**2022 Enterprise Budget for Oats in Western Idaho**

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**Background**

Until 2019, faculty in the Department of Agricultural Economics and Rural Sociology (AERS) and County Extension Educators at the University of Idaho (UI) would update enterprise budgets every other year. However, due to several AERS faculty who led these activities leaving the department, these updates have been delayed, and so an update for 2021 was not done. Additionally, the portfolio of crops for which enterprise budgets evolved over time. The last enterprise budget for oats in the AERS enterprise budget archive was from 2005, and for Northern Idaho under dryland production rather than Southern Idaho under irrigation. Given this background, several decisions were made to obtain enterprise budget estimates for oat production in Western Idaho for 2022.

**Approach and Assumptions**

First, it was assumed that the UI enterprise budget for 2019 Southwestern Idaho: Treasure Valley, Soft White Spring Wheat by Ben Eborn, UI 2019 wheat budget hereafter, would apply to large degree for oat production for the main farm structure details. These include assumptions for the model farm size, with 1,200 acres in grain, irrigation system used, fertilizer type and application method, and machinery used. Thus, the budget values that were in the UI 2019 wheat budget served as the basis for several of the input cost categories. The other reference that was used as a budget model for identifying cost categories was the “Guidelines for Estimating Crop Production Costs – 2022” published by Manitoba Agriculture, for which one of the crops was oats.

**Data and methods**

Most of the values in the UI 2019 wheat budget needed adjustment since inputs such as seed vary for oats and wheat, and because the inputs that are common to both production of wheat and oats (e.g., fuel) changed between 2019 and 2022. The value for non-cash overhead costs was assumed the same as in the UI 2019 wheat budget.

Several differences between oat and wheat production were accounted for by relying on the estimates for several oat budget elements from the “Guidelines for Estimating Crop Production Costs – 2022” published by Manitoba Agriculture. The cost categories from which data from the Manitoba report were relied upon include seeds with treatment, storage costs, and labor and living costs. The fertilizer quantities and target yields were also adjusted to equal the values in the Manitoba report.

For the inputs that are expected as common for both oat and wheat production, including fertilizer, fungicide, irrigation repairs, machinery repairs, custom application rates, crop insurance, general overhead, management fees, and crop insurance, the values in the UI 2019 wheat budgets were used as a base and then multiplied by index adjustment factor values for several indexes obtained from the Federal Reserve Bank of St. Louis Federal Reserve Economic Data (FRED) data base. These indexes include those for: fertilizers; agricultural machinery; and a broader producer price index (PPI) for grains. Fuel prices were obtained from AAA. Land rental values were obtained from the U.S. Department of Agriculture (USDA) National Agricultural Statistics Service for Gem County. The target price is the 2022/23 marketing year average farm price from the USDA World Agricultural Supply and Demand Estimates (WASDE) report for October 2022.

The UI Idaho Crop Input Price Summary for 2022 was relied upon for cost estimates for herbicides, irrigation power, irrigation water assessment fees, and interest on operating costs.

The specific estimation method for each category of input costs is listed in the table in the Appendix.

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| --- | --- | --- | --- | --- |
| **Oat production Costs 2022, Western Idaho** | |  |  |  |
| **Operating costs** |  |  |  |  |
|  | Quantity per acre | Unit | Cost/unit | Cost/acre |
| **Seed & treatment** | 2.5 | bu | 14 | 35 |
| **Fertilizer** |  |  |  |  |
| Dry Nitrogen - Pre-plant | 75 | lbs | 0.89 | 67.10 |
| Dry P2O5 | 30 | lbs | 0.87 | 26.20 |
| K2O | 10 | lbs | 0.66 | 6.60 |
| **Herbicide** |  |  |  |  |
| Axial XL | 16.4 | fl oz | 1.33 | 21.78 |
| Affinity TankMix | 0.6 | oz | 10 | 6.00 |
| Starane Ultra | 0.3 | pint | 32 | 9.60 |
| **Fungicide (Twinline)** | 7 | fl oz | 3.51 | 24.60 |
| **Irrigation** |  |  |  |  |
| Irrigation Power - Center Pivot | 20 | ac-in | 1.73 | 34.60 |
| Irrigation Water Assessment | 1 | acre | 64.92 | 64.92 |
| Irrigation Repairs | 20 | ac-in | 0.69 | 13.72 |
| **Machinery** |  |  |  |  |
| Fuel - Gas | 2.88 | gal | 4.4 | 12.67 |
| Fuel - Diesel | 5.32 | gal | 5.08 | 27.03 |
| Fuel - Road Diesel | 0.16 | gal | 5.4 | 0.86 |
| Lube |  |  |  | 4.69 |
| Machinery repair |  |  |  | 18.80 |
| **Custom** |  |  |  |  |
| Custom Fertilize: 0 - 400 lbs | 2 | acre | 14.44 | 28.87 |
| Custom Air Spray - 5 gal. rate | 1 | acre | 14.44 | 14.44 |
| Custom Haul: oats | 115 | bu | 0.67 | 77.47 |
| **Crop Insurance** |  |  |  | 28.87 |
| **Land Taxes** |  |  |  | 0 |
| **Storage Costs** |  |  |  | 18.77 |
| **Interest on Operating Costs** |  |  |  | 35.27 |
| **Total operating (per acre)** |  |  |  | **577.87** |

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| --- | --- | --- | --- | --- |
| **Cash overhead costs** |  |  |  |  |
| General overhead |  |  |  | 23.10 |
| Land rent |  |  |  | 147.00 |
| Management Fee |  |  |  | 75.07 |
| Property Taxes |  |  |  | 0 |
| Property Insurance |  |  |  | 2.83 |
| Investment repairs |  |  |  | 0 |
| **Total cash overhead costs (per acre)** |  |  |  | **247.99** |
|  |  |  |  |  |
| **Non-cash overhead costs** |  |  |  |  |
| Equipment (capital recovery) |  |  |  | 48.53 |
|  |  |  |  |  |
| **Ownership costs** |  |  |  |  |
| Labor & living |  |  |  | 25.00 |
|  |  |  |  |  |
| **Total cost (per acre)** |  |  |  | **899.39** |
|  |  |  |  |  |
| **Profitability analysis** |  |  |  |  |
| **Estimated Farmgate** |  |  |  |  |
| Target Price ($/bu) |  |  |  | 5.70 |
| Target Yield (bu/acre) |  |  |  | 115 |
| Gross revenue ($/acre) |  |  |  | **655.50** |
|  |  |  |  |  |
| **Marginal returns** |  |  |  |  |
| Over operating costs |  |  |  | **77.63** |
| Over total costs |  |  |  | **-243.89** |
| % over operating costs |  |  |  | 13% |
|  |  |  |  |  |
| **Breakeven analysis** |  |  |  |  |
| **Breakeven prices ($/bu)** |  |  |  |  |
| Over operating costs |  |  |  | 5.02 |
| Over total costs |  |  |  | 7.82 |
|  |  |  |  |  |
| **Breakeven yields (bu)** |  |  |  |  |
| Over operating costs |  |  |  | 99 |
| Over total costs |  |  |  | 164 |

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| **Profitability analysis - expanded** | | |  | |  | |  | |  | | |  |
|  | | Range of prices, with constant yields | | | | | | | | | | |
| **Estimated Farmgate** |  |  | |  | |  | |  | |  |  | |
| Target Price ($/bu) |  | 4.50 | | 5.00 | | 5.50 | | 6.00 | | 6.50 | 7.00 | |
| Target Yield (bu/acre) |  | 115 | | 115 | | 115 | | 115 | | 115 | 115 | |
| Gross revenue ($/acre) |  | **517.50** | | **575.00** | | **632.50** | | **690.00** | | **747.50** | **805.00** | |
|  |  |  | |  | |  | |  | |  |  | |
| **Marginal returns** |  |  | |  | |  | |  | |  |  | |
| Over operating costs |  | **-60.37** | | **-2.87** | | **54.63** | | **112.13** | | **169.63** | **227.13** | |
| Over total costs |  | **-381.89** | | **-324.39** | | **-266.89** | | **-209.39** | | **-151.89** | **-94.39** | |
| % over operating costs |  | -10% | | 0% | | 9% | | 19% | | 29% | 39% | |
|  |  |  | |  | |  | |  | |  |  | |
|  |  | Range of yields, with constant prices | | | | | | | | | | |
| **Estimated Farmgate** |  |  | |  | |  | |  | |  |  | |
| Target Price ($/bu) |  | 5.70 | | 5.70 | | 5.70 | | 5.70 | | 5.70 | 5.70 | |
| Target Yield (bu/acre) |  | 110 | | 120 | | 130 | | 140 | | 150 | 160 | |
| Gross revenue ($/acre) |  | **627.00** | | **684.00** | | **741.00** | | **798.00** | | **855.00** | **912.00** | |
|  |  |  | |  | |  | |  | |  |  | |
| **Marginal returns** |  |  | |  | |  | |  | |  |  | |
| Over operating costs |  | **49.13** | | **106.13** | | **163.13** | | **220.13** | | **277.13** | **334.13** | |
| Over total costs |  | **-272.39** | | **-215.39** | | **-158.39** | | **-101.39** | | **-44.39** | **12.61** | |
| % over operating costs |  | 9% | | 18% | | 28% | | 38% | | 48% | 58% | |

**Appendix: Estimation Methods**

The following table includes details regarding the estimation method used for each cost category

Reference key:

* **Manitoba value**: obtained from the “Guidelines for Estimating Crop Production Costs – 2022” published by Manitoba Agriculture
* **UI 2019 value**: obtained from the UI enterprise budget for 2019 Eastern Idaho: Soft White Spring Wheat
* **FRED fertilizer index**: Dataset WPS0652, Producer Price Index, Fertilizer Materials, Index 2019 = 100
* **FRED ag. machinery index**: Dataset WPU111, Producer Price Index, Machinery and Equipment, Agricultural, Index 2019 = 100
* **FRED PPI grains index**: Dataset WPS012, Producer Price Index, Farm Products: Grains, Index 2019 = 100
* **UI 2022 Input Cost summary** **value**: obtained from the UI “Idaho Crop Input Price Summary for 2022”

|  |  |
| --- | --- |
| **Cost category** | **Source and estimation method** |
| **Seed & treatment** | Manitoba value |
| **Fertilizer** | UI 2019 value x FRED fertilizer index |
| **Herbicide** | UI 2022 Input Cost summary value |
| **Fungicide** | UI 2019 value x FRED fertilizer index |
| **Irrigation power & assessments** | UI 2022 Input Cost summary value |
| **Irrigation repairs** | UI 2019 value x FRED ag. machinery index |
| **Fuel** | AAA (E ID prices as of October 2022, adjusted) |
| **Lube & machinery repair** | UI 2019 value x FRED ag. machinery index |
| **Custom hiring** | UI 2019 value x FRED PPI grains index |
| **Crop insurance** | UI 2019 value x FRED PPI grains index |
| **Storage costs** | Manitoba value |
| **Interest on Operating Costs** | Kansas City Federal Reserve survey data |
| **Overhead costs, except land rent** | UI 2019 value x FRED PPI grains index |
| **Land rent** | USDA-NASS value for Gem County 2022 |
| **Non-cash overhead costs** | UI 2019 value |
| **Ownership costs** | Manitoba value |
| **Target price** | USDA WASDE report for October 2022 |
| **Target yield** | Manitoba value |