

February 2015

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).

AG/Agribusiness/2015-04pr

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

		Quantity		2014 Values			2013 Values		
Receipts		per acre	Unit	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 Assess	ment	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 Se	rvices					\$438.40		\$452.03	-3.0%
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	5	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 Operation	ons Costs					\$471.39		\$478.46	-1.5%
Total Input, Services a	nd Field Op	eration Cos	ts			\$909.79		\$930.49	-2.2%
Contribution Margin						\$412.37		\$434.51	-5.1%
Overhead									
Accounting, liability in	nsurance, vehi	cle cost, offic	e expense		\$15.00			15.00	0.0%
Cash lease for land (ir	cludes prope	rty tax and wa	iter assessm	ent)	\$125.00			125.00	0.0%
Total Overhead						\$140.00		140.00	0.0%
Total Costs						\$1,049.79		\$1,070.49	-1.9%
Net Returns to Owner	(for unpaid	managemer	nt and risk	:)		\$272.37		\$294.51	-7.5%
Production or Yield Breakeven		2015	2014	% Change	Price Breake	ven	2015	2014	% Change
Tons Necessary to Cover Var	iable Costs	19.3 tons	19.1 tons	0.9%	Operating Cost	s (\$/ton)	\$32.49	\$33.23	-2.2%
Tons Necessary to Cover Fix	ed Costs	3.0 tons	2.9 tons	3.2%	Fixed Costs (\$/	ton)	\$5.00	\$5.00	0.0%
Tons Necessary to Cover Tot	al Costs	22.2 tons	22.0 tons	1.2%	Total Costs (\$/t	:on)	\$37.49	\$38.23	-1.9%

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions. Utah State University employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities. This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Kenneth L. White, Vice President for Extension and Agriculture, Utah State University.

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 <u>http://extension.usu.edu/boxelder</u> 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	Total Sales per Acre						
per Acre	\$1,122 \$1,222 \$1,322 \$1,422 \$						
\$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	Total Sales per Acre					
Income/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	Total Sales per Acre						
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	Total Sales per Acre					
Margin	\$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	Total Costs					
per Ton	\$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	Total Costs					
per Acre	\$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	