Agriculture

EXTENSION
UtahStateUniversity

extension.usu.edu

September 2019 AG/EnterpriseBudgets/2019-01pr

2019 Costs and Returns for Irrigated Safflower, Northern Utah

Mike Pace, Clark Israelsen, Ryan Larsen

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 page 4 contains sample costs and returns to establish and produce irrigated safflower in Northern Utah. 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. The sample budget may list production practices, inputs and services or field operations that your farm does not use. If this is the case, delete them and refigure the totals. If you have additional field operations or inputs, add them to the budget along with their costs to get a more accurate cost of production estimate for growing irrigated safflower on your farm.

Farm. The 2012 Census of Agriculture shows the representative farm consists of 950 acres of farmland that is both leased and owned, on which 100 acres are cultivated for safflower production and the remaining acres consist of wheat, alfalfa 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.

Receipts. A safflower production average of 3,000 lbs. per acre used for this publication was determined by interviews with local producers and crop advisors. The safflower prices were determined from interviews with safflower brokers and growers.

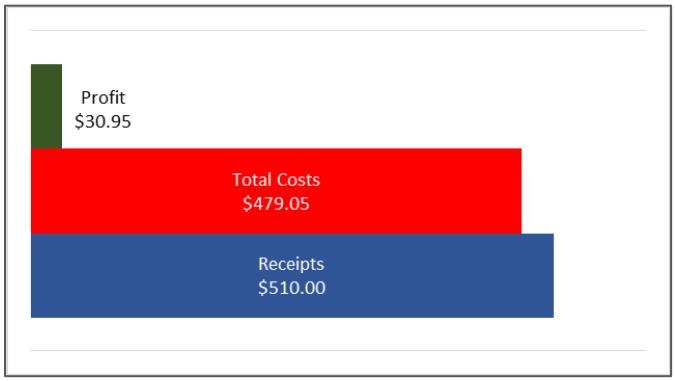

Figure 1. Estimated Receipts, Costs, and Profit for an Irrigated Safflower Enterprise.

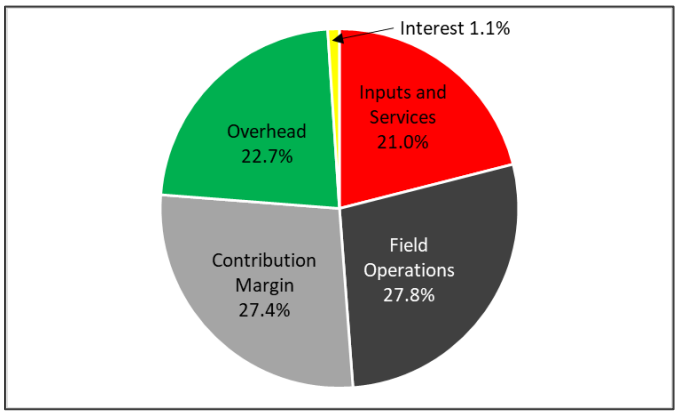

Figure 2. Percent Input and Services, Field Operation, Contribution Margins and Overhead Costs.

Inputs and Services. Inputs and services include crop insurance, fertilizer, pesticides, seed, and seasonal employees. Input and chemical prices are determined from interviews with seed, fertilizer and chemical dealers. The irrigation water assessment is what growers are paying to local canal companies per water share for ditch maintenance, water delivery, etc.

Seasonal Employees. One seasonal employee is hired a total of 2,500 hrs. per year and is paid a base wage plus FICA at the rate of $13.32/hr., including employer's share of payroll tax (USDA ERS). The total annual labor cost is $33,300 for the 950 acres resulting in an average cost per acre of $35.05.

Field Operations and Operating Interest. Field operations include things like tillage, seeding, harvesting, and hauling. The practices described in this fact sheet are considered typical for 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 of the state. An 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 the average established custom rates to cover machine and equipment operating costs. These rates were obtained from the USU Extension 2018 Custom Rate Survey (Larsen, Nelson, Pace, and Holmgren) and conversations with local growers and chemical dealers. Cash overhead consists of various cash expenses paid out during the year. These costs include property taxes, interest on land, office expenses, liability insurance, property insurance, and accounting /legal costs.

FINANCIAL AND PRODUCTION TERMINOLOGY

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 of total sales that is not consumed by variable costs. For example, a contribution margin ratio of 35.5% from Table 5 means that for each dollar increase in sales, total contribution margin will increase by 35.5 cents.

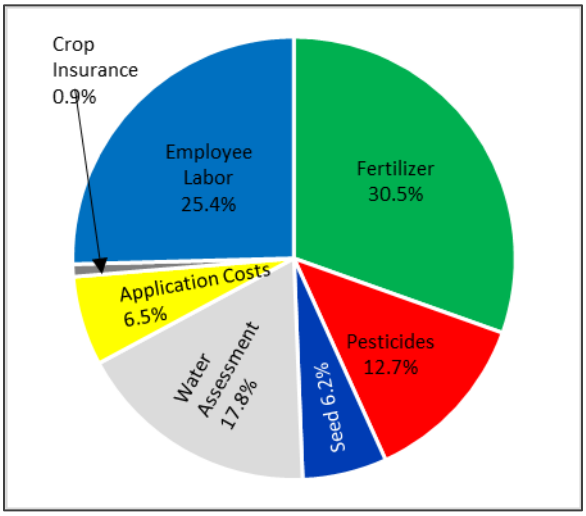

Figure 3. Percent Input and Services Costs.

Fixed Costs (Overhead). These are costs that take place irrespective of production. 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, this is the operation's total sales per acre minus total costs per acre.

Net Income or Total Sales Ratio. A ratio of profitability calculated as net income per acre 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 15.9% means the farm has a net income of 15.9 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. In the example budget on page 4 at the bottom of the page, you would need to sell your safflower for $0.16 per pound in order to breakeven and pay all of your expenses. Of the 16 cents, 11 cents would pay for the operating costs and 5 cents would be needed to pay for the fixed costs. Table 7 on page 5 shows different scenarios based on production and costs. Assume your production records show you have been producing 3,500 lbs. of safflower per acre and your total production costs are still about $480 per

acre. According to the table, you would only need to sell your safflower for 14 cents a lb. to breakeven and anything over that would be a profit to the farm. However, if your irrigated safflower production is only about 2,500 lbs. and your total costs are still $480 per acre, then you would need to sell the safflower for 19 cents a lb. to breakeven. Using this chart and assuming your total costs of production were $429 per acre and your yield was 3,500 lbs., you would only need to sell it for 12 cents per lbs. To use this chart properly, one needs to know their average yields and their total costs of production for growing safflower.

Production or Yield Breakeven. The production breakeven or yield breakeven is the point at which total expenses and total revenue are equal or it is the pounds per acre needed to cover the costs of the enterprise. In the example budget on page 4 at the bottom of the page, it shows that you would need to produce 2,818 lbs. of safflower per acre in order to pay all of your expenses. You would need to produce at least 1,936 lbs. to pay input, services and field operations and another 882 lbs. to pay for the fixed costs for a total of 2,818 lbs. of safflower per acre. Supposing you were offered a contract price of $0.21 per lb. at the beginning of the growing season and you estimate that your total production costs are closer to $429 per acre, you would only need to produce 2,043 lbs. of safflower per acre to breakeven and the rest of the yield per acre would be profit.

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

REFERENCES

Census of Agriculture. 2012. United States Department of Agriculture. National Agriculture Statistics Service. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Utah/cp49003.pdf

Larsen, R., Nelson, G., Pace, M., and Holmgren, L. (2019). 2018 Custom Rate Survey Department of Applied Economics, Utah State University.

USDA ERS. (2011). Hourly and annual earnings, selected occupations, May 2011. Online at: http://www.ers.usda.gov/topies/farm-economy/farm-labor/background.aspx#wages http://www.ers.usda.gov/topies/farm-economy/farm-labor/background.aspx#wages

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, Ken White, Vice President for Extension and Agriculture, Utah State University.

Table 1. 2019 Costs and Returns for Irrigated Safflower

Receipts	Quantity per acre	Unit	Price per unit	Value per acre	Total
Safflower	3,000	lbs	$0.17	$510.00	
Subtotal Receipts					**$510.00**
Inputs and Services					
Fertilizer					
46-0-0 Urea	75	Units	$0.56	$42.00	
Application	1	Acre	$5.00	$5.00	
Herbicides					
Sonalan (ethalfluralin)	2	Pints	$8.79	$17.57	
Application	1	Acre	$5.00	$5.00	
Seed	25	Lbs	$0.34	$8.50	
Seasonal Employees	1	Acre	$35.05	$35.05	
Irrigation Water Assessment	1	Acre	$24.50	$24.50	
Crop Insurance (NAP)				$1.25	
Subtotal Inputs and Services					**$138.87**
Field Operations	**Times**	**Unit**	**per Unit**	**Acre**	
Fall Chisel Plow	1	Acre	$21.00	$21.00	
Discing	1	Acre	$17.38	$17.38	
Triple K	2	Acre	$15.00	$30.00	
Land Plane	1	Acre	$11.27	$11.27	
Planting	1	Acre	$17.87	$17.87	
Harvesting	1	Acre	$34.69	$34.69	
Hauling	3,000	Lbs	$0.017	$51.00	
Subtotal Field Operations Costs					**$183.21**
Interest on Operating Capital	Rate	Term	Principle		
	5.00%	0.5	$278.87		**$6.97**
Total Input, Service and Field Operation Costs					**$329.05**
Contribution Margin					**$180.95**
Overhead					
Accounting, liability insurance, vehicle cost, office expense				$10.00	
Cash lease for land (includes property tax)				$140.00	
Total Overhead					**$150.00**
Total Costs					**$479.05**
Net Income to Owner (for unpaid management and risk)					**$30.95**

Production or Yield Breakeven (lbs./acre)		Price Breakeven ($/lb.)	
Input, Services and Field Operations	1936	Operating Costs	$0.11
Overhead (Fixed Costs)	882	Fixed Costs	$0.05
Total Costs	2818	Total Costs	$0.16

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

Total Costs	Total Sales per Acre				
per Acre	$410	$460	$510	$560	$660
$379	$30.95	$80.95	$130.95	$180.95	$280.95
$429	-$19.05	$30.95	$80.95	$130.95	$230.95
$479	-$69.05	-$19.05	$30.95	$80.95	$180.95
$529	-$119.05	-$69.05	-$19.05	$30.95	$130.95
$579	-$169.05	-$119.05	-$69.05	-$19.05	$80.95

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

Net	Total Sales per Acre				
Income / Acre	$410	$460	$510	$560	$660
$81	19.7%	17.6%	15.9%	14.5%	12.3%
$56	13.6%	12.2%	11.0%	10.0%	8.5%
$31	7.5%	6.7%	6.1%	5.5%	4.7%
$22	5.4%	4.8%	4.3%	3.9%	3.3%
$17	4.1%	3.7%	3.3%	3.0%	2.6%

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

Variable Costs	Total Sales per Acre				
per Acre	$410	$460	$510	$560	$610
$229	$180.95	$230.95	$280.95	$330.95	$380.95
$279	$130.95	$180.95	$230.95	$280.95	$330.95
$329	$80.95	$130.95	$180.95	$230.95	$280.95
$379	$30.95	$80.95	$130.95	$180.95	$230.95
$429	-$19.05	$30.95	$80.95	$130.95	$180.95

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

Contribution	Total Sales per Acre				
Margin	$410	$460	$510	$560	$610
$281	68.5%	61.1%	55.1%	50.2%	46.1%
$231	56.3%	50.2%	45.3%	41.2%	37.9%
$181	44.1%	39.3%	35.5%	32.3%	29.7%
$131	31.9%	28.5%	25.7%	23.4%	21.5%
$81	19.7%	17.6%	15.9%	14.5%	13.3%

Table 6. Production or Yield Breakeven (Total Costs per Acre / Safflower Price per lb.)

Price	Total Costs				
per/Pound	$429	$454	$479	$504	$529
$0.21	2043 lbs	2162 lbs	2281 lbs	2400 lbs	2519 lbs
$0.19	2258 lbs	2390 lbs	2521 lbs	2653 lbs	2784 lbs
$0.17	2524 lbs	2671 lbs	2818 lbs	2965 lbs	3112 lbs
$0.15	2860 lbs	3027 lbs	3194 lbs	3360 lbs	3527 lbs
$0.13	3300 lbs	3493 lbs	3685 lbs	3877 lbs	4070 lbs

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

Yield	Total Costs				
per/Acre	$429	$454	$479	$504	$529
3500	$0.12	$0.13	$0.14	$0.14	$0.15
3250	$0.13	$0.14	$0.15	$0.16	$0.16
3000	$0.14	$0.15	$0.16	$0.17	$0.18
2750	$0.16	$0.17	$0.17	$0.18	$0.19
2500	$0.17	$0.18	$0.19	$0.20	$0.21