University of Idaho
College of Agricultural and Life Sciences

Photo: Alberta Alfalfa Seed Commission

2013 Enterprise Budgets for Southwest Idaho: Alfalfa Seed

Kathleen Painter, Neil Rimbey, Jim Barbour, and Jerry Neufeld[1]

Budget spreadsheets are available at the following link:
http://www.cals.uidaho.edu/aers/r_crops.htm

[1]Painter is a farm and ranch management specialist,
Rimbey is a range economist located at the Caldwell R&E Center,
Barbour is an extension entomologist at the Parma R&E Center, and
Neufeld is an extension educator in Canyon County.

kpainter@uidaho.edu
nrimbey@uidaho.edu
jbarbour@uidaho.edu
jerryn@uidaho.edu

University of Idaho
PO Box 442334
Moscow ID 83844-2334
(208) 885-6041

Instructions and Assumptions for Using Enterprise Budgets and Cost Calculators

Color Coding:
A color coding system is used to indicate the source of the data for each budget and to show which data can be adjusted in the spreadsheet version of this report. Data with orange type can be changed without affecting the underlying equations in this cost calculator. Data with purple type are from the Summary sheet (Table 1). In the Summary sheet, crop price, crop yield, and years in full production have orange type. Adjusting any of those numbers will automatically update all calculations throughout the spreadsheet so you can quickly compare price and yield changes on net returns. Input prices can be easily updated by making changes in the green Input Prices sheet (Table 2). All calculations will again be updated throughout the spreadsheet. You will notice that data from the Input Prices tab appears in green ink on the Budget sheets. Machinery cost data appears in blue type. Please see below for more information on machinery cost calculations.

Input Prices:
By entering input prices on the Input Prices sheet, all of the cost calculations will be automatically updated in the spreadsheet version of this report. Input cost changes can also be made on individual crop price sheets, over-riding the input cost formula on that particular crop budget. Input costs are based on a survey of input suppliers for each region, as reported in the Idaho Crop Input Price Summary for 2011, available online at
http://www.cals.uidaho.edu/aers/PDF/AEES/2011/AEES110411.pdf

Crop Prices:
Crop prices can be adjusted on the Summary tab and the effects of this change will be reflected throughout all the budgets. (Yields can be adjusted similarly.) Crop prices are typically based on five-year average prices received by Idaho growers, with adjustments by region and for some contract crops.

Machinery Costs:
The machinery complement and associated hourly machinery cost data are in the last two tabs in the spreadsheet version (Tables 7 - 10). The per acre machinery cost data are used to create the individualized machinery cost data for each budget. In the crop budget sheets, entries in blue cells are calculated by the machinery cost program and come from the associated Machinery Cost table for that crop. Machinery fixed costs include depreciation, interest, property taxes, insurance, and housing. For the overall farm operation, these costs do not vary by crop, given the ownership of a specific machinery complement, and are incurred whether or not crops are grown. Your per acre fixed costs will change if the farm size differs significantly from the size used in these budgets.

Land Costs:
Land costs, included either as real or as opportunity costs, are based on a typical cash rent for this area. While the owner-operator will not actually experience a land rental cost, this cost represents the minimum return owner-operators must receive to justify growing the crop themselves. To determine the profitability of crop production relative to other activities, the owner-operator may want to consider these forgone rental returns along with the usual production expenses. Cash rent includes ownership costs for the irrigation system. Cash rent can be changed in the Input Prices sheet or on the individual budget sheets.

General Assumptions:
Since farming is inherently variable and constantly changing, we hope that this spreadsheet format will be helpful in adjusting these budgets to reflect your particular operation. Enterprise costs and returns vary from one location to the next and over time for any particular farming operation. Variability stems from differences in the following:

- Pest pressures, particularly for alfalfa seed production. Annual costs and returns will vary considerably depending on the pesticides needed for any specific year.
- Capital, labor, and natural resources
- Type and size of machinery complement
- Cultural practices
- Size of farm enterprise
- Crop yields
- Input prices
- Commodity prices
- Management skill

Background and Specific Assumptions:
Economic costs are used in the University of Idaho costs and returns estimates. All resources are valued based on market price or opportunity cost. Input prices are based on the U of I's annual survey of agricultural supply companies. Except for contract crops, the selling price is a 10-year average. The costs and returns estimate shown here is typical for growing alfalfa seed in southwestern Idaho.

Production practices most closely represent those in Canyon, Payette, and Washington counties. Production practices may be similar among individual farms, but each has a unique set of resources with varying levels of productivity and production problems, and therefore, slightly different costs. Farm size, crop rotation, age and type of equipment, soils, and quality of management are crucial factors that influence production costs.

The Model Farm

This costs and returns estimate models a 1200-acre farm with 250 acres in alfalfa seed. In addition to alfalfa seed, the farm grows 250 acres of potatoes or sugarbeets, 250 acres of corn, 250 acres of grain, and 200 acres of dry beans. Alfalfa seed is kept in production for three years, then rotated into potatoes or sugarbeets the fourth year. The farm uses a concrete ditch and siphon irrigation system and surface water delivered from an irrigation district. The district charges a flat fee per acre for water.

Tillage, Fertilization, Pest Control, and Irrigation

Tillage costs are incurred only in the year alfalfa is established and are prorated along with other establishment costs over the alfalfa seed production years. This is approximately $47 per acre assuming three years of production, including the establishment year. This assumption can be altered in Table 6 and the amortized amount will be automatically adjusted. In this budget, alfalfa seed is planted in the fall following grain production (see Table 3 for more detail). Grain stubble is shredded with a flail then disced and plowed. At this point fertilizer is typically applied. The ground is then cultivated twice, followed by a landplane, a 6-row bedder, and a harrow operation. Alfalfa seed is planted in September using a tool bar with gandy boxes and a furrow. A post-emerge herbicide is typically applied in October. In the spring, herbicides are typically applied in April, May, June, and July. Lygus control is by means of three aerial pesticide applications in July and August. An aerial clean-up spray is applied in August, followed by defoliation via ground rig in September. The seed is then combined, followed by a flail shredder and a light disc. The stand is thinned using 12"-16" sweeps.

For alfalfa seed production, the field operations include the following (see Table 5 for more detail). A pre-emerge herbicide is typically applied in March. In April the ground is harrowed using a groundhog. In May a post-emerge herbicide is typically applied. The stand is clipped in May using a flail shredder. The ground is then corrugated. Ground-applied herbicides are typically used in June and July. Lygus control is accomplished by means of three aerial pesticide applications in July and August. An aerial clean-up spray is applied in August, followed by defoliation via ground rig in September. The seed is then combined, followed by a flail shredder and a light disc. The stand is thinned using 12"-16" sweeps.

In terms of irrigation system, the farm uses a concrete ditch and siphon tube irrigation system with water delivered to the farm from an irrigation district. The district charges a flat fee per acre for water. Alfalfa seed receives about 23 inches of water during the growing season from five irrigations: 9 inches in June, 9 inches in July, and 5 inches in August.

Resources: Machinery, Land, Labor, and Capital

Table 7 lists the tractors, trucks, and other equipment used for alfalfa seed. Assumptions with respect to replacement and salvage values as well as years of life are based on recommendations from a panel of farmers, Extension and industry personnel as well as typical advertised values for used equipment. This information was used to construct per acre machinery costs and determine fuel usage based on output from the University of Idaho's machinery cost program as reported in Table 8. The data in Table 8 represent per acre costs for each operation, which is then used to construct Tables 9 and 10. These tables provide total per acre machinery ownership and operating costs. In the spreadsheet version of this bulletin, per acre machinery costs can be changed in Table 8 and Tables 9 and 10 will be automatically updated.

The land charge is cash rent and covers the ownership costs (depreciation, interest, and insurance) on the irrigation system. A labor charge is made for all labor pertaining to field operations and includes a base rate plus overhead expenses. Custom charges account for contracted field operations, such as aerial spraying. A management fee of 5% of gross revenue is charged under ownership costs.

Labor to operate machinery is valued at $16.25 per hour, while irrigation labor is valued at $11.55. Labor rates include a base wage plus a percentage for Social Security, Medicare, unemployment insurance, and other labor overhead expenses. Labor overhead amounts to 15 percent for non-machine labor, 25 percent for irrigation labor, and 30 percent for machinery labor.

Interest on operating capital is charged on total operating costs for six months and calculated at a nominal rate of 6.75 percent. The operating interest rate can be changed on the Input Prices sheet in the spreadsheet version of this bulletin. A general overhead charge of 2.5 percent of operating expenses is included to cover unallocated costs such as office expenses, phone service, legal and accounting fees, and utilities.

Please examine closely the assumptions we have used and make adjustments to reflect your particular operation. Adjustments in the variable costs can easily be made without affecting the overall accuracy of the budget information. Machinery costs are more difficult to adjust, due to the underlying complexity of machinery cost calculations. A separate machinery cost calculator program is used to develop the costs used in these budgets, which are based on specific machinery widths, tractor horsepower, type of operation, etc. The machinery cost program and data sets specific to this budget are available upon request.

Acknowledgments:

I wish to thank everyone who helped gather all of the information needed to create these worksheets. First and foremost, I thank the farmers who were willing to take the time to share their enterprise information in order to create this worksheet. Without their assistance we would not be able to provide this critical information to others. However, I take responsibility for any errors in these budgets. Please feel free to contact me with any comments or suggestions.

Budget spreadsheets are available at the following link:

http://web.cals.uidaho.edu/idahoagbiz/enterprise-budgets/

Table 1. Summary of Annual Returns for Alfalfa Seed Establishment and Full Production ($/acre), SW Idaho

	Yield (cwt/ac)	Price ($/cwt)	Revenue per acre ($/acre)	Total Operating & Ownership Costs (TC) ($/acre)	Returns over Total Costs (TC) ($/acre)	Total Variable Costs (VC) ($/acre)	Returns over Variable Costs (VC) ($/acre)
Years of full production = 3							
Year 1: Alfalfa Seed Following Grain	700	$2.20	$1,540	$1,906	**$0**	$1,405	$135
Years 2 & on: Alfalfa Seed, Full Production	850	$2.20	$1,870	$2,010	**-$140**	$1,254	$616
Average Per Year	813		$1,788	$1,984	**-$105**	$1,292	$496

**Negative returns for Year 1 are amortized over the subsequent years of full production.*

Legend: ***Follow directions below to preserve equations in the spreadsheet version of this document.***
Purple Type: Data are from Summary page (purple tab).
Orange Type: You may adjust these cells and all other data will adjust automatically.
Green Type: Data are from Input costs page (green tab).
Blue Type: Data are from the Machinery page (blue tab).

Table 2. Input Price Assumptions for Establishing and Producing Alfalfa Seed, SW Idaho

Item	Unit	2013 Price/unit
Fuel:		
Diesel, offroad, bulk	gal	$3.60
Gas	gal	$3.70
Diesel, road	gal	$4.10
Seed:		
Alfalfa Seed	lb	$5.50
Fertilizer:		
Nitrogen, dry	lb	$0.66
Phosphorous, dry	lb	$0.53
Sulfur, dry	lb	$0.25
Potassium, dry	lb	$0.50
Boron	lb	$1.15
Custom Rental:		
Custom Aerial	acre	$9.15
Custom Ground Sprayer	acre	$8.25
Custom Fertilize	acre	$7.75
Pesticides:		
2,4-DB Amine	oz	$0.35
Beleaf	oz	$9.50
Brigade	oz	$1.08
Buctril 2 EC	oz	$0.47
Dibrom 8 E	oz	$0.80
Dual Magnum 7.64EC	oz	$1.14
Gramoxone Inteon	oz	$0.26
Onager	oz	$2.35
Prowl EC	oz	$0.35
Raptor	oz	$4.23
Rimon	oz	$1.65
Sonolan HFP	oz	$0.36
Thiodan 2 EC	oz	$0.25
Warrior ll with Zeon Technology	oz	$3.25
Adjuvants:		
Crop Oil Concentrate	pt	$1.83
Crop Insurance[1]:		
Alfalfa seed	acre	$42.00
Labor[1]:		
Hourly machine labor	hour	$17.80
Hourly irrigation labor	hour	$12.60
Other labor	hour	$10.25

Table 2. Input Price Assumptions for Establishing and Producing Alfalfa Seed, SW Idaho

Item	Unit	2013 Price/unit
Interest:		
Operating Loan	percent	**5.75%**
Machinery Loan/investment	percent	6.00%
Miscellaneous:		
Cash rent	acre	**$300.00**
Overhead[2]	percent	**2.5%**
Management fee[3]	percent	**5.0%**

[1]Includes all applicable state and federal taxes.
[2]Covers legal, accounting, and utility fees. Calculated as percentage of operating expenses.
[3]Calculated as a percentage of gross revenue.

Table 3. Schedule of Operations for Fall Alfalfa Seed Establishment Following Grain, SW Idaho

No.	Month	Operation	Tooling	Materials/Service
1	July	Shred stubble	125HP-WT, 14' flail shredder	
2	July	Disc	125HP-WT, 15' tandem disc & packer	
3	July	Plow	145HP-WT, 4-bottom plow	
4	Aug	Fertilize (optional)	Custom applied	Suggested fertilizer: 30 lb N, 30 lb P, 30 lb K, 10 lb S, 1 lb B, 1 lb mircronutrients
5	Aug	Cultivate	145HP-WT, 6-row cultivator or groundhog	
6	Aug	Cultivate	145HP-WT, 6-row cultivator or groundhog	
7	Aug	Landplane (optional)	125HP-WT, 20' landplane	
8	Aug	Bed (optional)	125HP-WT, 6-row bedder	
9	Aug	Harrow (optional)	125HP-WT, 20' spike harrow	
10	Sept	Plant	125HP-WT, 15' tool bar with gandy boxes, furrow	1 lb alfalfa seed
11	Oct	Spray post-emerge herbicide	95-HP-WT, 44' sprayer	Suggested herbicides: 1 pint of Buctril, 1 quart of 2,4-DB
12	April	Spray in-crop herbicide	Custom applied (ground)	Suggested herbicides: 4-6 oz Raptor; 2 quarts of 2,4-DB
13	May	Spray in-crop herbicide	Custom applied (ground); Broadleaf (& grass, if needed)	Suggested herbicide: 2 quarts of Prowl
14	June	Spray in-crop insecticide (clean-up)	Custom applied (ground)	Suggested pesticide: 6.4 oz Brigade[1]
15	July	Spray in-crop insecticide	Custom applied (ground)	Suggested pesticides: 2.8 oz Beleaf, 12 oz Rimon, and 8 oz Onager [2]
17	July	Spray in-crop insecticide: Lygus	Custom applied (aerial)	Suggested pesticides: 2 oz Warrior and 1.3 pts of Thiodan [2]
18	July	Spray in-crop insecticide: Lygus	Custom applied (aerial)	Suggested pesticide: 12 oz Rimon [2]
19	August	Spray in-crop insecticide: Lygus	Custom applied (aerial)	Suggested pesticides: 2 oz Warrior and 1 pint DiBrom
20	August	Cleanup spray	Custom applied (aerial)	Suggested pesticide: 6.4 oz Brigade [3]
21	Sept	Defoliate	95-HP-WT, 44' sprayer	Suggested herbicide: Gramoxone, 4pts, with COC
22	Sept	Combine	22' Combine	
23	Oct	Shred	125HP-WT, 14' flail shredder	Chaff incorporation
24	Oct	Light Disc	125HP-WT, 15' tandem disc	
25	Oct	Thin	125HP-WT, 24' bar with 12"-16" sweeps	

[1]There are many possibilities, depending on pest pressures. Other common pesticides include 1 pint of Dimethoate; 2 pints of Lorsban; 3 pints of Supracide; plus combinations of these pesticides or many, many others. Please consult a certified pesticide applicator or the PNW Pest Control Management Guides at http://uspest.org/pnw/insects.

[2]For these three sprays in July, typical pesticides might include 6.4 oz of Brigade; 12 oz of Rimon; 2 oz of Warrior with 1.3 pts Thiodan; plus combinations of these pesticides or many, many others. Please consult a certified pesticide applicator or the PNW Pest Control Management Guides at http://uspest.org/pnw/insects.

[3]Other common pesticides include 1 pint of Dimethoate; 2 pints of Lorsban; 3 pints of Supracide; plus combinations of these pesticides or many, many others. Please consult a certified pesticide applicator or the PNW Pest Control Management Guides at http://uspest.org/pnw/insects.

Table 4. Production Costs for Establishing Alfalfa Seed Following Grain, SW Idaho

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
Gross Returns				
Alfalfa Seed	700	lb	$2.00	$1,400.00
Variable Costs				
Seed:				**$5.50**
Alfalfa Seed	1	lb	$5.50	$5.50
Fertilizer:				**$74.35**
Base your rate on your soil test results.				
A typical recommendation might include the following:				
Nitrogen (dry)	30	lb	$0.66	$19.80
Phosphorus (dry)	30	lb	$0.53	$15.90
Potassium (dry)	30	lb	$0.50	$15.00
Sulfur (dry)	10	lb	$0.25	$2.50
Boron	1	lb	$1.15	$1.15
Micronutrients	1	ac	$20.00	$20.00
				$0.00
Pesticides:				**$238.63**
Rates & chemicals will vary depending on pest pressure throughout the season.				
Consult a certified pesticide applicator or the PNW Pest Control Management Guides.				
The following cost estimates are typical:				
Buctril	16	oz	$0.47	$7.52
2,4-DB	32	oz	$0.35	$11.10
Raptor	6	oz	$4.23	$25.38
2,4-DB	64	oz	$0.35	$22.20
Prowl EC	64	oz	$0.35	$22.40
Brigade	6.4	oz	$1.08	$6.91
Beleaf	2.8	oz	$9.50	$26.60
Rimon	12	oz	$1.65	$19.80
Onager	8	oz	$2.35	$18.80
Warrior	2	oz	$3.25	$6.50
Thiodan	20.8	oz	$0.25	$5.16
Rimon	12	oz	$1.65	$19.80
Warrior	2	oz	$3.25	$6.50
DiBrom	16	oz	$0.80	$12.75
Brigade	6.4	oz	$1.08	$6.91
Gramoxone	64	oz	$0.26	$16.64
Crop Oil Contentrate	2	pt	$1.83	$3.66
Machinery:				**$119.23**
Fuel	12.85	gal	$3.60	$46.25
Lubricants	1	acre	$7.91	$7.91
Machinery Repairs	1	acre	$21.90	$21.90
Machinery Labor	2.43	acre	$17.80	$43.17
Custom & Consultants:				**$107.85**
Custom Aerial	4	acre	$9.15	$36.60
Custom Ground Spray	5	acre	$8.25	$41.25
Scouting	1	acre	$30.00	$30.00
Irrigation:				**$95.70**
Water Assessment	1	ac	$48.85	$48.85
Irrigation Repairs - Concrete Ditch system	1	ac	$2.75	$2.75
Irrigation Labor	3.50	hr	$12.60	$44.10

Table 4. Production Costs for Establishing Alfalfa Seed Following Grain, SW Idaho

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
Other:				**$687.00**
Crop insurance	1	acre	$42.00	$42.00
Leaf cutter bees	5	gal	$75.00	$375.00
Bee management	1.00	ac	$75.00	$75.00
Alfalfa Seed Commission dues*	700.00	lb	$0.20	$140.00
Handweeding	1.00	ac	$55.00	$55.00
Operating Interest[1]				$76.38
Total Variable Costs				**$1,404.64**
Variable Costs per Unit				$2.01
Net Returns Above Variable Costs				**-$4.64**
Ownership Costs:				
Machinery depreciation	1	ac	$59.38	$59.38
Machinery interest	1	ac	$30.89	$30.89
Machinery insur., housing, licenses	1	ac	$10.20	$10.20
Cash rent	1	ac	$300.00	$300.00
Overhead[2]	1	ac	$30.81	$30.81
Management fee[3]	1	ac	$70.00	$70.00
Total Fixed Costs				**$501.28**
Fixed Costs per Unit				$0.72
Total Costs per Acre				**$1,905.92**
Total Cost per Unit				$2.72
Returns to Risk				**-$505.92**

Notes:

[1]Calculated as 6.75% interest on operating capital for 12 months.

[2]Covers legal, accounting, and utility fees. Calculated as 2.5% of operating expenses.

[3]The management fee is calculated as a 5% of gross revenue.

*Alfalfa Seed Commission dues includes cleaning, bags, tags, certification, and seed indemnity.

Note: Pesticide usage varies considerably by area and by year, which directly affects production costs and returns. These budgets reflect an attempt to construct a typical pest management strategy. You will need to adjust the budgets to reflect your situation.

Breakeven Analysis:

	- 10%	Base Yield	+ 10%
Price	630.0	700	770.0
Operating Cost Breakeven	$2.23	$2.01	$1.82
Ownership Cost Breakeven	$0.80	$0.72	$0.65
Total Cost Breakeven	$3.03	$2.72	$2.48

	- 10%	Base Price	+ 10%
Yield	$1.80	$2.00	$2.20
Operating Cost Breakeven	780.4	702.3	638.5
Ownership Cost Breakeven	278.5	250.6	227.9
Total Cost Breakeven	1058.8	953.0	866.3

Table 5. Schedule of Operations for Alfalfa Seed Production, SW Idaho

No.	Month	Operation	Tooling	Materials/Service
1	Mar	Spray pre-emerge herbicide & incorporate	95HP-WT, 44' sprayer, 16' triple K	Suggested herbicide: 4 pt of Sonolan plus 3 pt of Dual Magnum
2	Apr	Harrow	125HP-WT, groundhog	
3	May	Spray in-crop herbicide	Custom applied (ground)	Suggested herbicide: 4 pt of Prowl
4	May	Clip/flail (setback)	125HP-WT, 14' flail shredder	
5	May	Corrugate	125HP-WT, 6-row corrugator	
6	June	Spray in-crop insecticide (clean-up)	Custom applied (ground)	Suggested pesticide: 6.4 oz Brigade[1]
7	July	Spray in-crop insecticide	Custom applied (ground)	Suggested pesticides: 2.8 oz Beleaf, 12 oz Rimon, and 8 oz Onager [2]
8	July	Spray in-crop insecticide: Lygus	Custom applied (aerial)	Suggested pesticides: 2 oz Warrior and 1.3 pts of Thiodan [2]
9	July	Spray in-crop insecticide: Lygus	Custom applied (aerial)	Suggested pesticide: 12 oz Rimon [2]
10	August	Spray in-crop insecticide: Lygus	Custom applied (aerial)	Suggested pesticides: 2 oz Warrior and 1 pint DiBrom
11	August	Cleanup spray	Custom applied (aerial)	Suggested pesticide: 4-6 oz Brigade [3]
12	Sept	Defoliate	95-HP-WT, 44' sprayer	Suggested herbicide: Gramoxone, 4pts, with COC
13	Sept	Combine	22' Combine	
14	Oct	Shred	125HP-WT, 14' flail shredder	Chaff incorporation
15	Oct	Light Disc	125HP-WT, 15' tandem disc	
16	Oct	Thin	125HP-WT, 24' bar with 12"-16" sweeps	

Table 6. Production Costs for Alfalfa Seed Production, SW Idaho

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
Gross Returns				
Alfalfa Seed	850	lb	$2.20	$1,870.00
Variable Costs				
Fertilizer:				**$0.00**
Base your rate on your soil test results.				
				$0.00
				$0.00
				$0.00
Pesticides:				**$249.95**
Rates & chemicals will depend on the pests in your crop.				
Consult a certified pesticide applicator or the PNW Pest Control Management Guides.				
The following cost estimates are typical:				
Sonolan	64	oz	$0.36	$22.80
Dual Magnum	48	oz	$1.14	$54.72
Prowl EC	64	oz	$0.35	$22.40
Brigade	6.4	oz	$1.08	$6.91
Beleaf	2.8	oz	$9.50	$26.60
Rimon	12	oz	$1.65	$19.80
Onager	8	oz	$2.35	$18.80
Warrior	2	oz	$3.25	$6.50
Thiodan	20.8	oz	$0.25	$5.16
Rimon	12	oz	$1.65	$19.80
Warrior	2	oz	$3.25	$6.50
DiBrom	16	oz	$0.80	$12.75
Brigade	6.4	oz	$1.08	$6.91
Gramoxone	64	oz	$0.26	$16.64
Crop Oil Contentrate	2	pt	$1.83	$3.66
				$0.00
Machinery:				**$71.52**
Fuel	7.37	gal	$3.60	$26.53
Lubricants	1	acre	$5.02	$5.02
Machinery Repairs	1	acre	$13.34	$13.34
Machinery Labor	1.50	acre	$17.80	$26.63
Custom & Consultants:				**$80.25**
Custom Ground Spray	3	acre	$6.75	$20.25
Custom Aerial	4	acre	$7.50	$30.00
Scouting	1	ac	$30.00	$30.00
Irrigation:				**$100.11**
Water Assessment	1	ac	$48.85	$48.85
Irrigation Repairs - Concrete Ditch system	1	ac	$2.75	$2.75
Irrigation Labor	3.85	hr	$12.60	$48.51
Other:				**$717.00**
Crop insurance	1	acre	$42.00	$42.00
Leaf cutter bees	5	gal	$75.00	$375.00
Bee management	1	ac	$75.00	$75.00
Alfalfa Seed Commission dues*	850	lb	$0.20	$170.00
Handweeding	1	ac	$55.00	$55.00
Operating Interest[1]				$35.04
Total Variable Costs				**$1,253.87**
Net Returns Above Variable Costs				**$616.13**

Table 6. Production Costs for Alfalfa Seed Production, SW Idaho

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
Ownership Costs:				
Machinery depreciation	1	ac	**$45.11**	$45.11
Machinery interest	1	ac	**$21.06**	$21.06
Machinery insur., housing, licenses	1	ac	**$8.42**	$8.42
Cash Rent	1	ac	**$300.00**	$300.00
Amortization losses of Year 1	7.5%	acre	$281.76	$281.76
Years of production	**3**			
Overhead[2]	1	ac	**$30.00**	$30.00
Management fee[3]	1	ac	**$70.00**	$70.00
Total Fixed Costs				**$756.35**
Total Costs per Acre				**$2,010.23**
Returns to Risk				**-$140.23**

Notes:

[1]Calculated as 6.75% interest on operating capital for 6 months.

[2]Covers legal, accounting, and utility fees. Calculated as 2.5% of operating expenses.

[3]The management fee is calculated as a 5% of gross revenue.

*Alfalfa Seed Commission dues includes cleaning, bags, tags, certification, and seed indemnity.

Note: Pesticide usage varies considerably by area and by year, which directly affects production costs and returns. These budgets reflect an attempt to construct a typical pest management strategy. You will need to adjust the budgets to reflect your situation.

Breakeven Analysis:

	- 10%	Base Yield	+ 10%
Price	765.0	850.00	935.0
Operating Cost Breakeven	$1.64	$1.48	$1.34
Ownership Cost Breakeven	$0.99	$0.89	$0.81
Total Cost Breakeven	$2.63	$2.36	$2.15

	- 10%	Base Price	+ 10%
Yield	$1.98	$2.20	$2.42
Operating Cost Breakeven	633.27	569.94	518.13
Ownership Cost Breakeven	382.00	343.80	312.54
Total Cost Breakeven	1015.27	913.74	830.67

Table 7. Machinery Complement for Alfalfa Seed Production following Grain, SW Idaho

Type of Machine	Replacement Value $	Age When Purchased	Years of Life	Annual Hours of Use	Salvage Value $	Annual Repairs (Materials & Labor) $	Gallons of Fuel/Hr.	Taxes, Housing, Insur., Licenses %	Acres per Hour
Tractors:									
145HP-WT	112,200	5	15	700	15,000	3,000	6.35	1.2	
125HP-WT	104,500	5	15	700	13,500	3,000	5.48	1.2	
95HP-WT	57,200	5	15	300	8,000	500	4.16	1.2	
ATV	7,150	0	10	300	2,000	100	1.2	1.2	
Equipment:									
14' Flail Shredder	17,000	5	10	150	4,000	1,000	4.6	2.5	9.50
4-Bottom Plow	8,400	0	15	20	800	200	4.6	0.6	2.78
6-Row Cultivator	1,760	5	15	250	400	200	4.6	0.6	8.65
15' Groundhog	5,000	5	15	40	500	150	4.6	0.6	8.73
16' Triple K cultivator/harrow	7,000	0	15	100	750	250	4.6	0.6	9.89
15' Tandem Disc	20,900	5	15	200	2,000	1,000	4.6	0.6	8.73
24' Sweep	15,500	0	15	150	1,500	500	4.6	0.6	17.31
6-Row Bedder	6,000	0	15	120	1,200	500	4.6	0.6	8.15
20' Spike Harrow	1,760	0	15	40	200	50	4.6	0.6	14.42
20' Landplane	11,000	5	15	40	1,000	100	4.6	0.6	12.36
15' Bar, Gandy Boxes, Furrow	6,500	5	15	25	400	300	4.6	3.0	7.27
44' Spray Boom	3,500	0	10	100	550	200	4.6	3.9	14.42
22' Combine	150,000	5	10	200	12,000	2,000	7	2.6	2.33
Trucks:				Miles/year:			MPG:		
Nurse Truck	11,000	15	15	2,000	1,000	800	6	10.1	
5-Ton Truck	35,000	10	15	2,000	4,000	2,800	6	10.1	
New 3/4-Ton Pickup	40,700	0	7	12,000	20,000	1,000	17	6.8	
Used 3/4-Ton Pickup	20,000	7	14	12,000	5,200	1,000	15	6.8	

Note: Farm size is assumed to be 1200 acres for the purposes of machinery cost calculations.

Note: Assumptions for truck use allocated per acre on an annual base are: 7 mi/ac for pickups; 2 mi/ac for the nurse truck; and 0.5 mi/ac for the 5-ton truck.

Table 8. Machinery Costs Calculations from the University of Idaho Machinery Cost Program ($/acre)

	Fixed Costs ($/acre):				Variable Costs ($/acre):				Labor	Fuel Use	Total Cost
	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Total Fixed Costs	Repairs	Labor	Fuel	Lubricants	(hr/acre)	(gal/acre)	($/acre)
Machinery costs for these implements are spread across every acre of the farm, regardless of crops produced:											
ATV	$0.36	$0.22	$0.04	$0.62	$0.01	$0.00	$0.71	$0.11	0.00	0.20	$1.45
New 3/4-ton pickup	$1.72	$1.19	$1.20	$4.11	$0.58	$0.00	$1.44	$0.23	0.00	0.41	$6.36
Used 3/4-ton pickup	$1.23	$0.50	$0.50	$2.23	$0.58	$0.00	$1.63	$0.25	0.00	0.47	$4.69
Nurse truck	$0.67	$0.41	$0.41	$1.49	$0.80	$1.95	$0.58	$0.09	0.12	0.17	$4.91
5-ton truck	$0.52	$0.33	$0.49	$1.34	$0.70	$0.47	$0.30	$0.05	0.03	0.09	$2.86
Machinery costs for these implements are specific to the operations for each crop:											
145HP-WT + 4B plow	$4.65	$3.80	$0.53	$8.98	$3.70	$6.43	$7.99	$1.20	0.40	1.94	$28.30
145HP-WT + 6-row cultivator	$2.86	$2.20	$0.27	$5.33	$2.12	$1.11	$0.28	$0.05	0.07	0.07	$8.89
125HP-WT + triple K	$1.30	$0.84	$0.12	$2.26	$0.68	$1.80	$1.90	$0.34	0.11	0.46	$6.98
125HP-WT + 15' groundhog	$1.85	$1.18	$0.17	$3.20	$0.92	$2.05	$2.16	$0.38	0.13	0.52	$8.71
145HP-WT + 6-row corrugator	$1.66	$1.09	$0.19	$2.94	$1.26	$3.07	$3.82	$0.57	0.19	0.93	$11.66
125HP-WT + 20' spike harrow	$0.69	$0.46	$0.08	$1.23	$0.39	$1.24	$1.29	$0.23	0.08	0.31	$4.38
125HP-WT + 15' tandem disk	$1.68	$1.08	$0.16	$2.92	$1.06	$2.05	$2.16	$0.38	0.13	0.52	$8.57
125HP-WT + 6-row bed splitter	$1.39	$0.95	$0.14	$2.48	$1.04	$2.29	$4.11	$0.61	0.14	1.00	$10.54
125HP-WT + 20' landplane	$2.05	$1.28	$0.15	$3.48	$0.55	$1.45	$1.52	$0.27	0.09	0.37	$7.27
125HP-WT + 15' planter	$3.43	$2.06	$0.71	$6.20	$2.24	$2.46	$2.59	$0.46	0.15	0.63	$13.95
125-HPWT + 14' flail/shredder	$1.96	$1.05	$0.28	$3.29	$1.15	$1.89	$1.96	$0.35	0.12	0.48	$8.64
125-HPWT + 24' sweep	$0.86	$0.55	$0.08	$1.49	$0.44	$1.03	$1.07	$0.19	0.06	0.26	$4.22
22' Combine	$29.57	$11.72	$4.51	$45.80	$4.29	$8.35	$10.26	$1.81	0.51	2.49	$70.52
95HP-WT + 44' spray boom	$0.63	$0.40	$0.07	$1.10	$0.16	$0.79	$0.64	$0.11	0.05	0.16	$2.80

Note: In the spreadsheet version, per acre machinery costs can be changed in this master table and they will update throughout. Per acre costs are calculated in a separate machinery cost program using the values listed in the Machinery Complement tab.

Table 9. Machinery Costs for SW ID Alfalfa Seed Establishment ($/acre) from the University of Idaho Machinery Cost Calculator

	Ownership Costs ($/acre):				Operating Costs ($/acre):				Labor	Fuel Use	
	Depre-ciation	Interest	Taxes, Housing, Insurance, Licenses	Total Ownership Costs	Repairs	Labor	Fuel	Lubricants	(hr/acre)	(gal/acre)	Total Cost ($/acre)
Machinery costs for these implements are spread across every acre of the farm, regardless of crops produced:											
ATV	$0.36	$0.22	$0.04	$0.62	$0.01	$0.00	$0.60	$0.11	0.00	0.30	$1.34
New 3/4-ton pickup	$1.72	$1.19	$1.20	$4.11	$0.58	$0.00	$1.22	$0.22	0.00	0.61	$6.13
Used 3/4-ton pickup	$1.23	$0.50	$0.50	$2.23	$0.58	$0.00	$1.39	$0.24	0.00	0.69	$4.44
Nurse truck	$0.67	$0.41	$0.41	$1.49	$0.80	$1.95	$0.49	$0.09	0.13	0.25	$4.82
5-ton truck	$0.52	$0.33	$0.49	$1.34	$0.70	$0.47	$0.26	$0.05	0.03	0.13	$2.81
Machinery costs for these implements are specific to the operations for each crop:											
125-HPWT + 14' flail/shredder	$1.96	$1.05	$0.28	$3.29	$1.15	$1.89	$1.96	$0.35	0.12	0.98	$8.64
125HP-WT + 15' tandem disk	$1.68	$1.08	$0.16	$2.92	$1.06	$2.05	$2.16	$0.38	0.13	0.52	$8.57
145HP-WT + 4B plow	$4.65	$3.80	$0.53	$8.98	$3.70	$6.43	$7.99	$1.20	0.40	1.94	$28.30
125HP-WT + 15' groundhog	$1.85	$1.18	$0.17	$3.20	$0.92	$2.05	$2.16	$0.38	0.13	0.52	$8.71
125HP-WT + 15' groundhog	$1.85	$1.18	$0.17	$3.20	$0.92	$2.05	$2.16	$0.38	0.13	0.52	$8.71
125HP-WT + 20' landplane	$2.05	$1.28	$0.15	$3.48	$0.55	$1.45	$1.52	$0.27	0.09	0.37	$7.27
125HP-WT + 6-row bed splitter	$1.39	$0.95	$0.14	$2.48	$1.04	$2.29	$4.11	$0.61	0.14	1.00	$10.54
125HP-WT + 20' spike harrow	$0.69	$0.46	$0.08	$1.23	$0.39	$1.24	$1.29	$0.23	0.08	0.31	$4.38
125HP-WT + 15' planter	$3.43	$2.06	$0.71	$6.20	$2.24	$2.46	$2.59	$0.46	0.15	0.63	$13.95
95HP-WT + 44' spray boom	$0.63	$0.40	$0.07	$1.10	$0.16	$0.79	$0.64	$0.11	0.05	0.16	$2.80
95HP-WT + 44' spray boom	$0.63	$0.40	$0.07	$1.10	$0.16	$0.79	$0.64	$0.11	0.05	0.16	$2.80
125-HPWT + 24' sweep	$0.86	$0.55	$0.08	$1.49	$0.44	$1.03	$1.07	$0.19	0.06	0.26	$4.22
22' Combine	$29.57	$11.72	$4.51	$45.80	$4.29	$8.35	$10.26	$1.81	0.51	2.49	$70.52
125-HPWT + 14' flail/shredder	$1.96	$1.05	$0.28	$3.29	$1.15	$1.89	$1.96	$0.35	0.12	0.48	$8.64
125HP-WT + 15' tandem disk	$1.68	$1.08	$0.16	$2.92	$1.06	$2.05	$2.16	$0.38	0.13	0.52	$8.57
Total:	**$59.38**	**$30.89**	**$10.20**	**$100.47**	**$21.90**	**$39.23**	**$46.63**	**$7.91**	**2.43**	**12.85**	**$216.14**

Table 10. Machinery Costs for SW ID Alfalfa Seed Production ($/acre) from the University of Idaho Machinery Cost Calculator

	Fixed Costs ($/acre):				**Variable Costs ($/acre):**				**Labor**	**Fuel Use**	**Total Cost**
	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Total Fixed Costs	Repairs	Labor	Fuel	Lubricants	(hr/acre)	(gal/acre)	($/acre)
Machinery costs for these implements are spread across every acre of the farm, regardless of crops produced:											
ATV	$0.36	$0.22	$0.04	$0.62	$0.01	$0.00	$0.71	$0.11	$0.00	$0.20	$1.45
New 3/4-ton pickup	$1.72	$1.19	$1.20	$4.11	$0.58	$0.00	$1.44	$0.23	$0.00	$0.41	$6.36
Used 3/4-ton pickup	$1.23	$0.50	$0.50	$2.23	$0.58	$0.00	$1.63	$0.25	$0.00	$0.47	$4.69
Nurse truck	$0.67	$0.41	$0.41	$1.49	$0.80	$1.95	$0.58	$0.09	$0.12	$0.17	$4.91
5-ton truck	$0.52	$0.33	$0.49	$1.34	$0.70	$0.47	$0.30	$0.05	$0.03	$0.09	$2.86
Machinery costs for these implements are specific to the operations for each crop:											
125HP-WT + triple K, 44' boom	$1.30	$0.84	$0.12	$2.26	$0.68	$1.80	$1.90	$0.34	0.11	0.46	$6.98
125HP-WT + 15' groundhog	$1.85	$1.18	$0.17	$3.20	$0.92	$2.05	$2.16	$0.38	0.13	0.52	$8.71
125-HPWT + 14' flail/shredder	$1.96	$1.05	$0.28	$3.29	$1.15	$1.89	$1.96	$0.35	0.12	0.48	$8.64
145HP-WT + 6-row corrugator	$1.66	$1.09	$0.19	$2.94	$1.26	$3.07	$3.82	$0.57	0.19	0.93	$11.66
95HP-WT + 44' spray boom	$0.63	$0.40	$0.07	$1.10	$0.16	$0.79	$0.64	$0.11	0.05	0.16	$2.80
22' Combine	$29.57	$11.72	$4.51	$45.80	$4.29	$8.35	$10.26	$1.81	0.51	2.49	$70.52
125-HPWT + 14' flail/shredder	$1.96	$1.05	$0.28	$3.29	$1.15	$1.89	$1.96	$0.35	0.12	0.48	$8.64
125HP-WT + 15' tandem disk	$1.68	$1.08	$0.16	$2.92	$1.06	$2.05	$2.16	$0.38	0.13	0.52	$8.57
125-HPWT + 24' sweep	$0.86	$0.55	$0.08	$1.49	$0.44	$1.03	$1.07	$0.19	0.06	0.26	$4.22
Total:	**$45.11**	**$21.06**	**$8.42**	**$74.59**	**$13.34**	**$24.31**	**$29.53**	**$5.02**	**1.50**	**7.37**	**$146.79**