



2015 Costs and Returns for Roundup Ready™ Silage Corn, Northern Utah

Lyle Holmgren and Mike Pace, USU Extension

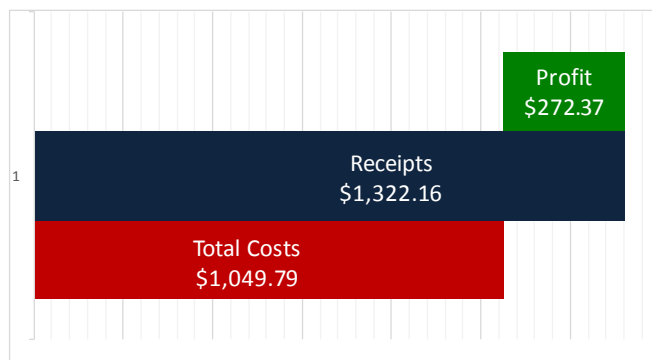


Figure 1. Estimated Receipts, Costs and Profit for Silage Corn.

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 silage 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 100 acres are cultivated for silage corn production and the remaining acres consist of alfalfa, wheat or grain 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 28 tons 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 operating capital needed to produce this crop. Fuel costs were significantly lower at the time of this printing, as a result field operation costs were lowered by 5.5%.

Machinery Costs and Overhead. Machinery variable 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).

Table 1. 2015 Costs and Returns for Roundup Ready™ Corn Silage (100 acres)

Receipts	Quantity	Unit	2014 Values			2013 Values			
	per acre		Price/Unit	Value/Acre	% Change	Price/Unit	Value/Acre	% Change	
Corn Silage	28	tons	\$47.22	\$1,322.16		\$48.75	\$1,365.00	-3.1%	
Subtotal Receipts				\$1,322.16			\$1,365.00		
Inputs and Services									
Crop Insurance (CAT)				\$3.00			\$3.00	0.0%	
Fertilizer									
46-0-0 (pre plant)	160	units	\$0.55	\$87.62		\$0.60	\$96.00	-8.7%	
11-52-0	100	units	\$0.56	\$56.13		\$0.50	\$50.00	12.3%	
46-0-0 (side dress)	80	units	\$0.55	\$43.81		\$0.60	\$48.00	-8.7%	
Application	2	acre	\$6.00	\$12.00		\$6.00	\$12.00	0.0%	
Herbicides									
Roundup	1	qt	\$7.67	\$7.67		\$8.88	\$8.88	-13.7%	
Banvel	0.5	pt	\$12.68	\$6.34		\$8.33	\$4.17	52.3%	
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%	
Interest on Operating Capital	Rate	Term	Principle		'14 Rate	Principle			
	5.00%	0.50/yr	\$427.70	\$10.69	\$5.50	\$439.94	\$12.10	-11.6%	
Subtotal Inputs and Services				\$438.40			\$452.03		
Field Operations									
	Times								
Discing	2	acre	\$14.54	\$29.08		\$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	\$8.50	\$8.50		\$9.00	\$9.00	-5.6%	
Plant	1	acre	\$15.66	\$15.66		\$16.57	\$16.57	-5.5%	
Cultivation/Furrowing	2	acre	\$13.47	\$26.94		\$14.25	\$28.50	-5.5%	
Chopping	28	ton	\$8.00	\$224.00		\$8.00	\$224.00	0.0%	
Inoculant	28	ton	\$1.00	\$28.00		\$1.00	\$28.00	0.0%	
Haul Silage to Pit	28	ton	\$2.00	\$56.00		\$2.00	\$56.00	0.0%	
Packing Silage in Pit	28	ton	\$1.50	\$42.00		\$1.50	\$42.00	0.0%	
Subtotal Field Operations Costs				\$471.39			\$478.46		
Total Input, Services and Field Operation Costs				\$909.79			\$930.49		
Contribution Margin				\$412.37			\$434.51		
Overhead									
Accounting, liability insurance, vehicle cost, office expense				\$15.00			15.00	0.0%	
Cash lease for land (includes property tax and water assessment)				\$125.00			125.00	0.0%	
Total Overhead				\$140.00			140.00		
Total Costs				\$1,049.79			\$1,070.49		
Net Returns to Owner (for unpaid management and risk)				\$272.37			\$294.51		
Production or Yield Breakeven									
Tons Necessary to Cover Variable Costs	2015	2014	% Change	Price Breakeven			2015	2014	% Change
	19.3 tons	19.1 tons	0.9%	Operating Costs (\$/ton)			\$32.49	\$33.23	-2.2%
Tons Necessary to Cover Fixed Costs	3.0 tons	2.9 tons	3.2%	Fixed Costs (\$/ton)			\$5.00	\$5.00	0.0%
Tons Necessary to Cover Total Costs	22.2 tons	22.0 tons	1.2%	Total Costs (\$/ton)			\$37.49	\$38.23	-1.9%

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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, etc.

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

Net Income or Profit Ratio. A ratio of profitability calculated as net income divided by total sales. The net income or profit ratio is very useful in determining profitability and is displayed as a percentage. A profit margin of 20% means the farm has a net income of 20 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 the costs of the enterprise. Breakeven can be calculated on variable costs and fixed costs.

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, hourly labor and other inputs which are directly associated with corn silage 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 link.

Contact Information:

USU Extension, Box Elder County
lyle.holmgren@usu.edu
435-279-4400

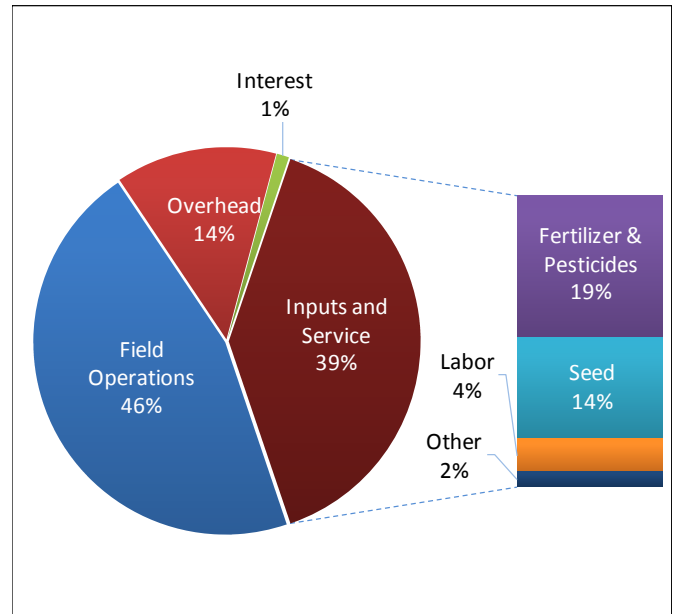


Figure 2. Percent Input, Field Operations and Overhead Required to Produce Silage Corn

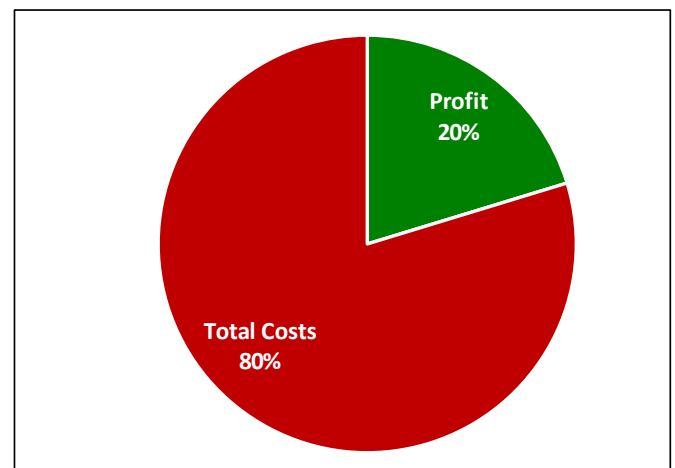


Figure 3. Net Income or Profit Margin

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#wages>

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

Total Costs per Acre	Total Sales per Acre				
	\$1,122	\$1,222	\$1,322	\$1,422	\$1,522
\$950	\$172	\$272	\$372	\$472	\$572
\$1,000	\$122	\$222	\$322	\$422	\$522
\$1,050	\$72	\$172	\$272	\$372	\$472
\$1,100	\$22	\$122	\$222	\$322	\$422
\$1,110	\$12	\$112	\$212	\$312	\$412

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

Net Income/Acre	Total Sales per Acre				
	\$1,122	\$1,222	\$1,322	\$1,422	\$1,522
\$312	27.8%	25.6%	23.6%	22.0%	20.5%
\$292	26.1%	23.9%	22.1%	20.6%	19.2%
\$272	24.3%	22.3%	20.6%	19.2%	17.9%
\$252	22.5%	20.6%	19.1%	17.7%	16.6%
\$232	20.7%	19.0%	17.6%	16.3%	15.3%

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

Variable Costs per Acre	Total Sales per Acre				
	\$1,122	\$1,222	\$1,322	\$1,422	\$1,522
\$810	\$312	\$412	\$512	\$612	\$712
\$860	\$262	\$362	\$462	\$562	\$662
\$910	\$212	\$312	\$412	\$512	\$612
\$960	\$162	\$262	\$362	\$462	\$562
\$1,010	\$112	\$212	\$312	\$412	\$512

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

Contribution Margin	Total Sales per Acre				
	\$1,122	\$1,222	\$1,322	\$1,422	\$1,522
\$512	45.7%	41.9%	38.8%	36.0%	33.7%
\$462	41.2%	37.8%	35.0%	32.5%	30.4%
\$412	36.7%	33.7%	31.2%	29.0%	27.1%
\$362	32.3%	29.7%	27.4%	25.5%	23.8%
\$312	27.8%	25.6%	23.6%	22.0%	20.5%

Table 6. Production Breakeven (Total Costs per Acre / Corn Silage Price per Ton)

Price per Ton	Total Costs				
	\$950	\$1,000	\$1,050	\$1,100	\$1,150
\$52	18 tons	19 tons	20 tons	21 tons	22 tons
\$50	19 tons	20 tons	21 tons	22 tons	23 tons
\$47	20 tons	21 tons	22 tons	23 tons	24 tons
\$45	21 tons	22 tons	23 tons	25 tons	26 tons
\$42	22 tons	24 tons	25 tons	26 tons	27 tons

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

Yield per Acre	Total Costs				
	\$850	\$950	\$1,050	\$1,150	\$1,150
32 tons	\$27/ton	\$30/ton	\$33/ton	\$36/ton	\$36/ton
30 tons	\$28/ton	\$32/ton	\$35/ton	\$38/ton	\$38/ton
28 tons	\$30/ton	\$34/ton	\$37/ton	\$41/ton	\$41/ton
26 tons	\$33/ton	\$37/ton	\$40/ton	\$44/ton	\$44/ton
24 tons	\$35/ton	\$40/ton	\$44/ton	\$48/ton	\$48/ton