


Farm Business Management Reports		EB1715
	<p>1992 Estimated Cost of Producing Alfalfa Seed Under Rill Irrigation in Franklin and Grant Counties</p>	
	Herbert R. Hinman Elvin Kulp	
 <p>COOPERATIVE EXTENSION WASHINGTON STATE UNIVERSITY</p>		

#### NOTE

Enterprise costs and returns vary from one farm to the next and over time for any particular farm. Variability stems from differences in:

- Capital, labor, land, and management resources
- Type and size of machinery complement
- Cultural practices
- Crop yields
- Input prices
- Commodity prices

Costs can also be calculated differently depending on the intended use of the cost estimate. The information in this publication serves as a general guide for alfalfa seed grown on a modern, well-managed farm in either Franklin or Grant counties. To avoid drawing unwarranted conclusions for any particular operation, closely examine the assumptions used. If they are not appropriate for the situation at hand, you should adjust the costs and/or returns.

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## About the Authors

Herbert Hinman is a Farm Management Economist, and Elvin Kulp is a Grant-Adams Area Extension Agent, Cooperative Extension, Washington State University.

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INTRODUCTION

In 1990, approximately 23,000 acres of alfalfa seed were produced in Washington State. Alfalfa seed ranked 24th in agricultural commodity value within the state with a value of \$18,573,000. Walla Walla County was the largest alfalfa seed producing county with 16,000 acres and a production of 106,000 cwt. of seed. Franklin and Grant counties produced a total of 5,800 acres and 36,000 cwt. of seed.<sup>1</sup>

Rainfall in Franklin and Grant counties ranges from 6-10 inches annually. Crops grown in these counties depend largely on irrigation water pumped from behind Grand Coulee Dam. Irrigation water availability, coupled with a growing season of 140 to 200 days, makes it possible to grow alfalfa seed in this area.

The general objective of this study was to develop enterprise budgets for alfalfa seed production within Franklin and Grant counties. The specific objectives were:

1. To identify production practices representative of well-managed alfalfa seed enterprises grown under rill irrigation in Franklin and Grant counties.
2. To provide estimates of capital requirements, production costs, and returns.
3. To give producers a procedure for analyzing the profitability of their alfalfa seed enterprise.

SOURCES OF INFORMATION

The primary information for this study was obtained from a group of Franklin and Grant county alfalfa seed producers. These producers were considered representative of well-managed farms. Their production practices and requirements for labor, equipment, and supplies are the basis for the assumptions used in this study and represent what this group of producers consider to be the latest developments. Local farm suppliers provided price information on materials and other services commonly used by farmers. Machinery costs were based on current purchase prices and rates of annual use considered typical by the producer committee.

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<sup>1</sup>Washington Agricultural Statistics, 1990-91, pages 7, 72-73.

### BUDGET ASSUMPTIONS

The following assumptions were made in developing the enterprise data:

1. The farm has 600 acres under rill (furrow) irrigation with 200 acres devoted to the production of alfalfa seed.
2. The enterprise budgets are for alfalfa seed established and produced under one or more 50-acre rill irrigation system.
3. The alfalfa seed field is established in late summer - early fall following the harvest of wheat. An alfalfa seed field can produce seed for three years.
4. The land is rented for \$100 per acre with the landowner furnishing the irrigation system and the operator paying the water charge of \$25 per acre, along with annual repairs of approximately \$4 per acre.
5. Producer yields range from 550 to 800 pounds of clean seed per acre. For the initial study, management costs were calculated using an average annual yield of 700 pounds.
6. Net price to the producer ranges from \$.80 to \$1.25 per pound of clean seed per acre. For the initial study, management costs were calculated using an average annual price of \$1.00 per pound. For management, a cost of 7% of gross receipts is used (see page 5).
7. The interest rate is 9%.

### SUMMARY OF RESULTS

Table 1 presents a summary of the establishment year costs and the production costs for the three producing years. Production year costs include establishment year costs amortized over three years at 9% interest. These amortized establishment year costs must be recaptured during the three production years if the enterprise is to be profitable.

The detailed schedule of operations and itemized costs per acre for the establishment year and the three production years are presented in Tables 3.1 through Table 4.4 in Appendix I. A discussion of this budget information is presented later.

TABLE 1. SUMMARY OF ESTABLISHMENT AND PRODUCTION COSTS PER ACRE FOR ALFALFA SEED PRODUCED UNDER RILL IRRIGATION IN FRANKLIN AND GRANT COUNTIES.

	ESTAB. YEAR	YEAR 1	YEAR 2	YEAR 3
	\$	\$	\$	\$
VARIABLE COSTS:				
ALFALFA SEED	3.75	-	-	-
SOIL TEST	1.00	-	-	-
BURNING COST	1.55	10.00	10.00	10.00
POLLINATION COST	-	156.82	167.30	167.30
SEED CERTIFICATION FEE	.30	.30	.30	.30
SEED PRODUCTION FEE	-	1.75	1.75	1.75
FERTILIZER	23.60	6.00	6.00	6.00
CHEMICALS	39.75	66.55	53.80	60.10
WATER CHARGE	6.25	25.00	25.00	18.75
CUSTOM OPERATIONS	5.00	12.00	12.00	12.00
MACHINERY COST*	37.57	57.60	54.15	51.48
LABOR	41.28	60.31	51.72	49.25
OVERHEAD	12.21	30.43	29.26	28.85
INTEREST	<u>2.79</u>	<u>9.36</u>	<u>8.18</u>	<u>7.79</u>
TOTAL VARIABLE COST	175.05	436.12	419.46	413.57
FIXED COST:				
MACHINERY COST*	56.11	104.01	96.89	94.17
LAND RENT	25.00	100.00	100.00	75.00
AMORT. ESTAB. VC**	-	69.16	69.16	69.16
AMORT. ESTAB. FC**	-	36.88	36.88	36.88
MANAGEMENT	<u>12.25</u>	<u>49.00</u>	<u>49.00</u>	<u>36.75</u>
TOTAL FIXED COST	93.36	359.05	351.93	311.96
TOTAL COST	<u>268.41</u>	<u>795.17</u>	<u>771.39</u>	<u>725.53</u>

\* INCLUDES ALL MACHINERY COSTS PLUS MACHINE SHED AND SHOP, SHOP TOOLS, AND IRRIGATION COSTS.

\*\*ESTABLISHMENT YEAR VARIABLE COSTS (VC) AND FIXED COSTS (FC) AMORTIZED OVER THE 3-YEAR PRODUCTION PERIOD AT 9% INTEREST.

From information presented in Table 1, it can be determined that the average annual variable cost (including the establishment year variable cost amortized over three years at 9% interest) encountered over the three producing years is

$$[(\$436.12 + \$69.16) + (\$419.46 + \$69.16) + (\$413.57 + \$69.16)]/3 = \$492.21$$

The average annual total cost encountered over the three producing years is

$$(\$795.17 + \$771.39 + \$725.53)/3 = \$764.03$$

Table 2 presents the prices, net of seed cleaning charges, necessary at different average annual yield levels in order to cover all costs over the three-year production period.

TABLE 2. PRICES, NET OF SEED CLEANING CHARGES, NEEDED TO COVER COSTS FOR DIFFERENT AVERAGE ANNUAL YIELD LEVELS OVER THE THREE-YEAR PRODUCTION PERIOD.

AVERAGE 3-YEAR YIELD LEVEL:	550 LBS.	600 LBS.	650 LBS.	700 LBS.	750 LBS.	800 LBS.
PRICE/LB. NEEDED TO COVER:	\$	\$	\$	\$	\$	\$
VARIABLE COST*	.89	.82	.76	.70	.66	.62
TOTAL COST	1.39	1.27	1.18	1.09	1.02	.96

\*INCLUDES ESTABLISHMENT YEAR VARIABLE COST AMORTIZED OVER 3 YEARS AT 9% INTEREST.

### DISCUSSION OF DETAILED BUDGETS

Appendix I presents the detailed budgets developed from this study. A discussion of the data in each of the tables follows.

#### Schedule of Operations and Estimated Costs Per Acre

Table 3.1 outlines the schedule of field operations by month, the type of machinery and labor used, the hours of machine use per acre, and total costs for the establishment year. Tables 3.2, 3.3, and 3.4 outline the schedules of field operations by month, the type of machinery and labor used, the hours of machine use per acre, and total production costs for each of the three production years.

The costs are divided into two categories: 1) fixed costs include machinery and building ownership, land, establishment, and management costs; 2) variable costs are associated with operating machinery, hiring labor, and purchasing services and materials. Total cost is the sum of fixed and variable costs.

Machinery and building fixed costs include depreciation, interest on the investment, property taxes, and insurance. These costs are incurred whether or not a crop is grown and do not vary with the size of the enterprise, given the ownership of a specific machinery and building complement. Machinery fixed costs for a specific field operation are determined by multiplying the machine hours per acre times the per-hour fixed cost. The per-hour fixed costs, shown in Table 7, are determined by dividing the total annual fixed

cost by the annual hours of machinery use over all enterprises for the representative farm. Building, irrigation and shop tool costs are calculated on a per-acre basis.

Land fixed cost is equal to the gross cash rental rate typical of the area. Much of the land used for production is rented. Even if you produce a crop on land you own, the prevailing rental rate is an opportunity cost or foregone return for not renting out the land. Although individual rental arrangements vary, in many situations the tenant pays a cash rent and the landowner pays the property taxes.

For each production year, an establishment cost is included. This cost represents establishment year costs amortized over three years at 9% interest that must be recaptured during the three production years.

An opportunity cost for management is also listed in Table 3. For management, a cost of 7% of gross receipts is used. This is representative of management fees charged by farm management firms in the Columbia Basin and is an estimate of the value of an operator's management skills. Management is regarded as a fixed rather than a variable cost because one either uses management skills or loses them during the production year.

Variable costs depend directly on the number of crop acres and type of enterprise. These costs include labor, fuel, oil, repairs, fertilizer, chemicals, custom work, interest on operating capital, and overhead (telephone, utilities, legal, accounting, organization dues, etc.). Also included is a dollar figure for pollination cost. Pollination costs involving an alfalfa seed field were calculated separately and are detailed in Appendix II.

Two pickup trucks are included in the cost estimate; one for the manager and one for the hired labor. No labor hours are assigned to the use of these pickups. In the manager's case, labor costs for using this pickup are part of the management cost. For the pickup used by the hired labor, labor cost for using the pickup are included in the other labor figures, i.e., irrigation labor costs, etc.

#### Itemized Costs Per Acre

Tables 4.1-4.4 provide itemized lists of the costs detailed in Tables 3.1-3.4, respectively. Most items are self-explanatory. However, "Tractor Interest" and "Machinery Interest" represent the opportunity cost (returns foregone by investing in machinery rather than in alternative investments) or interest paid to finance this equipment. Total interest cost on these capital purchases is calculated on the average value of the machinery over the



respective years of use. The 9% interest charge made against this "average" value is the total interest cost.

The amortization of the first year establishment cost was divided into variable cost and fixed cost. This was done so that in determining break-even prices at the variable cost level (Table 2), or average returns over variable costs (Table 6), the amortization of the establishment year variable costs would be correctly included as part of total overall variable cost.

#### Materials and Services Used by Operation

Tables 3.1-3.4 list the "Schedule of Operations and Estimated Cost Per Acre..." for the establishment year and each production year. The "Service" and "Materials" columns of these tables list dollar amounts spent on services and materials used with individual operations. Tables 5.1-5.4 list, by operation, the specific services and/or materials used, the quantities used, and the prices paid for the establishment year and each production year analyzed in this study.

#### Returns Over Variable Costs and Total Costs

Table 6 presents returns over variable cost and total cost, for each production year at different prices and yields. Prices vary from \$.80 per pound of clean seed to \$1.25 per pound. Yields vary from 550 lbs. to 800 lbs. of clean seed.

Returns over variable costs represent those returns over costs that occur only if the crop is maintained and harvested. If returns fail to cover these costs, alfalfa seed becomes uneconomical to produce even in the short run because the added costs of production are greater than the added returns.

Returns over total costs represent the compensation you receive for producing alfalfa seed after covering all costs of production including cash costs, depreciation, operator labor and management, and opportunity costs for investments in equipment. Failure to receive a positive return means you will not realize a return on your management, labor, and capital contributions equivalent to what you could earn from an alternative use.

#### Machinery and Building Cost Per Hour/Per Acre

Table 7 identifies the type of machinery and buildings used to derive machinery and building costs. It includes the type of machines used on the representative farm, their current replacement price, annual hours of use, and estimated per-hour fixed and variable costs. For buildings, irrigation tubes and dams, and shop tools it includes their current replacement price, acres covered by the asset(s), and estimated per-acre fixed and variable costs.

Machinery and building fixed costs include depreciation and interest on investment, property taxes, and insurance--costs that do not vary with the crop grown or the number of acres produced. Current replacement costs are used for all machinery and buildings. While this assumption may result in an overstatement of production costs, it is an indication of the enterprise's ability to generate the earnings needed to replace depreciable assets. Continuing increases in prices paid for machinery and buildings means that depreciation claimed on assets purchased before price advances understates the amount of capital currently required to replace assets. When an enterprise is evaluated to determine its long-run viability, it is important to consider its ability to replace depreciable assets. Interest on investment represents a 9% opportunity cost to the enterprise. These are earnings foregone by investing money in machinery and buildings rather than the next best alternative. This may also represent the interest paid on funds borrowed to finance machinery purchases.

Machinery and building variable costs include machine and building repair, fuel, and lubrication--costs that vary with the crop grown and the number of acres of crop produced.

#### Input Prices

Prices used for fuel, fertilizer, chemicals, seed, custom services, and other inputs are listed in Table 8.

#### CONCLUDING NOTE

To use these budgets you should fully comprehend the procedures and assumptions used in this study and interpret the results accordingly. The authors and producers who organized this data recognize that these budgets do not represent any one particular operation. They should be used as a general guide to help derive budgets for individual operations. Moreover, this publication does not recommend production practices. Rather, it presents current technology used to raise alfalfa seed.

APPENDIX I  
Detailed Budgets

TABLE 3.1. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING AN ALFALFA SEED FIELD, FOLLOWING WHEAT.\*

-----												
VARIABLE COST												
-----												
OPERATION	TOOLING	MTH YEAR	MACH	LABOR	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST
-----												
			HOURS	HOURS	\$	\$	\$	\$	\$	\$	\$	\$
BURN STUBBLE	PERMIT, LABOR & PROPANE TORCH	AUG 1991	.00	.04	.04	.00	.40	1.50	.05	.04	1.99	2.03
DISK & PACK	140HP-WT, 12' DISC W/14' PACK.	AUG 1991	.25	.28	4.81	4.30	2.75	.00	.00	.16	7.21	12.02
CORRUGATE	140HP-WT, 5-ROW CORRUGATOR	AUG 1991	.20	.22	2.97	2.27	2.20	.00	.00	.10	4.57	7.54
HEDLAND	100HP-WT, HEDLAND CORRUGATOR	AUG 1991	.06	.07	1.18	.85	.66	.00	.00	.03	1.54	2.72
IRRIGATE (3X)**	RILL IRRIGATION	AUG-SEP 1991	.00	1.50	.98	1.00	15.00	6.25	.00	.50	22.75	23.73
DISK & PACK	140HP-WT, 12' DISC W/14' PACK.	AUG 1991	.25	.28	4.81	4.30	2.75	.00	.00	.16	7.21	12.02
PLOW & PACK	140HP-WT, 4BTM PLOW W/7' PACK.	AUG 1991	.29	.31	5.59	5.00	3.14	.00	.00	.18	8.32	13.92
ROTOFILL	140HP-WT, 12'ROTOVATOR W/PACK.	AUG 1991	.33	.37	9.04	6.89	3.67	.00	.00	.24	10.79	19.84
SOIL TEST	CUSTOM HIRE	AUG 1991	.00	.00	.00	.00	.00	1.00	.00	.02	1.02	1.02
FERTILIZE	CUSTOM HIRE	AUG 1991	.00	.00	.00	.00	.00	5.00	23.60	.64	29.24	29.24
PLANT/CORRUGATE	100HP-WT, 6R PLANTER W/CORRUG.	SEP 1991	.25	.28	5.88	2.77	2.75	.00	3.75	.14	9.41	15.29
HEDLAND	100HP-WT, HEDLAND CORRUGATOR	SEP 1991	.06	.07	1.18	.85	.66	.00	.00	.02	1.53	2.71
CULTIVATE	100HP-WT, 6R-CULTIVATOR	OCT 1991	.33	.37	5.97	3.19	3.67	.00	.00	.05	6.90	12.88
SPRAY	100HP-WT, 30'PTO SPRAYER	OCT 1991	.13	.14	2.23	1.16	1.38	.00	27.00	.22	29.76	31.98
HAUL WATER	NURSE TRUCK	OCT 1991	.04	.04	1.20	.35	.44	.00	.00	.01	.80	1.99
SPRAY	100HP-WT, 30' PTO SPRAYER	OCT 1991	.13	.14	2.23	1.16	1.38	.00	12.75	.11	15.40	17.63
HAUL WATER	NURSE TRUCK	OCT 1991	.04	.04	1.20	.35	.44	.00	.00	.01	.80	1.99
CERTIFICATION	SEED CERTIFICATION FEE	OCT 1991	.00	.00	.00	.00	.00	.30	.00	.00	.30	.30
MISC. USE	MANAGER'S PICKUP	ANN 1991	.33	.00	1.56	1.25	.00	.00	.00	.06	1.31	2.87
MISC. USE	LABOR'S PICKUP	ANN 1991	.38	.00	2.58	1.72	.00	.00	.00	.08	1.80	4.38
BUILDINGS	MACHINE SHED AND SHOP	ANN 1991	.00	.00	1.13	.17	.00	.00	.00	.01	.17	1.30
MISC. USE	SHOP TOOLS	ANN 1991	.00	.00	1.55	.00	.00	.00	.00	.00	.00	1.55
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN 1991	.00	.00	.00	.00	.00	12.21	.00	.00	12.21	12.21
LAND COST	LAND RENT	ANN 1991	.00	.00	25.00	.00	.00	.00	.00	.00	.00	25.00
MANAGEMENT***	MANAGEMENT COST	ANN 1991	.00	.00	12.25	.00	.00	.00	.00	.00	.00	12.25
TOTAL PER ACRE			3.06	4.13	93.36	37.57	41.28	26.26	67.15	2.79	175.05	268.41
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\* FOR THE ESTABLISHMENT YEAR, THE FOLLOWING COSTS ARE ALLOCATED 25% ALFALFA ESTABLISHMENT AND 75% WHEAT: IRRIGATION, PICKUPS, MACHINE SHED AND SHOP, SHOP TOOLS AND LAND RENT.

\*\* IRRIGATE ONCE IN AUGUST BEFORE PLANTING AND TWICE IN SEPTEMBER AFTER PLANTING.

\*\*\*MANAGEMENT COST IS FIGURED AS 7% OF PROJECTED ANNUAL GROSS RETURNS (700 LBS. CLEAN SEED X \$1.00/LB. X 7% = \$49.00). FOR THE ESTABLISHMENT YEAR AND THE LAST YEAR OF PRODUCTION 25% OF THIS ANNUAL COST IS ALLOCATED TO THE ESTABLISHMENT YEAR WHILE 75% IS ALLOCATED TO THE THIRD (AND LAST) YEAR OF PRODUCTION.

TABLE 4.1. ITEMIZED COST PER ACRE FOR **ESTABLISHING AN ALFALFA SEED FIELD**, FOLLOWING WHEAT.

		PRICE OR UNIT COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
ALFALFA SEED	LB.	5.00	.75	3.75	_____
NITROGEN	LB.	.28	30.00	8.40	_____
PHOSPHOROUS	LB.	.24	30.00	7.20	_____
POTASH	LB.	.14	30.00	4.20	_____
SULFUR	LB.	.11	10.00	1.10	_____
BORON	LB.	2.70	1.00	2.70	_____
FUSILADE	PINT	15.25	1.50	22.88	_____
MORACT (STICKER)	PINT	2.75	1.50	4.12	_____
2,4-DB-ESTER	PINT	4.25	3.00	12.75	_____
WATER CHARGE	ACRE	25.00	.25	6.25	_____
CUSTOM FERTILIZATION	ACRE	5.00	1.00	5.00	_____
SOIL TEST	ACRE	1.00	1.00	1.00	_____
BURN PERMIT	ACRE	1.50	1.00	1.50	_____
SEED CERTIFICATION FEE	ACRE	.30	1.00	.30	_____
PROPANE GAS	ACRE	.05	1.00	.05	_____
IRRIGATION REPAIR	ACRE	4.00	.25	1.00	_____
TRACTOR REPAIR	ACRE	12.48	1.00	12.48	_____
TRACTOR FUEL/LUBE	ACRE	10.50	1.00	10.50	_____
MACHINERY REPAIR*	ACRE	12.07	1.00	12.07	_____
MACHINE FUEL/LUBE	ACRE	1.53	1.00	1.53	_____
LABOR	HOURL	10.00	4.13	41.28	_____
OVERHEAD	ACRE	12.21	1.00	12.21	_____
INTEREST ON OP. CAP.	DOL.	.09	30.97	2.79	_____
				-----	
TOTAL VARIABLE COST				175.05	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	14.98	1.00	14.98	_____
TRACTOR INTEREST	ACRE	12.38	1.00	12.38	_____
TRACTOR INSURANCE	ACRE	.83	1.00	.83	_____
TRACTOR TAXES	ACRE	2.48	1.00	2.48	_____
MACHINE DEPRECIATION*	ACRE	14.59	1.00	14.59	_____
MACHINE INTEREST*	ACRE	8.58	1.00	8.58	_____
MACHINE INSURANCE*	ACRE	.57	1.00	.57	_____
MACHINE TAXES*	ACRE	1.72	1.00	1.72	_____
LAND RENT	ACRE	100.00	.25	25.00	_____
MANAGEMENT	ACRE	49.00	.25	12.25	_____
				-----	
TOTAL FIXED COST				93.36	_____
TOTAL COST				268.41	_____
-----					

\*INCLUDES ALL MACHINERY PLUS MACHINE SHED AND SHOP, SHOP TOOLS, AND IRRIGATION COSTS.

TABLE 5.1. MATERIALS AND SERVICES USED BY OPERATION FOR **ESTABLISHING AN ALFALFA SEED FIELD.**

OPERATION	MONTH	MATERIAL AND/OR SERVICE
BURN STUBBLE	AUGUST	BURN PERMIT @ \$1.50/ACRE PROPANE GAS @ \$.05/ACRE
IRRIGATE (3X)	AUG.-SEPT.	25% OF THE ANNUAL IRRIGATION CHARGE @ \$25.00/ACRE
SOIL TEST	AUGUST	CUSTOM HIRED @ \$1.00/ACRE
FERTILIZE	AUGUST	CUSTOM FERTILIZE @ \$5.00/ACRE 30 LBS. NITROGEN @ \$.28/LB. 30 LBS. PHOSPHORUS @ \$.24/LB. 30 LBS. POTASH @ \$.14/LB. 10 LBS. SULFUR @ \$.11/LB. 1 LB. BORON @ \$2.70/LB.
PLANT/CORRUGATE	SEPTEMBER	0.75 LBS. OF ALFALFA SEED @ \$5.00/LB.
SPRAY (1ST TIME)	OCTOBER	1.5 PINTS OF FUSILADE @ \$15.25/PINT 1.5 PINTS OF MORACT @ \$2.75/PINT
SPRAY (2ND TIME)	OCTOBER	3 PINTS OF 2,4-DB-ESTER @ \$4.25/PINT
CERTIFICATION	OCTOBER	SEED CERTIFICATION FEE @ \$15.00/FIELD
OVERHEAD	ANNUAL	7.5% OF VARIABLE COST

TABLE 3.2. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING ALFALFA SEED THE **FIRST YEAR OF PRODUCTION.**

OPERATION	TOOLING	MTH YEAR	MACH	LABOR	VARIABLE COST							TOTAL VARIABLE COST	TOTAL COST
					TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.			
				HOURS	HOURS	\$	\$	\$	\$	\$	\$	\$	
SPRAY	100HP-WT, 30' PTO SPRAYER	MAR 1992	.13	.14	2.23	1.16	1.38	.00	12.75	.92	16.20	18.43	
HAUL WATER	NURSE TRUCK	MAR 1992	.04	.04	1.20	.35	.44	.00	.00	.05	.84	2.03	
CULTIVATE/CORRUG	100HP-WT, 6R CULTIV./CORRUGA.	MAR 1992	.29	.31	5.47	2.93	3.14	.00	.00	.36	6.44	11.91	
HEDLAND	100HP-WT, HEDLAND CORRUGATOR	MAR 1992	.06	.07	1.18	.85	.66	.00	.00	.09	1.60	2.78	
HERBICIDE SPRAY	100HP-WT, SPRAYER/ROLLING CULT	APR 1992	.33	.37	8.52	4.55	3.67	.00	20.00	1.48	29.70	38.22	
HAUL WATER	NURSE TRUCK	APR 1992	.04	.04	1.20	.35	.44	.00	.00	.04	.83	2.03	
IRRIGATE (5X)*	RILL IRRIGATION	SEA 1992	.00	2.50	3.92	4.00	25.00	25.00	.00	2.43	56.43	60.35	
PRE-BLOOM SPRAY	CUSTOM AERIAL	MAY 1992	.00	.00	.00	.00	.00	6.00	34.80	1.84	42.64	42.64	
POLLINATION**	DOLLAR COST OF POLLINATION	SEA 1992	.00	.00	.00	.00	.00	156.82	.00	.00	156.82	156.82	
CERTIFICATION	SEED CERTIFICATION FEE	JUN 1992	.00	.00	.00	.00	.00	.30	.00	.01	.31	.31	
PRODUCTION FEE	SEED PRODUCTION FEE	JUN 1992	.00	.00	.00	.00	.00	1.75	.00	.07	1.82	1.82	
ROGUE FIELD	HAND LABOR, BACKPACK SPRAYER	JUL 1992	.00	1.00	.79	.10	10.00	.00	1.00	.33	11.43	12.22	
INSECTIC. SPRAY	CUSTOM AERIAL	AUG 1992	.00	.00	.00	.00	.00	6.00	4.00	.23	10.22	10.22	
SWATH	14' SWATHER	AUG 1992	.25	.28	9.30	7.21	2.75	.00	.00	.22	10.18	19.49	
COMBINE	14' COMBINE	AUG 1992	.67	.73	33.94	17.01	7.33	.00	.00	.55	24.89	58.83	
HAUL SEED	TRUCK	AUG 1992	.04	.04	1.20	.35	.44	.00	.00	.02	.81	2.00	
BURN FIELD	DOLLAR COST OF BURNING FIELD	OCT 1992	.00	.00	.00	.00	.00	10.00	.00	.08	10.07	10.07	
CORRUGATE	140HP-WT, 5 ROW CORRUGATOR	OCT 1992	.20	.22	2.97	2.27	2.20	.00	.00	.03	4.51	7.47	
HEDLAND	100HP-WT, HEDLAND CORRUGATOR	OCT 1992	.06	.07	1.18	.85	.66	.00	.00	.01	1.52	2.70	
THIN FIELD	140HP-WT, 6 ROW CULTIVATOR	OCT 1992	.20	.22	3.64	3.06	2.20	.00	.00	.04	5.30	8.94	
MISC. USE	MANAGER'S PICKUP	ANN 1992	1.33	.00	6.26	5.01	.00	.00	.00	.23	5.23	11.49	
MISC. USE	LABOR'S PICKUP	ANN 1992	1.50	.00	10.33	6.88	.00	.00	.00	.31	7.19	17.52	
BUILDINGS	MACHINE SHED AND SHOP	ANN 1992	.00	.00	4.52	.67	.00	.00	.00	.03	.70	5.21	
MISC. USE	SHOP TOOLS	ANN 1992	.00	.00	6.18	.00	.00	.00	.00	.00	.00	6.18	
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN 1992	.00	.00	.00	.00	.00	30.43	.00	.00	30.43	30.43	
LAND COST	LAND RENT	ANN 1992	.00	.00	100.00	.00	.00	.00	.00	.00	.00	100.00	
ESTABLISHMT COST	3-YR AMORTIZED ESTAB. COST	ANN 1992	.00	.00	106.04	.00	.00	.00	.00	.00	.00	106.04	
MANAGEMENT***	MANAGEMENT COST	ANN 1992	.00	.00	49.00	.00	.00	.00	.00	.00	.00	49.00	
TOTAL PER ACRE			5.13	6.03	359.05	57.61	60.31	236.30	72.55	9.36	436.12	795.17	

\* IRRIGATE TWICE IN APRIL, TWICE IN JULY, AND ONCE IN OCTOBER.

\*\* CALCULATED SEPARATELY. SEE APPENDIX II: POLLINATION COST CALCULATIONS.

\*\*\*MANAGEMENT COST IS FIGURED AS 7% OF PROJECTED ANNUAL GROSS RETURNS (700 LBS. OF CLEAN SEED X \$1.00/LB. X 7% = \$49.00).

TABLE 4.2. ITEMIZED COST PER ACRE FOR PRODUCING ALFALFA SEED FOR THE **FIRST YEAR OF PRODUCTION.**

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
2,4-DB-ESTER	PINT	4.25	3.00	12.75	_____
SONALAN	PINT	5.00	4.00	20.00	_____
CAPTURE	OZ.	4.50	6.40	28.80	_____
FOLIAR FEED	ACRE	6.00	1.00	6.00	_____
ROGUING SPRAY	ACRE	1.00	1.00	1.00	_____
INSECTICIDE	ACRE	4.00	1.00	4.00	_____
CUSTOM AERIAL	ACRE	6.00	2.00	12.00	_____
BURNING COST	ACRE	10.00	1.00	10.00	_____
POLLINATION COST	ACRE	156.82	1.00	156.82	_____
SEED CERTIFICATION FEE	ACRE	.30	1.00	.30	_____
SEED PRODUCTION FEE	ACRE	1.75	1.00	1.75	_____
WATER CHARGE	ACRE	25.00	1.00	25.00	_____
IRRIGATION REPAIR	ACRE	4.00	1.00	4.00	_____
TRACTOR REPAIR	ACRE	6.04	1.00	6.04	_____
TRACTOR FUEL/LUBE	ACRE	4.65	1.00	4.65	_____
MACHINERY REPAIRS	ACRE	32.75	1.00	32.75	_____
MACHINE FUEL/LUBE	ACRE	10.17	1.00	10.17	_____
LABOR	HOUR	10.00	6.03	60.31	_____
OVERHEAD	ACRE	30.43	1.00	30.43	_____
INTEREST ON OP. CAP.	DOL.	.09	103.97	9.36	_____
-----					
TOTAL VARIABLE COST				436.12	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	8.29	1.00	8.29	_____
TRACTOR INTEREST	ACRE	6.85	1.00	6.85	_____
TRACTOR INSURANCE	ACRE	.46	1.00	.46	_____
TRACTOR TAXES	ACRE	1.37	1.00	1.37	_____
MACHINE DEPRECIATION*	ACRE	52.42	1.00	52.42	_____
MACHINE INTEREST*	ACRE	27.33	1.00	27.33	_____
MACHINE INSURANCE*	ACRE	1.82	1.00	1.82	_____
MACHINE TAXES*	ACRE	5.47	1.00	5.47	_____
LAND RENT	ACRE	100.00	1.00	100.00	_____
AMORT. ESTAB. VC**	ACRE	69.16	1.00	69.16	_____
AMORT. ESTAB. FC**	ACRE	36.88	1.00	36.88	_____
MANAGEMENT FEE	ACRE	49.00	1.00	49.00	_____
-----					
TOTAL FIXED COST				359.03	_____
TOTAL COST				795.15	_____
-----					

\* INCLUDES ALL MACHINERY PLUS MACHINE SHED AND SHOP, SHOP TOOLS, AND IRRIGATION COSTS.

\*\*ESTABLISHMENT VARIABLE COSTS (VC) AND FIXED COSTS (FC) AMORTIZED OVER THE 3-YEAR PRODUCTION PERIOD AT 9% INTEREST.



TABLE 5.2. MATERIALS AND SERVICES USED BY OPERATION FOR PRODUCING ALFALFA SEED  
THE **FIRST YEAR OF PRODUCTION.**

OPERATION	MONTH	MATERIAL AND/OR SERVICE
SPRAY	MARCH	3 PINTS OF 2,4-DB-ESTER @ \$4.25/PINT
HERBICIDE SPRAY	APRIL	4 PINTS OF SONALAN @ \$5.00/PINT
IRRIGATE (5X)	SEASON	IRRIGATION CHARGE @ 25.00/ACRE
PRE-BLOOM SPRAY	MAY	CUSTOM AERIAL @ \$6.00/ACRE 6.4 OUNCES OF CAPTURE @ \$4.50/OZ. FOLIAR FEED @ \$6.00/ACRE
POLLINATION	MAY	POLLINATION COSTS @ \$156.82/ACRE
CERTIFICATION	JUNE	SEED CERTIFICATION FEE @ \$15.00/FIELD
PRODUCTION FEE	JUNE	SEED PRODUCTION FEE @ \$1.75/ACRE
ROGUE FIELD	JULY	ROGUING SPRAY @ \$1.00/ACRE
INSECTICIDE SPRAY	AUGUST	CUSTOM AERIAL @ \$6.00/ACRE INSECTICIDE SPRAY @ \$4.00/ACRE
BURN FIELD	OCTOBER	BURNING COST @ \$10.00/ACRE
OVERHEAD	ANNUAL	7.5% OF VARIABLE COST

TABLE 3.3. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING ALFALFA SEED THE SECOND YEAR OF PRODUCTION.

OPERATION	TOOLING	MTH YEAR	MACH	LABOR	VARIABLE COST							TOTAL COST	
					TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST		
					\$	\$	\$	\$	\$	\$	\$		
SKEWTRED	100HP-WT, 16' SKEWTREDER	MAR 1992		HOURS									
			.13	.14	2.46	1.77	1.38	.00	.00	.19	3.33	5.79	
HERBICIDE SPRAY	100HP-WT, SPRAYER/ROLLING CULT	APR 1992	.33	.37	8.52	4.55	3.67	.00	20.00	1.48	29.70	38.22	
HAUL WATER	NURSE TRUCK	APR 1992	.04	.04	1.20	.35	.44	.00	.00	.04	.83	2.03	
LAYBY	140HP-WT, 5 ROW CORRUGATOR	APR 1992	.20	.22	2.97	2.27	2.20	.00	.00	.23	4.71	7.68	
HEDLAND	100HP-WT, HEDLAND CORRUGATOR	APR 1992	.06	.07	1.18	.85	.66	.00	.00	.08	1.59	2.77	
IRRIGATE (4X)*	RILL IRRIGATION	SEA 1992	.00	2.00	3.92	4.00	20.00	25.00	.00	2.21	51.21	55.13	
PRE-BLOOM SPRAY	CUSTOM AERIAL	MAY 1992	.00	.00	.00	.00	.00	6.00	34.80	1.84	42.64	42.64	
POLLINATION**	DOLLAR COST OF POLLINATION	SEA 1992	.00	.00	.00	.00	.00	167.30	.00	.00	167.30	167.30	
CERTIFICATION	SEED CERTIFICATION FEE	JUN 1992	.00	.00	.00	.00	.00	.30	.00	.01	.31	.31	
PRODUCTION FEE	SEED PRODUCTION FEE	JUN 1992	.00	.00	.00	.00	.00	1.75	.00	.07	1.82	1.82	
ROGUE FIELD	HAND LABOR, BACKPACK SPRAYER	JUL 1992	.00	1.00	.79	.10	10.00	.00	1.00	.33	11.43	12.22	
INSECTIC. SPRAY	CUSTOM AERIAL	AUG 1992	.00	.00	.00	.00	.00	6.00	4.00	.23	10.22	10.22	
SWATH	14' SWATHER	AUG 1992	.25	.28	9.30	7.21	2.75	.00	.00	.22	10.18	19.49	
COMBINE	14' COMBINE	AUG 1992	.67	.73	33.94	17.01	7.33	.00	.00	.55	24.89	58.83	
HAUL SEED	TRUCK	AUG 1992	.04	.04	1.20	.35	.44	.00	.00	.02	.81	2.00	
BURN FIELD	DOLLAR COST OF BURNING FIELD	OCT 1992	.00	.00	.00	.00	.00	10.00	.00	.08	10.07	10.07	
CORRUGATE	140HP-WT, 5 ROW CORRUGATOR	OCT 1992	.20	.22	2.97	2.27	2.20	.00	.00	.03	4.51	7.47	
HEDLAND	100HP-WT, HEDLAND CORRUGATOR	OCT 1992	.06	.07	1.18	.85	.66	.00	.00	.01	1.52	2.70	
MISC. USE	MANAGER'S PICKUP	ANN 1992	1.33	.00	6.26	5.01	.00	.00	.00	.23	5.23	11.49	
MISC. USE	LABOR'S PICKUP	ANN 1992	1.50	.00	10.33	6.88	.00	.00	.00	.31	7.19	17.52	
BUILDINGS	MACHINE SHED AND SHOP	ANN 1992	.00	.00	4.52	.67	.00	.00	.00	.03	.70	5.21	
MISC. USE	SHOP TOOLS	ANN 1992	.00	.00	6.18	.00	.00	.00	.00	.00	.00	6.18	
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN 1992	.00	.00	.00	.00	.00	29.26	.00	.00	29.26	29.26	
LAND COST	LAND RENT	ANN 1992	.00	.00	100.00	.00	.00	.00	.00	.00	.00	100.00	
ESTABLISHMT COST	3-YR AMORTIZED ESTAB. COST	ANN 1992	.00	.00	106.04	.00	.00	.00	.00	.00	.00	106.04	
MANAGEMENT***	MANAGEMENT COST	ANN 1992	.00	.00	49.00	.00	.00	.00	.00	.00	.00	49.00	
TOTAL PER ACRE			4.81	5.17	351.93	54.15	51.72	245.61	59.80	8.18	419.46	771.39	

\* IRRIGATE ONCE IN APRIL, TWICE IN JULY, AND ONCE IN OCTOBER.

\*\* CALCULATED SEPARATELY. SEE APPENDIX II: POLLINATION COST CALCULATIONS.

\*\*\*MANAGEMENT COST IS FIGURED AS 7% OF PROJECTED ANNUAL GROSS RETURNS (700 LBS. OF CLEAN SEED X \$1.00/LB. X 7% = \$49.00).

TABLE 4.3. ITEMIZED COST PER ACRE FOR PRODUCING ALFALFA SEED  
THE SECOND YEAR OF PRODUCTION.

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SONALAN	PINT	5.00	4.00	20.00	_____
CAPTURE	OZ.	4.50	6.40	28.80	_____
FOLIAR FEED	ACRE	6.00	1.00	6.00	_____
ROGUNG SPRAY	ACRE	1.00	1.00	1.00	_____
INSECTICIDE	ACRE	4.00	1.00	4.00	_____
CUSTOM AERIAL	ACRE	6.00	2.00	12.00	_____
BURNING COST	ACRE	10.00	1.00	10.00	_____
POLLINATION COST	ACRE	167.30	1.00	167.30	_____
SEED CERTIFICATION FEE	ACRE	.30	1.00	.30	_____
SEED PRODUCTION FEE	ACRE	1.75	1.00	1.75	_____
WATER CHARGE	ACRE	25.00	1.00	25.00	_____
IRRIGATION REPAIR	ACRE	4.00	1.00	4.00	_____
TRACTOR REPAIR	ACRE	4.92	1.00	4.92	_____
TRACTOR FUEL/LUBE	ACRE	3.37	1.00	3.37	_____
MACHINERY REPAIRS	ACRE	31.79	1.00	31.79	_____
MACHINE FUEL/LUBE	ACRE	10.06	1.00	10.06	_____
LABOR	HOUR	10.00	5.17	51.72	_____
OVERHEAD	ACRE	29.26	1.00	29.26	_____
INTEREST ON OP. CAP.	DOL.	.09	90.85	8.18	_____
TOTAL VARIABLE COST				419.46	_____
-----					
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	6.43	1.00	6.43	_____
TRACTOR INTEREST	ACRE	5.31	1.00	5.31	_____
TRACTOR INSURANCE	ACRE	.35	1.00	.35	_____
TRACTOR TAXES	ACRE	1.06	1.00	1.06	_____
MACHINE DEPRECIATION*	ACRE	50.81	1.00	50.81	_____
MACHINE INTEREST*	ACRE	25.99	1.00	25.99	_____
MACHINE INSURANCE*	ACRE	1.73	1.00	1.73	_____
MACHINE TAXES*	ACRE	5.20	1.00	5.20	_____
LAND RENT	ACRE	100.00	1.00	100.00	_____
AMORT. ESTAB. VC**	ACRE	69.16	1.00	69.16	_____
AMORT. ESTAB. FC**	ACRE	36.88	1.00	36.88	_____
MANAGEMENT FEE	ACRE	49.00	1.00	49.00	_____
TOTAL FIXED COST				351.93	_____
-----					
TOTAL COST				771.39	_____
-----					

\* INCLUDES ALL MACHINERY PLUS MACHINE SHED AND SHOP, SHOP TOOLS,  
AND IRRIGATION COSTS.

\*\*ESTABLISHMENT VARIABLE COSTS (VC) AND FIXED COSTS (FC) AMORTIZED  
OVER THE 3-YEAR PRODUCTION PERIOD AT 9% INTEREST.

TABLE 5.3. MATERIALS AND SERVICES USED BY OPERATION FOR PRODUCING ALFALFA SEED  
THE **SECOND YEAR OF PRODUCTION.**

OPERATION	MONTH	MATERIAL AND/OR SERVICE
HERBICIDE SPRAY	APRIL	4 PINTS OF SONALAN @ \$5.00/PINT
IRRIGATE (4X)	SEASON	IRRIGATION CHARGE @ 25.00/ACRE
PRE-BLOOM SPRAY	MAY	CUSTOM AERIAL @ \$6.00/ACRE 6.4 OUNCES OF CAPTURE @ \$4.50/OZ. FOLIAR FEED @ \$6.00/ACRE
POLLINATION	MAY	POLLINATION COSTS @ \$167.30/ACRE
CERTIFICATION	JUNE	SEED CERTIFICATION FEE @ \$15.00/FIELD
PRODUCTION FEE	JUNE	SEED PRODUCTION FEE @ \$1.75/ACRE
ROGUE FIELD	JULY	ROGUING SPRAY @ \$1.00/ACRE
INSECTICIDE SPRAY	AUGUST	CUSTOM AERIAL @ \$6.00/ACRE INSECTICIDE SPRAY @ \$4.00/ACRE
OVERHEAD	ANNUAL	7.5% OF VARIABLE COST

TABLE 3.4. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING ALFALFA SEED THE THIRD YEAR OF PRODUCTION.\*

OPERATION	TOOLING	MTH YEAR	MACH	LABOR	VARIABLE COST							TOTAL VARIABLE COST	TOTAL COST
					TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.			
					\$	\$	\$	\$	\$	\$			
			HOURS	HOURS									
SKEWTRER	100HP-WT, 16' SKEWTREDER	MAR 1992	.13	.14	2.46	1.77	1.38	.00	.00	.19	3.33	5.79	
HERBICIDE SPRAY	100HP-WT, SPRAYER/ROLLING CULT	APR 1992	.33	.37	8.52	4.55	3.67	.00	20.00	1.48	29.70	38.22	
HAUL WATER	NURSE TRUCK	APR 1992	.04	.04	1.20	.35	.44	.00	.00	.04	.83	2.03	
LAYBY	140HP-WT, 5-ROW CORRUGATOR	APR 1992	.20	.22	2.97	2.27	2.20	.00	.00	.23	4.71	7.68	
HEDLAND	100HP-WT, HEDLAND CORRUGATOR	APR 1992	.06	.07	1.18	.85	.66	.00	.00	.08	1.59	2.77	
IRRIGATE (3X)**	RILL IRRIGATION	SEA 1992	.00	1.50	2.94	.00	18.00	18.75	.00	1.65	38.40	41.35	
PRE-BLOOM SPRAY	CUSTOM AERIAL	MAY 1992	.00	.00	.00	.00	.00	6.00	34.80	1.84	42.64	42.64	
POLLINATION***	DOLLAR COST OF POLLINATION	SEA 1992	.00	.00	.00	.00	.00	167.30	.00	.00	167.30	167.30	
CERTIFICATION	SEED CERTIFICATION FEE	JUN 1992	.00	.00	.00	.00	.00	.30	.00	.01	.31	.31	
PRODUCTION FEE	SEED PRODUCTION FEE	JUN 1992	.00	.00	.00	.00	.00	1.75	.00	.07	1.82	1.82	
ROGUE FIELD	HAND LABOR, BACKPACK SPRAYER	JUL 1992	.00	1.00	.79	.10	10.00	.00	1.00	.33	11.43	12.22	
INSECTIC. SPRAY	CUSTOM AERIAL	AUG 1992	.00	.00	.00	.00	.00	6.00	4.00	.23	10.22	10.22	
SWATH	14' SWATHER	AUG 1992	.25	.28	9.30	7.21	2.75	.00	.00	.22	10.18	19.49	
COMBINE	14' COMBINE	AUG 1992	.67	.73	33.94	17.01	7.33	.00	.00	.55	24.89	58.83	
HAUL SEED	TRUCK	AUG 1992	.04	.04	1.20	.35	.44	.00	.00	.02	.81	2.00	
BURN FIELD	DOLLAR COST OF BURNING FIELD	AUG 1992	.00	.00	.00	.00	.00	10.00	.00	.23	10.22	10.22	
SPRAY	100HP-WT, 30' PTO SPRAYER	SEP 1992	.20	.22	3.56	1.86	2.20	.00	6.30	.16	10.51	14.08	
HAUL WATER	NURSE TRUCK	SEP 1992	.04	.04	1.20	.35	.44	.00	.00	.01	.80	2.00	
CROWN ROOTS	100HP-WT, 6 ROW CULTIVATOR	OCT 1992	.25	.28	4.48	2.39	2.75	.00	.00	.04	5.18	9.66	
MISC. USE	MANAGER'S PICKUP	ANN 1992	1.00	.00	4.69	3.76	.00	.00	.00	.17	3.93	8.62	
MISC. USE	LABOR'S PICKUP	ANN 1992	1.13	.00	7.75	5.16	.00	.00	.00	.23	5.39	13.14	
BUILDINGS	MACHINE SHED AND SHOP	ANN 1992	.00	.00	3.39	.50	.00	.00	.00	.02	.52	3.91	
MISC. USE	SHOP TOOLS	ANN 1992	.00	.00	4.64	.00	.00	.00	.00	.00	.00	4.64	
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN 1992	.00	.00	.00	.00	.00	28.85	.00	.00	28.85	28.85	
LAND COST	LAND RENT	ANN 1992	.00	.00	75.00	.00	.00	.00	.00	.00	.00	75.00	
ESTABLISHMT COST	3-YR AMORTIZED ESTAB. COST	ANN 1992	.00	.00	106.04	.00	.00	.00	.00	.00	.00	106.04	
MANAGEMENT****	MANAGEMENT COST	ANN 1992	.00	.00	36.75	.00	.00	.00	.00	.00	.00	36.75	
TOTAL PER ACRE			4.33	4.93	311.96	48.48	52.25	238.95	66.10	7.79	413.57	725.53	

\* FOR THE LAST YEAR OF PRODUCTION THE FOLLOWING COSTS ARE ALLOCATED 75% ALFALFA SEED PRODUCTION AND 25% TO THE FOLLOWING CROP: IRRIGATION, PICKUPS, MACHINE SHED AND SHOP, SHOP TOOLS AND LAND RENT.

\*\* IRRIGATE ONCE IN APRIL AND TWICE IN JULY.

\*\*\* CALCULATED SEPARATELY. SEE APPENDIX II: POLLINATION COST CALCULATIONS.

\*\*\*\*MANAGEMENT COSTS ARE FIGURED AS 7% AS PROJECTED ANNUAL GROSS RETURNS (700 LBS. CLEAN SEED X \$1.00/LB. X 7% = \$49.00). FOR THE ESTABLISHMENT YEAR AND THE LAST YEARS OF PRODUCTION, 25% OF THIS ANNUAL COST IS ALLOCATED TO THE ESTABLISHMENT YEAR WHILE 75% IS ALLOCATED TO THE THIRD (AND LAST) YEAR OF PRODUCTION.

TABLE 4.4. ITEMIZED COST PER ACRE FOR PRODUCING ALFALFA SEED  
THE THIRD YEAR OF PRODUCTION.

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SONALAN	PINT	5.00	4.00	20.00	_____
CAPTURE	OZ.	4.50	6.40	28.80	_____
FOLIAR FEED	ACRE	6.00	1.00	6.00	_____
ROGUING SPRAY	ACRE	1.00	1.00	1.00	_____
INSECTICIDE	ACRE	4.00	1.00	4.00	_____
2,4-D	QT.	3.15	2.00	6.30	_____
CUSTOM AERIAL	ACRE	6.00	2.00	12.00	_____
BURNING COST	ACRE	10.00	1.00	10.00	_____
POLLINATION COST	ACRE	167.30	1.00	167.30	_____
SEED CERTIFICATION FEE	ACRE	.30	1.00	.30	_____
SEED PRODUCTION FEE	ACRE	1.75	1.00	1.75	_____
WATER CHARGE	ACRE	25.00	.75	18.75	_____
IRRIGATION REPAIR	ACRE	4.00	.75	3.00	_____
TRACTOR REPAIR	ACRE	5.12	1.00	5.12	_____
TRACTOR FUEL/LUBE	ACRE	3.75	1.00	3.75	_____
MACHINERY REPAIRS	ACRE	30.74	1.00	30.74	_____
MACHINE FUEL/LUBE	ACRE	8.87	1.00	8.87	_____
LABOR	HOUR	10.00	4.93	49.25	_____
OVERHEAD	ACRE	28.85	1.00	28.85	_____
INTEREST ON OP. CAP.	DOL.	.09	86.61	7.79	_____
				-----	
TOTAL VARIABLE COST				413.57	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	7.64	1.00	7.64	_____
TRACTOR INTEREST	ACRE	6.31	1.00	6.31	_____
TRACTOR INSURANCE	ACRE	.42	1.00	.42	_____
TRACTOR TAXES	ACRE	1.26	1.00	1.26	_____
MACHINE DEPRECIATION*	ACRE	47.00	1.00	47.00	_____
MACHINE INTEREST*	ACRE	24.90	1.00	24.90	_____
MACHINE INSURANCE*	ACRE	1.66	1.00	1.66	_____
MACHINE TAXES*	ACRE	4.98	1.00	4.98	_____
LAND RENT	ACRE	100.00	.75	75.00	_____
AMORT. ESTAB. VC**	ACRE	69.16	1.00	69.16	_____
AMORT. ESTAB. FC**	ACRE	36.88	1.00	36.88	_____
MANAGEMENT FEE	ACRE	49.00	.75	36.75	_____
				-----	
TOTAL FIXED COST				311.96	_____
TOTAL COST				725.53	_____
-----					

\* INCLUDES ALL MACHINERY PLUS MACHINE SHED AND SHOP, SHOP TOOLS, AND IRRIGATION COSTS.

\*\*ESTABLISHMENT VARIABLE COSTS (VC) AND FIXED COSTS (FC) AMORTIZED OVER THE 3-YEAR PRODUCTION PERIOD AT 9% INTEREST.

TABLE 5.4. MATERIALS AND SERVICES USED BY OPERATION FOR PRODUCING ALFALFA SEED  
THE **THIRD YEAR OF PRODUCTION.**

OPERATION	MONTH	MATERIAL AND/OR SERVICE
HERBICIDE SPRAY	APRIL	4 PINTS OF SONALAN @ \$5.00/PINT
IRRIGATE (3X)	SEASON	75% OF THE ANNUAL IRRIGATION CHARGE @ \$25.00/ACRE
PRE-BLOOM SPRAY	MAY	CUSTOM AERIAL @ \$6.00/ACRE 6.4 OUNCES OF CAPTURE @ \$4.50/OZ. FOLIAR FEED @ \$6.00/ACRE
POLLINATION	MAY	POLLINATION COSTS @ \$167.30/ACRE
CERTIFICATION	JUNE	SEED CERTIFICATION FEE @ \$15.00/FIELD
PRODUCTION FEE	JUNE	SEED PRODUCTION FEE @ \$1.75/ACRE
ROGUE FIELD	JULY	ROGUING SPRAY @ \$1.00/ACRE
INSECTICIDE SPRAY	AUGUST	CUSTOM AERIAL @ \$6.00/ACRE INSECTICIDE SPRAY @ \$4.00/ACRE
BURN FIELD	AUGUST	BURNING COST @ \$10.00/ACRE
SPRAY	SEPTEMBER	2 QUARTS OF 2,4-D @ \$3.15/QT.
OVERHEAD	ANNUAL	7.5% OF VARIABLE COST

Table 6. Returns Over Variable Costs and Total Costs.

Price\Yield*:	550 lbs.	600 lbs.	650 lbs.	700 lbs.	750 lbs.	800 lbs.
	\$	\$	\$	\$	\$	\$
<b>\$.80/Lb.</b>						
Year 1:						
Over V.C.**	- 65	- 25	15	55	95	135
Over T.C.***	-355	-315	-275	-235	-195	-155
Year 2:						
Over V.C.	- 49	- 9	31	71	111	151
Over T.C.	-331	-291	-251	-211	-171	-131
Year 3:						
Over V.C.	- 43	- 3	37	77	117	157
Over T.C.	-286	-246	-206	-166	-126	- 86
3-Year Average:						
Over V.C.	- 52	- 12	28	68	108	148
Over T.C.	-324	-284	-244	-204	-164	-124
<b>\$.95/Lb.</b>						
Year 1:						
Over V.C.	17	65	112	160	207	255
Over T.C.	-273	-225	-178	-130	- 83	- 35
Year 2:						
Over V.C.	34	81	129	176	224	271
Over T.C.	-249	-202	-154	-107	- 59	- 12
Year 3:						
Over V.C.	40	88	135	183	230	278
Over T.C.	-203	-155	-108	- 60	- 13	35
3-Year Average:						
Over V.C.	30	78	125	173	220	268
Over T.C.	-242	-194	-146	- 99	- 52	- 4
<b>\$1.10/Lb.</b>						
Year 1:						
Over V.C.	100	155	210	265	320	390
Over T.C.	-190	-135	- 80	- 25	30	85
Year 2:						
Over V.C.	115	171	226	281	351	391
Over T.C.	-166	-111	- 56	- 1	54	109
Year 3:						
Over V.C.	122	177	232	287	342	397
Over T.C.	-121	- 66	- 11	44	99	154
3-Year Average:						
Over V.C.	112	168	222	278	337	393
Over T.C.	-159	-104	- 49	6	61	116
<b>\$1.25/Lb.</b>						
Year 1:						
Over V.C.	182	245	307	370	432	495
Over T.C.	-108	- 71	17	80	142	205
Year 2:						
Over V.C.	199	261	324	386	449	511
Over T.C.	- 84	-22	41	103	166	228
Year 3:						
Over V.C.	205	268	330	393	455	518
Over T.C.	-38	25	87	150	212	275
3-Year Average:						
Over V.C.	195	258	320	383	445	508
Over T.C.	- 77	- 23	48	111	173	236

\* Price is net of seed cleaning charges and yield is clean seed.

\*\* V.C. = Variable Cost (includes establishment year variable cost amortized over 3 years at 9% interest = \$69.16)

\*\*\*T.C. = Total Cost



TABLE 7. MACHINERY AND BUILDING COST PER HOUR/PER ACRE.

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPRECIATION	INTEREST	INSURANCE	TAXES	TOTAL COST		FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
								FIXED COST	REPAIR			
	\$							-----COST PER HOUR-----				
140HP-WT 4WD*	60,000.00	10	700	6.04	5.00	.33	1.00	12.37	6.02	5.52*	11.54	23.91
100HP-WT	42,000.00	10	500	5.92	4.90	.33	.98	12.12	3.56	2.76	6.32	18.45
4-18" MB PLOW	8,500.00	10	250	2.80	1.80	.12	.36	5.08	4.07	.00	4.07	9.15
7' PACKER	1,500.00	10	250	.49	.32	.02	.06	.90	.72	.00	.72	1.62
12' PACKER	2,100.00	10	250	.69	.44	.03	.09	1.25	1.01	.00	1.01	2.26
14' PACKER	3,000.00	10	250	.99	.64	.04	.13	1.79	1.44	.00	1.44	3.23
12' OFFSET DISC	6,400.00	10	250	2.11	1.36	.09	.27	3.82	3.07	.00	3.07	6.89
12' ROTOVATOR	15,000.00	15	150	6.03	4.93	.38	.99	12.27	6.97	.00	6.97	19.24
6-ROW CULTIVATOR	5,600.00	15	150	2.25	1.84	.12	.37	4.58	2.60	.00	2.60	7.18
PTO SPRAYER	3,000.00	10	100	2.47	1.59	.11	.32	4.48	2.33	.00	2.33	6.81
CORRUGATOR	1,500.00	15	150	.60	.49	.03	.10	1.23	.70	.00	.70	1.92
HEDLAND CORRUGATOR	7,500.00	5	250	4.04	1.79	.12	.36	6.31	7.19	.00	7.19	13.50
6-ROW SM SEED PLANT.	6,000.00	10	100	4.94	3.18	.21	.64	8.96	3.41	.00	3.41	12.38
SADDLE TANK SPRAYER	1,000.00	10	75	1.10	.71	.05	.14	1.99	.89	.00	.89	2.89
ROLLING CULTIVATOR	12,500.00	15	150	5.02	4.11	.27	.82	10.23	5.81	.00	5.81	16.03
SKEWTREDER	7,500.00	5	250	4.04	1.79	.12	.36	6.31	7.19	.00	7.19	13.50
70HP SWATHER	50,000.00	10	200	20.27	13.38	.89	2.68	37.22	25.08	3.76	28.84	66.06
14' COMBINE	100,000.00	10	300	30.00	16.50	1.10	3.30	50.90	20.00	5.52	25.52	76.42
MANAGER'S PICKUP	16,000.00	4	800	3.13	1.24	.08	.25	4.69	1.25	2.51	3.76	8.45
LABOR'S PICKUP	6,000.00	3	300	5.56	1.05	.07	.21	6.89	3.33	1.25	4.59	11.47
NURSE TRUCK & TANK	10,000.00	10	50	16.46	10.59	.71	2.12	29.88	6.00	2.76	8.76	38.64
PROPANE TORCH	250.00	10	40	.63	.28	.02	.06	.98	.00	.00	.00	.98
BACKPACK SPRAYER	250.00	10	50	.50	.23	.02	.05	.79	.10	.00	.10	.89
			ACRES COVERED					-----COST PER ACRE-----				
IRRIGATION TUBES	505.00	5	50	2.02	.45	.03	.09	2.60	.00	.00	.00	2.60
IRRIGATION DAMS	170.00	3	50	1.13	.15	.01	.03	1.33	.00	.00	.00	1.33
MACH SHED & SHOP	30,000.00	30	600	1.67	2.25	.15	.45	4.52	.67	.00	.67	5.18
SHOP TOOLS	30,000.00	15	600	3.33	2.25	.15	.45	6.18	.00	.00	.00	6.18

\*FUEL AND LUBE COST SHOWN AT A RATE OF 6 GALLONS PER HOUR. ANOTHER RATE USED IN THE BUDGETS IS 4 GALLONS PER HOUR AT WHICH THE FUEL AND LUBE COST IS \$3.68 PER HOUR.

Table 8. Input Prices

Input	Unit	Cost
		\$
Services:		
Burn Permit	Acre	1.50
Irrigation Charge	Acre	25.00
Soil Test	Acre	1.00
Custom Fertilize	Acre	5.00
Custom Aerial	Acre	6.00
Materials:		
Alfalfa Seed	Lb.	5.00
2,4-DB-Ester	Pint	4.25
2,4-D	Qt.	3.15
Nitrogen (Actual)	Lb.	.28
Phosphorous (Actual)	Lb.	.24
Potash (Actual)	Lb.	.14
Sulfur (Actual)	Lb.	.11
Boron (Actual)	Lb.	2.70
Fusilade	Pint	15.25
Moract (Sticker)	Pint	2.75
Sonalan	Pint	5.00
Capture	Oz.	4.50
Foliar Feed	Acre	6.00
Roguing Spray	Acre	1.00
Insecticide	Acre	4.00
Gasoline	Gal.	1.09
Diesel	Gal.	.80
Labor		Hour
10.00		
Land Rent	Acre	100.00

APPENDIX II  
POLLINATION COST CALCULATIONS

The following are the basic assumptions and calculations used to estimate the per-acre cost of pollinating an alfalfa seed field with leafcutter bees.

### Basic Assumptions

1. Bee larvae cost \$60 per gallon.
2. Seventy-five percent of the bee larvae are regenerated by the existing bees each year. The bee larvae are sold at the end of year three. Thus, the current year bee cost is equivalent to the 25% bee larvae replacement cost for the following year.
3. Bee larvae requirements per acre:

<u>Production Year</u>	<u>Gal. of Bee Larvae Furnished</u>	<u>Gal. of Bee Larvae Returned</u>	<u>Gal. of Bee Larva Lost</u>
1	3.0	2.25	0.75
2	3.5	2.625	0.875
3	3.5	2.625	0.875

4. Incubator construction cost with heating and refrigeration is \$100/acre with a 20-year life.
5. Incubator trays cost \$10.00/tray with a 10-year life. Two trays/acre required.
6. Laminated bee boards cost \$50.00/board with a 10-year life. Three and one-half boards/acre required.
7. Punch out machine cost \$5,000.00 with a 10-year life. One punch out machine will handle 250 acres.
8. Cell breaker machine cost \$5,000.00 with a 10-year life. One cell breaker will handle 250 acres.
9. Shelters cost \$125.00/shelter with a 10-year life. One shelter will handle 2.5 acres.
10. Other costs:
  - electricity, \$1.50/acre/year
  - labor, 3 hr./acre/year
  - materials, \$4.00/acre/year
  - repairs, \$1.00/acre/year

### Pollination Cost Per Acre

	Average Annual Investment Cost Per Acre				Prod. Year 1	Prod. Years 2-3
	<u>Depr.</u>	<u>Interest</u>	<u>Insurance</u>	<u>Taxes</u>	<u>Cost</u>	<u>Cost</u>
Incubator	5.00	4.50	.30	.90	10.70	10.70
Incub. trays (2/acre)	2.00	.90	.06	.18	3.14	3.14
Laminated bee boards (3.5/acre)	17.50	7.88	.52	1.58	27.48	27.48
Punch out machine	2.00	.90	.06	.18	3.14	3.14
Cell breaker	2.00	.90	.06	.18	3.14	3.14
Shelter	5.00	2.25	.15	.45	<u>7.85</u>	<u>7.85</u>
Subtotal					55.45	55.45
Interest on first-year bee investment ( \$180 at 9%)					16.20	16.20
Interest on additional second-year bee investment ( \$30 at 9%)						2.70
<u>Annual cost per acre:</u>						
Replacement bees					45.00	52.50
Electricity					1.50	1.50
Labor					30.00	30.00
Materials					4.00	4.00
Repairs					1.00	1.00
Interest on operating cost (9% for 6 mo.)					<u>3.67</u>	<u>4.00</u>
Total cost per acre					<u><u>156.82</u></u>	<u><u>167.30</u></u>

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is violation of law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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