



2015 Costs and Returns for Roundup Ready™ Grain Corn, Box Elder County

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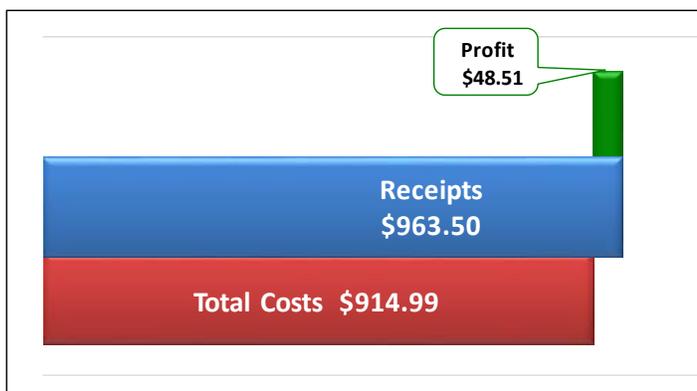


Figure 1. Estimated Receipts, Costs and Profit for Roundup Ready™ Grain Corn.

INTRODUCTION

Enterprise budgets are the building blocks of a farm or ranch. They represent estimates of income and expenses for a specific period of time using a set of production practices and inputs for that enterprise.

The budget in Table 1 on the following page contains sample costs and returns to establish and produce grain corn under flood irrigation in Box Elder County. It is intended to be a guide used to estimate income and expenses, list inputs and production practices and provide a framework for the whole farm plan.

Farm. The representative farm consists of 720 acres of farmland that is both leased and owned on which 250 acres are cultivated for grain corn and the remaining acres consist of alfalfa, wheat or silage corn production. The market value for irrigated agricultural land with water rights varies widely by area and soil type. In this budget, land is valued at \$4,500 per acre. Flood irrigation is used for all crops. Water is leased at the rate of \$18/acre.

Receipts. Commodity prices were determined from an average of December 2014 and January 2015 weekly Utah Department of Agriculture and Food Market News Reports. Production average of 205 bushels per acre is determined by interviews with local producers and crop advisors.

Inputs and Services. Inputs and services include crop insurance, fertilizer, pesticides, seed, seasonal employees, irrigation and water assessment. Input and chemical prices are determined from interviews with seed, fertilizer and chemical dealers.

Seasonal Employees. Two seasonal employees are hired a total of 2,500 hrs. per year and are paid a base wage plus FICA at the rate of \$13.07/hr. including employer's share of payroll tax (USDA ERS) The total annual cost is \$32,680 for the 720 acre farm. The average labor cost per acre is estimated at \$45.39.

Field Operations and Operating Interest. The practices described are not the recommendations of Utah State University, but rather the production practices and materials considered as typical of a well-managed farm in the region, as determined by interviews with producers and agribusiness representatives. Costs, materials, and practices are not applicable to all situations as management and cultural practices vary among growers and regions. The interest rate of 5% is charged for 6 months on capital needed to produce this crop.

Machinery Costs and Overhead. Machinery operation costs are determined by using average established custom rates to cover machine and equipment operating costs. These rates were obtained from two publications: 1) USU Custom Rates Survey Report 2009/2010 (Drollette 2010). 2) Custom Rates for Idaho Agricultural Operations 2010-2011 (Patterson and Painter 2011). Fuel costs were significantly lower at the time of this printing, as a result field operation costs were lowered by 5.5%

Table 1. 2015 Costs and Returns for Roundup Ready™ Grain Corn

Receipts	Quantity per acre	Unit	2015 Values			2014 Values		
			Price/Unit	Value/Acre	% Change	Price/Unit	Value/Acre	% Change
Grain Corn	205	bushels	\$4.70	\$963.50		\$5.18	\$1,061.90	-9.3%
Subtotal Receipts				\$963.50			\$1,061.90	
Inputs and Services								
Crop Insurance (CAT)				\$1.50			\$5.00	-70.0%
Fertilizer								
46-0-0 (pre plant)	160	units	\$0.55	\$87.62		\$0.62	\$99.22	-11.7%
11-52-0	100	units	\$0.56	\$56.13		\$0.57	\$56.98	-1.5%
46-0-0 (side dress)	80	units	\$0.55	\$43.81		\$0.62	\$49.61	-11.7%
Application	2	acre	\$6.00	\$12.00		\$6.00	\$12.00	0.0%
Herbicides								
Roundup	1	qt	\$7.67	\$7.67		\$7.88	\$7.88	-2.6%
Banvel	0.5	pt	\$12.68	\$6.34		\$11.45	\$5.73	10.8%
Application	1	acre	\$6.00	\$6.00		\$6.00	\$6.00	0.0%
Seed	27	lbs	\$5.25	\$141.75		\$5.50	\$148.50	-4.5%
Seasonal Employees	1	acre	\$45.39	\$45.39		\$45.39	\$45.39	0.0%
Irrigation Water Assessment	1	acre	\$18.00	\$18.00		\$18.00	\$18.00	0.0%
Corn Drying	205	bushels	\$0.28	\$58.12		\$0.30	\$58.50	-0.7%
Interest on Operating Capital	Rate	Term	Principle			Principle		
	6.0%	0.50/yr	\$484.32	\$14.53		\$512.80	\$15.28	-4.9%
Subtotal Inputs and Services				\$498.85			\$528.08	-5.5%
Field Operations	Times							
Discing	2	acre	\$14.54	\$29.09		\$15.39	\$30.78	-5.5%
Plowing	1	acre	\$27.70	\$27.70		\$29.31	\$29.31	-5.5%
Roller Harrow	1	acre	\$13.51	\$13.51		\$14.30	\$14.30	-5.5%
Land Plane	1	acre	\$8.51	\$8.51		\$9.00	\$9.00	-5.5%
Plant	1	acre	\$15.66	\$15.66		\$16.57	\$16.57	-5.5%
Cultivation	2	acre	\$13.47	\$26.93		\$14.25	\$28.50	
Combining	1	acre	\$34.68	\$34.68		\$36.70	\$36.70	-5.5%
Shred Stalks	1	acre	\$13.51	\$13.51		\$14.30	\$14.30	-5.5%
Storage	205	bushels	\$0.19	\$38.75		\$0.20	\$41.00	-5.5%
Trucking	205	bushels	\$0.33	\$67.80		\$0.35	\$71.75	-5.5%
Subtotal Field Operations Costs				\$276.14			\$292.21	-5.5%
Total Input, Services and Field Operation Costs				\$774.99			\$820.29	-5.5%
Contribution Margin				\$188.51			\$241.61	-22.0%
Overhead								
Accounting, liability insurance, vehicle cost, office expense				\$15.00			\$15.00	0.0%
Cash lease/opportunity cost for land				\$125.00			\$125.00	0.0%
Total Overhead				\$140.00			\$140.00	0.0%
Total Costs				\$914.99			\$960.29	-4.7%
Net Returns to Owner (for unpaid management and risk)				\$48.51			\$101.61	-52.3%
Breakeven Yield	2015	2014	% Change	Breakeven Price	2015	2014	% Change	
Bu. Necessary to Cover Variable Costs	165 bu	158 bu	+4.1%	Operating Costs (\$/bu.)	\$3.78	\$4.00	-5.5%	
Bu. Necessary to Cover Fixed Costs	30 bu	27 bu	+10.2%	Fixed Costs (\$/bu.)	\$0.68	\$0.68	+0.0%	
Bu. Necessary to Cover Total Costs	195 bu	185 bu	+5.0%	Total Costs (\$/bu.)	\$4.46	\$4.68	-4.7%	

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FINANCIAL AND PRODUCTION ANALYSIS

Contribution Margin. This represents the portion of sales revenue from the operation that is not consumed by variable costs and so contributes to the coverage of fixed costs and net profit.

Contribution Margin Ratio. A percentage total sales that is not consumed by variable costs. For example, a contribution margin ratio of 22.2% means that for each dollar increase in sales, total contribution margin will increase by 22.2 cents.

Fixed Costs (Overhead). These are costs that take place irrespective of production. For example, fixed costs include depreciation on equipment and buildings, property taxes, interest on land, equipment or buildings as well as overhead, etc.

Net Income or Profit. Sometimes referred to as net profit, is the operation's total sales per acre of minus total costs per acre.

Net Income or Profit Ratio. A ratio of profitability calculated as net income per acre of grain corn divided by total sales per acre. The net income or profit ratio is very useful in determining profitability and is displayed as a percentage. A profit margin of 5% means the farm has a net income of 5 cents for every dollar of sales.

Price Breakeven. Breakeven analysis is a tool used to determine the relationship between the revenue and costs associated with an enterprise. Price breakeven represents the price point which must be reached to cover costs of the enterprise.

Production Breakeven. This is the production point which total expenses and total revenue are equal or the bushels or tons needed to cover costs of the enterprise.

Variable Costs (Operating). Variable or input costs are those costs that change with production. These costs include fertilizer, seed, chemicals and other inputs which are directly associated with grain corn production.

Calculating your Own Budget with Excel. To download a free Excel spreadsheet of this and other crop and livestock enterprise budgets, go to <http://extension.usu.edu/boxelder> and select the Agriculture – Crop/Livestock Budgets.

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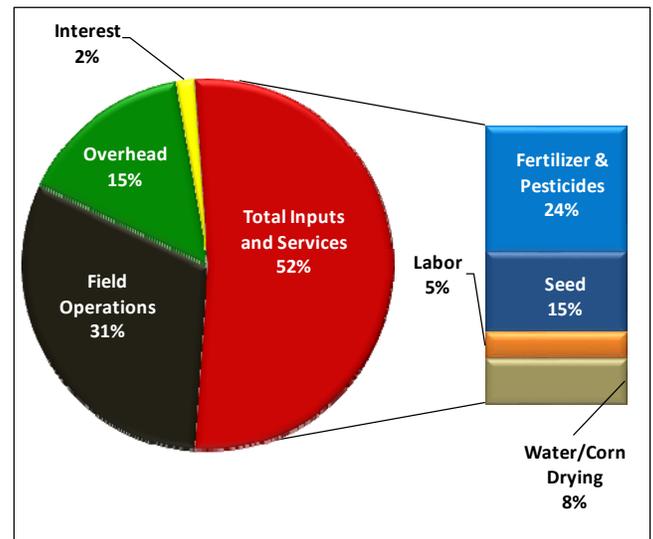


Figure 2. Percent Input, Field Operations, Overhead and Interest Costs Required to Produce Grain Corn.



Figure 3. Net Income or Profit Margin.

REFERENCES.

- Drollette, S.A. (2010). Custom Rates Survey Report 2009/2010. Department of Applied Economics, Utah State University. AG/ECON/2010-02RM.
- Patterson, P.E., and Painter, K. (2011). Custom Rates for Idaho Agricultural Operations 2010-2011. University of Idaho Extension. BUL 729.
- USDA ERS. (2011) Hourly and annual earnings, selected occupations, May 2011. Online at: [http://www.ers.usda.gov/topics/farm economy/farm-labor/background.aspx#wagesper Acre](http://www.ers.usda.gov/topics/farm%20economy/farm-labor/background.aspx#wagesper%20Acre)

Table 2. Net Income (Total Sales per Acre - Total Costs)

Total Costs per Acre	Total Sales per Acre				
	\$864	\$914	\$964	\$1,014	\$1,064
\$815	\$48.51	\$98.51	\$148.51	\$198.51	\$248.51
\$865	-\$1.49	\$48.51	\$98.51	\$148.51	\$198.51
\$915	-\$51.49	-\$1.49	\$48.51	\$98.51	\$148.51
\$965	-\$101.49	-\$51.49	-\$1.49	\$48.51	\$98.51
\$1,015	-\$151.49	-\$101.49	-\$51.49	-\$1.49	\$48.51

Table 3. Net Income / Total Sales Ratio (Net Income per Acre / Total Sales per Acre)

Net Income/Acre	Total Sales per Acre				
	\$864	\$914	\$964	\$1,014	\$1,064
\$149	17.2%	16.3%	15.4%	14.7%	14.0%
\$99	11.4%	10.8%	10.2%	9.7%	9.3%
\$49	5.6%	5.3%	5.0%	4.8%	4.6%
-\$1	-0.2%	-0.2%	-0.2%	-0.1%	-0.1%
-\$51	-6.0%	-5.6%	-5.3%	-5.1%	-4.8%

Table 4. Contribution Margin (Total Sales per Acre - Variable Costs per Acre)

Variable Costs per Acre	Total Sales per Acre				
	\$864	\$914	\$964	\$1,014	\$1,064
\$675	\$188.51	\$238.51	\$288.51	\$338.51	\$388.51
\$725	\$138.51	\$188.51	\$238.51	\$288.51	\$338.51
\$775	\$88.51	\$138.51	\$188.51	\$238.51	\$288.51
\$825	\$38.51	\$88.51	\$138.51	\$188.51	\$238.51
\$875	-\$11.49	\$38.51	\$88.51	\$138.51	\$188.51

Table 5. Contribution Margin Ratio (Contribution Margin per Acre / Total Sales per Acre)

Contribution Margin	Total Sales per Acre				
	\$864	\$914	\$964	\$1,014	\$1,064
\$289	33.4%	31.6%	29.9%	28.5%	27.1%
\$239	27.6%	26.1%	24.8%	23.5%	22.4%
\$189	21.8%	20.6%	19.6%	18.6%	17.7%
\$139	16.0%	15.2%	14.4%	13.7%	13.0%
\$89	10.3%	9.7%	9.2%	8.7%	8.3%

Table 6. Production Breakeven (Total Costs per Acre / Grain Corn Price per Bushel)

Price per bushel	Total Costs				
	\$815	\$865	\$915	\$965	\$1,015
\$5.70	143 bu.	152 bu.	161 bu.	169 bu.	178 bu.
\$5.20	157 bu.	166 bu.	176 bu.	186 bu.	195 bu.
\$4.70	173 bu.	184 bu.	195 bu.	205 bu.	216 bu.
\$4.20	194 bu.	206 bu.	218 bu.	230 bu.	242 bu.
\$3.70	220 bu.	234 bu.	247 bu.	261 bu.	274 bu.

Table 7. Price Breakeven (Total Costs per Acre / Grain Corn Yield per Acre)

Yield per Acre	Total Costs				
	\$815	\$865	\$915	\$965	\$1,015
155 bu	\$5.26/bu.	\$5.58/bu.	\$5.90/bu.	\$6.23/bu.	\$6.55/bu.
180 bu	\$4.53/bu.	\$4.81/bu.	\$5.08/bu.	\$5.36/bu.	\$5.64/bu.
205 bu	\$3.98/bu.	\$4.22/bu.	\$4.46/bu.	\$4.71/bu.	\$4.95/bu.
230 bu	\$3.54/bu.	\$3.76/bu.	\$3.98/bu.	\$4.20/bu.	\$4.41/bu.
255 bu	\$3.20/bu.	\$3.39/bu.	\$3.59/bu.	\$3.78/bu.	\$3.98/bu.