



By Shon Ferguson and Simon Weseen

Organic Crop Planning Guide

BROWN SOIL ZONE

The following crop budgets are intended to serve as a guide to estimate the income and cost for different crops using organic farming practices. These estimates do not represent provincial average cost of production figures.

The figures provide an estimate of variable expenses and other expenses (depreciation and investment cost for machinery, buildings and land). The grain prices and yields are based on a survey of organic farmers in 2004. Yields are based on a Saskatchewan-wide average.

On each farm, costs and yields differ due to soil type, climatic conditions and agronomic practices. Farm managers should determine their own costs, yields and expected commodity prices and adjust or change the assumptions listed on the back of this publication. Blank worksheets are provided for this purpose.

Using the Guide

When comparing returns per acre of different crops, you must add the green manure costs to the costs of growing harvested crops. The best way of comparing different rotations is to calculate the returns per rotation acre for different rotations of crops. Refer to the example in this guide.

The break-even yields per acre show the level of yields producers would need to achieve to cover costs based on the estimated market price. The break-even prices for crops show the levels of prices needed by

producers to cover costs if the estimated average yields are obtained. Farm managers are advised to interpret these figures very carefully, and evaluate new information as it becomes available.

Profitability and Agronomics

These crop budgets can be used to assist producers in deciding which crops will be the most profitable for the coming year or in deciding which crop rotations and farming practices may be the most profitable for the farm over the long term. However, long term profitability and sustainability includes many factors such as fertility, disease, weed and insect management that must also be considered when choosing crops and rotations.

Planning

Deciding which crops to grow this coming year should be based on a long-term rotation. When looking at long-term decisions such as crop rotations, you must look at all the costs, including fixed costs. The **return over total expenses** should be the basis of comparison between alternatives.

Within your long-term rotation, you may have some flexibility in your crop choices. Deciding which crops to grow this coming year can be made by comparing the **return over variable expenses** (estimated gross revenue minus variable expenses).

CROP PRODUCTION COSTS (\$/ACRE) BROWN SOIL ZONE 2005

	Transition Crops										Green Manure Plow-Down			Green Manure Seed			Certified Organic Crops										
	Grass/Alfalfa Year 1	Grass/Alfalfa Year 2	Grass/Alfalfa Year 3	Spring Wheat	Durum Wheat	CPS Wheat	Feed Barley	Oats	Large Green Lentils	Mustard	Brown Flax	Tillage Fallow	Red Clover	Chickling Vetch	Indianhead Lentil	Red Clover	Chickling Vetch	Indianhead Lentil	Spring Wheat	Durum Wheat	CPS Wheat	Feed Barley	Oats	Large Green Lentils	Mustard	Brown Flax	
REVENUE PER ACRE																											
Estimated Yield (bu/ac./lb./ac.tonne/ac) (A)	1.5	1.5	1.5	18.6	20.1	22.2	28.2	32.9	502.5	7.7	7.0				250.0	15.0	600.0	18.6	20.1	22.2	28.2	32.9	502.5	7.7	7.0		
Est. On Farm Market Price/bus./lb./tonne (B)	55.00	55.00	55.00	3.53	2.87	1.92	1.92	1.75	0.18	8.00	7.75				1.30	14.00	0.50	8.02	9.00	8.53	4.24	3.75	0.55	34.33	28.70		
Estimated Gross Revenue/ac (AxB)-(C)	0.00	82.50	82.50	65.66	57.69	42.62	54.14	57.62	90.45	61.60	53.86	0.00	0.00	0.00	0.00	325.00	210.00	300.00	149.17	180.90	189.37	119.57	123.47	276.38	264.34	199.47	
EXPENSES PER ACRE																											
Variable Expenses/acre																											
Seed	10.50			12.56	14.03	13.32	6.89	10.25	50.40	3.74	20.13	11.20	19.50	28.00	11.20	19.50	28.00	12.56	14.03	13.32	6.89	10.25	50.40	3.74	20.13		
Innoculant	4.00								4.00				4.00	4.00	4.00	4.00	4.00	4.00						4.00			
Forage Costs - Seeding	13.00																										
- Harvesting		8.14	8.14																								
- Breaking				14.06																							
Machinery Operating - Fuel				9.48	9.48	9.48	9.48	9.48	9.48	9.48	9.48	5.90	5.90	5.90	5.90	9.48	9.48	9.48	9.48	9.48	9.48	9.48	9.48	9.48	9.48	9.48	
- Repair				9.38	9.38	9.38	9.38	9.38	9.38	9.38	9.38	3.40	3.40	3.40	3.40	9.38	9.38	9.38	9.38	9.38	9.38	9.38	9.38	9.38	9.38	9.38	
Custom Work & Hired Labour				4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84					4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84	
Crop Insurance Premium	0.00	0.00	0.00	3.44	3.93	4.54	4.31	4.12	13.34	6.52	7.88					4.88	5.58	6.45	6.12	6.22	22.94	8.98	10.24				
Utilities & Miscellaneous	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	
Interest on Variable Expenses	0.82	0.30	0.68	1.14	1.19	1.19	1.01	1.10	2.51	0.99	1.46	1.00	2.21	2.87	3.54	1.12	1.34	1.56	1.18	1.23	1.24	1.06	1.15	2.76	1.05	1.52	
Total Variable Expenses (D)	31.60	11.72	26.16	44.11	46.13	46.03	39.19	42.45	97.23	38.22	56.45	13.58	29.99	38.95	48.12	43.30	51.82	60.54	45.60	47.82	47.99	41.04	44.60	107.09	40.75	58.88	
Other Expenses/acre																											
Building Repair	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	
Property Taxes	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	
Insurance & Licenses	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	
Machinery Depreciation				12.09	12.09	12.09	12.09	12.09	15.59	12.09	12.09	6.80	6.80	6.80	6.80	12.09	12.09	12.09	12.09	12.09	12.09	12.09	12.09	15.59	12.09	12.09	
Building Depreciation	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	
Machinery Investment				5.80	5.80	5.80	5.80	5.80	7.48	5.80	5.80	3.26	3.26	3.26	3.26	5.80	5.80	5.80	5.80	5.80	5.80	5.80	7.48	5.80	5.80		
Building Investment	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	
Land Investment	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	13.95	
Total Other Expenses (E)	24.18	24.18	24.18	42.08	42.08	42.08	42.08	42.08	47.26	42.08	42.08	34.25	34.25	34.25	34.25	42.08	42.08	42.08	42.08	42.08	42.08	42.08	42.08	47.26	42.08	42.08	
Labour and Management (F)*																											
Total Expenses (D+E+F)-(G)	55.78	35.91	50.34	86.19	88.20	88.10	81.26	84.52	144.48	80.30	98.53	47.83	64.24	73.19	82.37	85.37	93.89	102.62	87.67	89.89	90.06	83.12	86.68	154.34	82.82	100.95	
Green Manure Total Cost (H)**																											
Total Rotational Expense (G+H)-(I)	55.78	35.91	50.34	86.19	88.20	88.10	81.26	84.52	144.48	80.30	98.53	47.83	64.24	73.19	82.37	85.37	93.89	102.62	87.67	89.89	90.06	83.12	86.68	154.34	82.82	100.95	
RETURNS PER ACRE																											
Return over Variable Expenses (C-D)	-31.60	70.78	56.34	21.54	11.56	-3.40	14.96	15.17	-6.78	23.38	-2.59	-13.58	-29.99	-38.95	-48.12	281.70	158.18	239.46	103.58	133.08	141.38	78.52	78.87	169.29	223.59	140.59	
Return over Total Rotational Expenses (C-I)	-55.78	46.59	32.16	-20.53	-30.51	-45.48	-27.12	-26.90	-54.03	-18.70	-44.66	-47.83	-64.24	-73.19	-82.37	239.63	116.11	197.38	61.50	91.01	99.31	36.45	36.79	122.03	181.52	98.51	
BREAK-EVEN YIELD PER ACRE																											
To Cover Variable Expenses	0.2	0.5	12.5	16.1	24.0	20.4	24.3	540.2	4.8	7.3					33.3	121.1		5.7	5.3	5.6	9.7	11.9	194.7	1.2	2.1		
To Cover Total Rotational Expenses	0.7	0.9	24.4	30.7	45.9	42.3	48.3	802.7	10.0	12.7					65.7	205.2		10.9	10.0	10.6	19.6	23.1	280.6	2.4	3.5		
BREAK-EVEN PRICE PER BUS/LB																											
To Cover Variable Expenses	10.74	20.36	2.61	2.51	2.27	1.54	1.42	0.20	5.53	8.75					0.19	0.11		2.69	2.60	2.36	1.61	1.49	0.22	5.86	9.10		
To Cover Total Rotational Expenses	23.94	33.56	4.63	4.39	3.97	2.88	2.57	0.29	10.43	14.18					0.34	0.17		4.71	4.47	4.06	2.95	2.63	0.31	10.76	14.53		

1 The budget for grass/alfalfa in year 1 is representative of seeding grass/alfalfa separately. This budget cannot be used if the grass/alfalfa is underseeded into the previous crop.

*These budgets do not include an estimate for owner/operator labour and management. This value varies greatly and depends on both the farm manager's needs as well as the ability of the farm business to generate income. Farm managers need to determine their own actual labor and management cost and add it to total expenses.

**The harvested crop budgets do not include any costs from the green manure year(s). Farm managers need to include the cost of a green manure crop when calculating the cost of a crop rotation, either by adding to the cost of other crops (Item H), or adding the green manure as a separate crop as part of a total rotation cost calculation.

BROWN SOIL ZONE ASSUMPTIONS

1. **Alfalfa/grass** cost assumptions taken from SAF *Dryland Forage Production Costs*
2. **Seed including cleaning**
 - Organic spring wheat 1.5 bu/ac at \$8.37/bu.
 - Organic durum wheat 1.5 bu/ac at \$9.35/bu.
 - Organic CPS wheat 1.5 bu/ac at \$8.88/bu.
 - Organic feed barley 1.5 bu/ac at \$4.59/bu.
 - Organic oats 2.25 bu/ac at \$4.10/bu.
 - Organic large green lentils 90 lbs/ac at \$0.56/lb.
 - Organic mustard 6 lbs/ac at \$0.62/lb.
 - Organic flax 0.67 bu/ac at \$30.20/lb.
 - Organic sweet clover 8 lbs/ac at \$1.40/lb.
 - Organic Indianhead lentil 35lbs/ac at \$0.80/lb.
 - Organic AC Greenfix chickling vetch 75 lbs/ac at \$0.26/lb.
 - Organic crested wheatgrass 3 lbs/ac at \$2/lb.
 - Organic alfalfa 2 lbs/ac at \$2.25/lb.
3. **Inoculation and organic fertilizers**
 - Organic lentils, red clover, chickling vetch, Indianhead lentil: inoculation 100% of acres
 - No organic phosphorus, potassium or sulfur costs were applied in these budgets.
4. **Fuel costs** are based on an average from the 2001 *Census of Agriculture* for farms reporting "certified organic field crops" in the brown soil zone, inflated to 2004 values.
5. **Machinery repair** costs are based on an average from the 2001 *Census of Agriculture* for farms reporting "certified organic field crops" in the brown soil zone, inflated to 2004 values.
6. **Custom work and hired labor costs** are based on an average from the 2001 *Census of Agriculture* for farms reporting "certified organic field crops" in the brown soil zone, inflated to 2004 values.
7. **Saskatchewan Crop Insurance Corporation (SCIC)** premiums are based on 70% of the risk area's coverage plus 20%.
8. **Utilities and Miscellaneous** are taken from the SAF *Crop Planning Guide, Brown Soil Zone 2005*.
9. **Operating interest** is calculated on all cash operating costs at 4.8% for 6 months on harvested crops, 18 months for green manure plow-down crops.
10. **Building repair** costs are based on an average from the 2001 *Census of Agriculture* for farms reporting "certified organic field crops" in the brown soil zone, inflated to 2004 values.
11. **Property tax** is taken from the SAF *Crop Planning Guide, Brown Soil Zone 2005*.
12. **Insurance and Licenses** is taken from the SAF *Crop Planning Guide, Brown Soil Zone 2005*.
13. **Machinery depreciation** is calculated at 10% of machinery investment per year on a straight line basis.
14. **Building depreciation** is based on a building investment of \$24 per cultivated acre calculated at 5% per year on a straight line basis, taken from the SAF *Crop Planning Guide, Brown Soil Zone 2005*.
15. **Average machinery investment** is \$120.90 per cultivated acre (from the 2001 *Census of Agriculture* for farms reporting "certified organic field crops" in the brown soil zone, inflated to 2004 values) and \$68 per green manure plow-down/summerfallow acre (from the SAF *Crop Planning Guide, Brown Soil Zone 2005*.)
16. **Investment cost** on building and machinery investment is calculated at an interest rate of 4.8% on the investment per acre.
17. **Land investment cost** of \$15.30/ac is calculated at 4.5% return on investment of \$341 per cultivated acre.
18. **Transition crop prices** are farm gate price estimates for 2005 crop production, provided by SAF in December, 2004 (taken from the SAF *Crop Planning Guide, Brown Soil Zone 2005*)

19. **Certified organic crop prices** are farm gate prices received by organic farmers in Saskatchewan in 2003 and 2004 (taken from the *Organic Crops Price Survey*, undertaken by the Saskatchewan Research Council (SRC). Organic alfalfa, red clover, chickling vetch and Indianhead lentil yields taken from personal communication with organic farmers and agronomists.
20. **Crop yields** are calculated as a percentage of stubble crop conventional yields, taken from the SAF *Crop Planning Guide, Brown Soil Zone 2005*.
 - Organic spring wheat, durum wheat, CPS wheat, feed barley, oats: 75% of conventional yield.
 - Organic large green lentils, peas, mustard, flax: 50% of conventional yield.
 - Organic alfalfa, red clover, chickling vetch and Indianhead lentil yields taken from personal communication with organic farmers and agronomists.
21. **Labour and Management** – These budgets do not include an estimate for owner/operator labour and management. This value varies greatly and farm managers need to determine their own labour and management cost.

For more information contact:

The Organic Trade and Market Analyst
Department of Agricultural Economics
University of Saskatchewan
Telephone (306) 966-4027

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This information is on the University of Saskatchewan Organic Information Website.

Website: <http://organic.usask.ca>

USING THE 2005 CROP BUDGETS

The relative profitability of crops can be difficult to determine when they are part of a longer-term rotation. Profits are easier to compare based on the net returns per rotation acre, which is the average profit or loss per acre, per year for a particular crop rotation.

Step 1. Adjust the Crop Budgets for the Crops to be Compared

The crop budgets shown in this report are based on estimated costs and returns for each crop. The actual costs and returns on your own farm may be different. For example, the crop budgets assume a crop insurance expense. You may not purchase crop insurance, therefore you may wish to change costs to suit the conditions on your own farm. The assumptions which were used to develop the budgets are listed on the back of this report. A blank worksheet is provided to permit you to adjust

the budgets for each crop in the rotations you are comparing.

Step 2. Calculate the Average Returns per Rotation Acre

Use the table below to list the different rotations of crops and fallow that you are considering for your farm. Show the complete rotation from the first year to the last year. Use the adjusted crop budgets for your own farm to calculate the average return per rotation acre for various rotations.

CROP ROTATION RETURNS	Example 1 BROWN SOIL ZONE			Rotation 1		Rotation 2		Rotation 3	
	Crop	Return over Total Expenses \$/acre	Return over Variable Expenses \$/acre	Crop	Return \$/acre	Crop	Return \$/acre	Crop	Return \$/acre
Year 1	Transition Alfalfa/grass	-55.78	-31.60						
Year 2	Transition Alfalfa/grass	46.59	70.78						
Year 3	Transition Alfalfa/grass	32.16	56.34						
Year 4	Certified Org. Flax	98.51	140.59						
Year 5	Certified Org. Spring Wheat	61.50	103.58						
Year 6	Certified Org. Lentils	122.03	169.29						
Total Returns		305.01	508.98						
Total # of years in rotation		6	6						
Return per rotation acre		50.84	84.83						

In this example, both returns over total expenses and returns over variable expenses are calculated.

CROP PRODUCTION COSTS MY FARM	USE THIS WORKSHEET TO ADJUST THE CROP BUDGETS TO YOUR FARM COSTS			
CROPS				
REVENUE PER ACRE				
A Estimated yield (bu/ac; lb/ac)				
B Estimated on-farm market price per bushel or per pound				
C Estimated Gross Revenue per acre (AxB)				
EXPENSES PER ACRE				
Variable Expenses per acre				
Seed				
Inoculant				
Machinery Operating – Fuel				
– Repair				
Custom Work and Hired Labour				
Crop Insurance Premium				
Utilities and Miscellaneous				
Interest on Variable Expenses				
D Total Variable Expenses per acre				
Other Expenses per acre				
Building Repair				
Property Taxes				
Insurance and Licenses				
Machinery Depreciation				
Building Depreciation				
Machinery Investment				
Building Investment				
Land Investment				
E Total Other Expenses				
F. Labour and Management*				
G Total Expenses per acre (D+E+F)				
H Green Manure Total Cost**				
I Total Rotational Expense (G+H)				
RETURNS PER ACRE				
Return over Variable Expenses (C-D)				
Return over Total Expenses (C-I)				
BREAK-EVEN YIELD PER ACRE (lb./ac. Or bu./ac.)				
To Cover Variable Expenses				
To Cover Total Expenses				
BREAK-EVEN PRICE (per bushel or per pound)				
To Cover Variable Expenses				
To Cover Total Expenses				

* The Crop Planning Guide budgets do not include an estimate for owner/operator labour and management. This value varies greatly and depends on both the farm manager's needs as well as the ability of the farm business to generate farm income. Farm managers need to determine their own actual labour and management cost and add it to total expenses.

**The harvested crop budgets do not include any costs from the green manure year(s). Farm managers need to include the cost of a green manure crop when calculating the cost of a crop rotation, either by adding to the cost of other crops (Item H), or adding the green manure as a separate crop as part of a total rotation cost calculation.