ 7.61	\$5,174.80
Seed				
Seed	0.33	pail	\$ 1,830.00	\$603.90
Subtotal Seed				\$603.90
Fertilizer:				
Dry Nitrogen - Pre-plant	50	lb	\$0.60	\$30.00
Dry P2O5	115	lb	\$0.66	\$75.90
Micronutrients/Sulfuric Acid	1	ac	\$27.00	\$27.00
K20	100	lb	\$0.42	\$42.00
Liquid Nitrogen	100	lb	\$0.66	\$66.00
				\$240.90
Plant Protection:				
Vapam	40.0	gal	\$7.50	\$300.00
Select	16.0	fl oz	\$0.94	\$15.04
Dual Magnum	2.0	pint	\$12.13	\$24.26
Roundup	22.0	fl oz	\$0.16	\$3.52
Outlook (2x)	21.0	fl oz	\$1.20	\$25.20
Brox	1.5	pint	\$6.88	\$10.32
Goal Tender (2x)	10.0	fl oz	\$0.97	\$9.70
Prowl H2O (2x)	2	pint	\$6.75	\$13.50
Radiant (2x)	16	fl oz	\$7.18	\$114.88
Lannate LV (1X)	3	pint	\$10.88	\$32.63
Movento (2X)	10	fl oz	\$11.33	\$113.28
AZA-Direct	16	fl oz	\$1.87	\$29.92
M-Pede	1	qt	\$16.25	\$16.25
Manzate Max (2X)	4.8	qt	\$10.00	\$48.00
Zing	30	fl oz	\$0.73	\$21.90
Pristine	16	fl oz	\$3.75	\$60.00
Chlorine Dioxide (drip lines)	1	gal	\$32.00	\$32.00
MH30 Sprout Inhibitor	1.33	gal	\$24.50	\$32.59
Adjuvants (11X)	11.0	pint	\$3.50	\$38.50
				\$941.48
Custom & Consultants:				
Custom Fertilize	2	ac	\$10.00	\$20.00
Custom Fumigate - Deep	1	ac	\$45.00	\$45.00
Hand Weed	3	ac	\$100.00	\$300.00
Soil Testing	1	ac	\$5.00	\$5.00
Custom Aerial Application	2	ac	\$15.00	\$30.00
				\$400.00
Irrigation				
Water Assessment	1.00	acre	\$61.66	\$61.66
Irrigation Fuel pump (diesel)	20.0	gal	\$2.25	\$45.00
Irrigation Repair (pump)	1.00	ac	\$5.00	\$5.00
Drip Tape/Supplies	1.00	ac	\$267.50	\$267.50
Irrigation Set-up/Removal Labor	8.00	hrs	\$18.19	\$145.52
Drip Tape recycling/haul away	1.00	ac	\$12.00	\$12.00
Total Irrigation				\$536.68
Machinery				
Equipment Fuel	41.67	gal	\$2.25	\$93.76
Road Gas	2.00	gal	\$3.06	\$6.11
Road Diesel	3.00	gal	\$3.27	\$9.80
Repairs	1.00	ac	\$71.43	\$71.43
Lube				\$16.45
Hauling charge	680	cwt	\$0.45	\$306.00
Total Fuel, Lube, Repairs				\$503.55
Labor				
Equipment Labor	5.22	hrs	\$24.69	\$128.98
Irrigation Labor	1.50	hrs	\$17.88	\$26.82
Sorting/Pickers Labor	2.50	hrs	\$16.73	\$41.83
Truck Driver Labor	5.00	hrs	\$20.13	\$100.65
General Labor	3.50	hrs	\$18.19	\$63.67
Total General, Equipment & Harvest Labor				\$361.94
Storage:				
Bin Rental	680.00	cwt	\$1.00	\$680.00
Storage Subtotal				\$680.00
Other (Fees and Insurance):				
Crop Insurance	1	ac	\$84.00	\$84.00
Assessments	680	cwt	\$0.05	\$34.00
GAP Audit	1	ac	\$12.00	\$12.00
Subtotal Fees				\$130.00
Subtotal Variable Costs				\$4,398.45
Interest on Operating Capital				\$109.96
Total Operating Costs				\$4,508.41

Appendix D. Continued **Field Run** Cost of Production with Storage NO Packing Charge Idaho

Fixed Costs			
Depreciation, Interest, Housing & Insurance On Equipment			\$609.68
Land	1.00	\$328.00	\$328.00
Management			\$225.42
Overhead			\$135.25
Total Fixed Costs			\$1,298.35
Total Operating and Fixed Costs			\$5,806.76
Returns over operating costs			\$666.39
Returns over Total Costs			-\$631.96
Operating Cost (Per Cwt)			\$6.63
Total Cost (per cwt)			\$8.54
	-		+
Price	10%	Yield	10%
Breakeven	612	680	748
Operating Cost	\$7.37	\$6.63	\$6.03
Ownership Cost	\$2.12	\$1.91	\$1.74
TC	\$9.49	\$8.54	\$7.76
		Price	
Yield	\$6.85	\$7.61	\$8.37
Operating Cost	658	592	539
Ownership Cost	190	171	155
TC	848	763	694

Appendix E. **Field Run** Cost of Production NO Storage NO Packing Malheur County

	Quantity	Unit	Price	\$/acre
Field Run Yield	695	cwt	\$ 6.67	\$4,635.65
Seed				
Seed	0.33	pail	\$ 1,830.00	\$603.90
Subtotal Seed				\$603.90
Fertilizer:				
Dry Nitrogen - Pre-plant	50	lb	\$0.60	\$30.00
Dry P2O5	115	lb	\$0.66	\$75.90
Micronutrients/Sulfuric Acid	1	ac	\$27.00	\$27.00
K2O	100	lb	\$0.42	\$42.00
Liquid Nitrogen	100	lb	\$0.66	\$66.00
				\$240.90
Plant Protection:				
Vapam	40.0	gal	\$7.50	\$300.00
Select	16.0	fl oz	\$0.94	\$15.04
Dual Magnum	2.0	pint	\$12.13	\$24.26
Roundup	22.0	fl oz	\$0.16	\$3.52
Outlook (2x)	21.0	fl oz	\$1.20	\$25.20
Brox	1.5	pint	\$6.88	\$10.32
Goal Tender (2x)	10.0	fl oz	\$0.97	\$9.70
Prowl H2O (2x)	2	pint	\$6.75	\$13.50
Radiant (2x)	16	fl oz	\$7.18	\$114.88
Lannate LV (1X)	3	pint	\$10.88	\$32.63
Movento (2X)	10	fl oz	\$11.33	\$113.28
AZA-Direct	16	fl oz	\$1.87	\$29.92
M-Pede	1	qt	\$16.25	\$16.25
Manzate Max (2X)	4.8	qt	\$10.00	\$48.00
Zing	30	fl oz	\$0.73	\$21.90
Pristine	16	fl oz	\$3.75	\$60.00
Chlorine Dioxide (drip lines)	1	gal	\$32.00	\$32.00
MH30 Sprout Inhibitor	1.33	gal	\$24.50	\$32.59
Adjuvants (11X)	11.0	pint	\$3.50	\$38.50
				\$941.48
Custom & Consultants:				
Custom Fertilize	2	ac	\$10.00	\$20.00
Custom Fumigate - Deep	1	ac	\$45.00	\$45.00
Hand Weed	3	ac	\$100.00	\$300.00
Soil Testing	1	ac	\$5.00	\$5.00
Custom Aerial Application	2	ac	\$15.00	\$30.00
				\$400.00
Irrigation				
Water Assessment	1.00	acre	\$69.00	\$69.00
Irrigation Fuel pump (diesel)	20.0	gal	\$2.25	\$45.00
Irrigation Repair (pump)	1.00	ac	\$5.00	\$5.00
Drip Tape/Supplies	1.00	ac	\$267.50	\$267.50
Irrigation Set-up/Removal Labor	8.00	hrs	\$20.43	\$163.44
Drip Tape recycling/haul away	1.00	ac	\$12.00	\$12.00
Total Irrigation				\$561.94
Machinery				
Equipment Fuel	41.67	gal	\$2.25	\$93.76
Road Gas	2.00	gal	\$3.06	\$6.11
Road Diesel	3.00	gal	\$3.27	\$9.80
Repairs	1.00	ac	\$71.43	\$71.43
Lube				\$16.45
Hauling charge	695	cwt	\$0.45	\$312.75
Total Fuel, Lube, Repairs				\$510.30
Labor				
Equipment Labor	5.22	hrs	\$24.69	\$128.98
Irrigation Labor	1.50	hrs	\$18.79	\$28.19
Sorting/Pickers Labor	2.50	hrs	\$18.79	\$46.98
Truck Driver Labor	5.00	hrs	\$20.13	\$100.65
General Labor	3.50	hrs	\$20.43	\$71.51
Total General, Equipment & Harvest Labor				\$376.30
Other (Fees and Insurance):				
Crop Insurance	1	ac	\$84.00	\$84.00
Assessments	695	cwt	\$0.05	\$34.75
GAP Audit	1	ac	\$12.00	\$12.00
Subtotal Fees				\$130.75
Subtotal Variable Costs				\$3,765.56
Interest on Operating Capital				\$94.14
Total Operating Costs				\$3,859.70

Appendix E. Continued **Field Run** Cost of Production NO Storage NO Packing Charge Malheur County

Fixed Costs			
Depreciation, Interest, Housing & Insurance On Equipment			\$609.68
Land	1.00	\$321.00	\$321.00
Management			\$192.99
Overhead			\$115.79
Total Fixed Costs			\$1,239.46
Total Operating and Fixed Costs			\$5,099.16
Returns over operating costs			\$775.95
Returns over Total Costs			-\$463.51
Operating Cost (Per Cwt)			\$5.55
Total Cost (per cwt)			\$7.34
	-		+
Price	10%	Yield	10%
Breakeven	626	695	765
Operating Cost	\$6.17	\$5.55	\$5.05
Ownership Cost	\$1.98	\$1.78	\$1.62
TC	\$8.15	\$7.34	\$6.67
		Price	
Yield	\$6.00	\$6.67	\$7.34
Operating Cost	643	579	526
Ownership Cost	206	186	169
TC	849	764	695

Appendix F. **Field Run** Cost of Production NO Storage NO Packing Idaho

	Quantity	Unit	Price	\$/acre
Field Run Yield	680	cwt	\$ 7.61	\$5,174.80
Seed				
Seed	0.33	pail	\$ 1,830.00	\$603.90
Subtotal Seed				\$603.90
Fertilizer:				
Dry Nitrogen - Pre-plant	50	lb	\$0.60	\$30.00
Dry P2O5	115	lb	\$0.66	\$75.90
Micronutrients/Sulfuric Acid	1	ac	\$27.00	\$27.00
K2O	100	lb	\$0.42	\$42.00
Liquid Nitrogen	100	lb	\$0.66	\$66.00
				\$240.90
Plant Protection:				
Vapam	40.0	gal	\$7.50	\$300.00
Select	16.0	fl oz	\$0.94	\$15.04
Dual Magnum	2.0	pint	\$12.13	\$24.26
Roundup	22.0	fl oz	\$0.16	\$3.52
Outlook (2x)	21.0	fl oz	\$1.20	\$25.20
Brox	1.5	pint	\$6.88	\$10.32
Goal Tender (2x)	10.0	fl oz	\$0.97	\$9.70
Prowl H2O (2x)	2	pint	\$6.75	\$13.50
Radiant (2x)	16	fl oz	\$7.18	\$114.88
Lannate LV (1X)	3	pint	\$10.88	\$32.63
Movento (2X)	10	fl oz	\$11.33	\$113.28
AZA-Direct	16	fl oz	\$1.87	\$29.92
M-Pede	1	qt	\$16.25	\$16.25
Manzate Max (2X)	4.8	qt	\$10.00	\$48.00
Zing	30	fl oz	\$0.73	\$21.90
Pristine	16	fl oz	\$3.75	\$60.00
Chlorine Dioxide (drip lines)	1	gal	\$32.00	\$32.00
MH30 Sprout Inhibitor	1.33	gal	\$24.50	\$32.59
Adjuvants (11X)	11.0	pint	\$3.50	\$38.50
				\$941.48
Custom & Consultants:				
Custom Fertilize	2	ac	\$10.00	\$20.00
Custom Fumigate - Deep	1	ac	\$45.00	\$45.00
Hand Weed	3	ac	\$100.00	\$300.00
Soil Testing	1	ac	\$5.00	\$5.00
Custom Aerial Application	2	ac	\$15.00	\$30.00
				\$400.00
Irrigation				
Water Assessment	1.00	acre	\$61.66	\$61.66
Irrigation Fuel pump (diesel)	20.0	gal	\$2.25	\$45.00
Irrigation Repair (pump)	1.00	ac	\$5.00	\$5.00
Drip Tape/Supplies	1.00	ac	\$267.50	\$267.50
Irrigation Set-up/Removal Labor	8.00	hrs	\$18.19	\$145.52
Drip Tape recycling/haul away	1.00	ac	\$12.00	\$12.00
Total Irrigation				\$536.68
Machinery				
Equipment Fuel	41.67	gal	\$2.25	\$93.76
Road Gas	2.00	gal	\$3.06	\$6.11
Road Diesel	3.00	gal	\$3.27	\$9.80
Repairs	1.00	ac	\$71.43	\$71.43
Lube				\$16.45
Hauling charge	680	cwt	\$0.45	\$306.00
Total Fuel, Lube, Repairs				\$503.55
Labor				
Equipment Labor	5.22	hrs	\$24.69	\$128.98
Irrigation Labor	1.50	hrs	\$17.88	\$26.82
Sorting/Pickers Labor	2.50	hrs	\$16.73	\$41.83
Truck Driver Labor	5.00	hrs	\$20.13	\$100.65
General Labor	3.50	hrs	\$18.19	\$63.67
Total General, Equipment & Harvest Labor				\$361.94
Other (Fees and Insurance):				
Crop Insurance	1	ac	\$84.00	\$84.00
Assessments	680	cwt	\$0.05	\$34.00
GAP Audit	1	ac	\$12.00	\$12.00
Subtotal Fees				\$130.00
Subtotal Variable Costs				\$3,718.45
Interest on Operating Capital				\$92.96
Total Operating Costs				\$3,811.41

Appendix F. Continued **Field Run** Cost of Production NO Storage NO Packing Charge Idaho

Fixed Costs			
Depreciation, Interest, Housing & Insurance On Equipment			\$609.68
Land	1.00	\$328.00	\$328.00
Management			\$190.57
Overhead			\$114.34
Total Fixed Costs			\$1,242.59
Total Operating and Fixed Costs			\$5,054.00
Returns over operating costs			\$1,363.39
Returns over Total Costs			\$120.80
Operating Cost (Per Cwt)			\$5.61
Total Cost (per cwt)			\$7.43
	-		+
Price	10%	Yield	10%
Breakeven	612	680	748
Operating Cost	\$6.23	\$5.61	\$5.10
Ownership Cost	\$2.03	\$1.83	\$1.66
TC	\$8.26	\$7.43	\$6.76
		Price	
Yield	\$6.85	\$7.61	\$8.37
Operating Cost	556	501	455
Ownership Cost	181	163	148
TC	738	664	604