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COST OF PRODUCING BLUEGRASS SEED IN THE LINCOLN - ADAMS AREA UNDER CENTER PIVOT IRRIGATION

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Note

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

. Capital, labor, and management resources.
. Type and size of machinery complement.
. Cultural practices.
. Size of farm enterprise.
. 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 growing bluegrass seed under center pivot irrigation in the Lincoln-Adams Area. To avoid drawing unwarranted conclusions for any particular farm or group of farms, the reader must closely examine the assumptions used. If they are not appropriate for the situation at hand, adjustments in the costs and/or returns should be made.

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Introduction

This publication examines representative field operations and costs associated with establishing and producing bluegrass seed under center pivot irrigation within Adams and Lincoln counties. Traditionally, a winter wheat and summer fallow area, annual precipitation in the study area varies from 9 to 12 inches, almost 60 percent of which occurs from November through March.

Prior to 1986, production of bluegrass seed in the region was virtually non-existent. During the past three years, approximately 15,000 acres have been dedicated to production of bluegrass seed. Perceived need by producers to diversify both the product and economic base of the farm operation, weak small grain prices, and production related problems in traditional growing areas largely contributed to the rapid increase in bluegrass seed production. If imposed restrictions on production practices ensue in the Willamette Valley of Oregon and Rathdrum Prairie of Washington, the area committed to the production of turf-type grasses (Kentucky bluegrass, perennial ryegrass, and tall fescue) within Adams and Lincoln counties could approach 30,000 acres.

The outlook for sales of U.S. turfgrass seed in the international herbage seed market appears promising. The higher seed quality and better performance associated with U.S. varieties as well as the favorable valuation of the U.S. dollar relative to other currencies should stimulate sales. The record golf course construction in European and Asian countries should also generate strong demand for U.S. turfgrass seed. Our strongest competitors in the international herbage seed market are European countries within the European Economic Community.

Objective of the Study

The objective of the study is to present estimated costs of establishing and producing bluegrass seed on an irrigated farm in the Lincoln-Adams area of Washington State. Because of the assumptions and sources of information used in this study, the data in this publication should be viewed as representative of what knowledgeable bluegrass seed producers anticipate for an irrigated bluegrass seed enterprise. Consequently, many factors may alter the costs reported here when compared to a particular individual's operation. Therefore, we recommend that individual growers use the blanks provided on the right-hand side of various budget tables to estimate their own cost and returns. The primary value in a report of this kind is to identify the type of production practices and management program considered to be typical of a well-managed bluegrass seed enterprise. While

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it does not represent the average and is not intended to be a guide to production practices, this publication does indicate current trends. As such, it should be helpful in estimating the physical and financial requirements of establishing and planting bluegrass seed.

Budget Assumptions

The following assumptions were made in developing the enterprise data:

1. This is a center pivot operation irrigating 130 acres per circle.

2. The establishment of bluegrass follows a wheat crop.

3. There is one year of establishment during which time no production is realized, followed by seven years of production.

4. Machinery is valued at a cost which would be incurred if replaced. While replacement costs may result in an overstatement of production costs currently experienced by producers, it provides an indication of the enterprise's ability to generate the earnings needed to replace depreciable assets. When an enterprise is evaluated to determine its long-run viability, it is important to consider its ability to replace depreciable costs on a replacement basis.

5. The center pivot system for 130 acres costs $38,000. It has a ten-year life with a salvage value of $13,500. Repair costs average $15 per acre, per year. The irrigation and power costs average $40 per acre, per year.

6. The well cost $60,000 and serves a total of 390 acres (3 circles). It has a 20-year life with a $10,000 salvage value. The pump, panel, and delivery system cost a total of $60,000. They have a 20-year life with a $10,000 salvage value. Repair costs are estimated at $1,000 per year.

7. Land is valued at $800 per acre. Land taxes are estimated at $5.00 per acre.

8. Interest on operating loans is 13 percent.

Sources of Information

A committee of area producers identified the field operations, machinery and irrigation complement, and the assumptions under which these budgets were developed. These producers were considered to be representative of well-managed bluegrass seed farms. The quantities and types of materials used in the budget were based on widely accepted practices. Local farm suppliers were contracted to obtain price information on materials and other services commonly used by farmers. Machinery costs were based on current replacement prices and rates of annual use considered to be typical.

Discussion of Budget Information

This budget information for the bluegrass seed enterprise is reported in nine separate tables. A summary of the data in each table is presented below.

Table 1: Schedule of Operations and Estimated Costs per Acre of Establishing Bluegrass Under Center Pivot Irrigation in the Lincoln-Adams Area, Following Wheat.

Table 1 outlines the schedule of field operations by calendar month, the type of machinery and labor used, and the hours used per acre for the first year of establishing a bluegrass field.

The costs of field operations are divided into two categories. The first is the cost of equipment and land ownership or fixed costs. The second category, variable costs, is associated with operating machinery, hiring labor, and purchasing services and materials. Total cost is the sum of fixed and variable costs.

Machinery and irrigation fixed costs include depreciation, interest on the average investment, property taxes, housing, and insurance. These costs are incurred whether or not a crop is grown and do not vary, given ownership of a specific equipment complement. Per hour fixed costs for machinery are determined by dividing the total annual fixed cost per machine by the annual hours of machinery use for the representative farm. Machinery fixed costs, for a specific field operation, are determined by multiplying the machine hours per acre times the machinery per hour fixed costs figure. Irrigation fixed costs per acre are determined by dividing the total annual fixed cost by the number of acres.

Land fixed cost includes taxes and interest on land investment. Land is valued at $800 per acre and the annual interest charged against land is 10 percent. As used in this publication, the land cost is termed an opportunity cost to indicate that it is not an out-of-pocket expense, but rather a return that is foregone by the producer as a result of choosing to undertake the production of an enterprise. Of course, for the individual producer, cash costs such as interest payments on loans used to buy land or land rent payments, must be identified and treated as cash costs and not as opportunity costs.

Variable costs depend directly on the number of acres produced. These costs include fuel, oil, repairs, fertilizer, chemicals, custom work, overhead (5 percent of variable costs), and interest on operating capital. Labor, valued at $10.00 per hour, is also included as a variable cost.

Table 2: Materials and Service Provided by Operation for the Establishment of Bluegrass Under Center Pivot Irrigation in the Lincoln-Adams Area. Table 2 lists by operation the materials and/or services that comprise the values reported in Table 1.

Table 3: Itemized Cost per Acre of Establishing Bluegrass Under Center Pivot Irrigation in the Lincoln-Adams Area, Following Wheat. An itemized list of the costs in Table 1 is presented in Table 3. Most items are self-explanatory or have been previously explained. However, "Tractor Interest and Machine Interest" warrants additional explanation. It represents an opportunity cost (returns that are foregone by investing in the given equipment complement rather that in alternative investments) or interest paid to finance the given equipment complement, or both. The total interest cost on these capital purchases is calculated on the average value of the machinery and irrigation system over their respective years of use. The 10 percent interest charge made against this "average" value represents the annual interest cost.

Table 4: Schedule of Operations and Estimated Costs per Acre of Producing Bluegrass Seed in the Lincoln-Adams Area Under Center Pivot Irrigation. The schedule of field operations by calendar month, the type of machinery and labor used, and the hours used per acre for bluegrass seed during the production years are outlined in Table 4. This table does the same for the production years as Table 1 does for

the establishment year.

The cost of the establishment year plus interest must be recaptured during the production years if a profit is to be realized. Since it is estimated that once the bluegrass is established, it will be in production for seven years, the establishment cost of the first year is amortized over a seven-year period at a 13 percent interest rate.

Table 5: Materials and Services Provided by Operation for the Production of Bluegrass Seed Under Center Pivot Irrigation in the Lincoln-Adams Area. Table 5 lists by operation the materials and/or services that go into making up the respective figures in Table 4.

Table 6: Itemized Cost per Acre of Producing Bluegrass Seed in the Lincoln-Adams Area Under Center Pivot Irrigation. Costs in the schedule of operations for bluegrass seed during the production years are summarized in Table 6 in the same way that costs during the establishment year are summarized in Table 3. It should be noted that a charge for "management" is not included. A management charge must be considered when determining total cost of production. Typically, a charge of approximately 7 percent of expected gross receipts is used--a rate charged by several "management" firms in the area.

Table 7: Total Cost per Acre of Producing Bluegrass Seed Given Different Levels of Machinery Valuation. In determining these budgets, machinery was valued at costs incurred if it was replaced. In determining these replacement costs, basically new prices were used. Table 7 shows the total cost of production at 100 percent, 75 percent, and 50 percent of the given replacement values used in developing the budgets (Table 9).

Table 8: Break-Even Prices. Table 8 shows the break-even prices necessary to cover variable costs and total costs (assuming 100 percent machinery replacement values) at different levels of clean seed production. These break-even prices do not take into consideration income from grazing.

Table 9: Machinery Complement. Table 9 identifies the machinery complement used to derive the cost estimates. It includes current purchase prices, annual hours of use, and per hour or per acre fixed and variable costs. Fixed costs include depreciation and interest on investment, property taxes, and insurance--costs that do not vary with the number of acres produced. Interest on investment represents a 10 percent opportunity cost to the enterprise. Variable costs include machine repairs, fuel and lubrication costs; costs that vary with the number of acres produced.

TABLE 1: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE OF ESTABLISHING BLUEGRASS UNDER CENTER PIVOT IRRIGATION IN THE LINCOLN-ADAMS AREA, FOLLOWING WHEAT.

							VARIABLE COST						
OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST
						$	$	$	$	$	$	$	$
BURN STUBBLE	LABOR, PROPANE TORCH	SEP	1988	.04	.04	.04	.00	.40	.50	.05	.11	1.06	1.10
DISC	150HP-CT, 24' OFFSET DISC	SEP	1988	.12	.13	5.46	2.23	1.30	.00	.00	.42	3.95	9.40
IRRIGATION	CENTER PIVOT IRRIGATION	SEA	1989	.00	.50	78.48	16.41	5.00	40.00	.00	3.99	65.40	143.89
CULT. & HARROW	150HP-CT, 28'CULT & TINE HAR.	SEP	1988	.09	.10	3.23	1.26	.95	.00	.00	.26	2.47	5.70
PACK	150HP-CT, 20' PACKER	SEP	1988	.07	.08	2.15	.95	.75	.00	.00	.20	1.90	4.05
SPRAY	150HP-CT, RENTAL SPRAYER	SEP	1988	.04	.04	1.12	.45	.45	1.00	8.94	1.29	12.14	13.26
PLANT	150HP-CT, RENTAL DRILL	OCT	1988	.05	.06	1.40	.57	.55	3.50	13.50	1.96	20.08	21.48
SPRAY	150HP-CT, RENTED SPRAYER	MAY	1989	.03	.04	.92	.37	.40	1.00	6.42	.27	8.46	9.39
SPOT SPRAYING	LABOR, BACKBACK SPRAYER	SEA	1989	.20	.20	.19	.07	2.00	.00	.30	.15	2.53	2.72
CHOP GRASS*	140HP-WT, 20' FLAIL	MAY	1989	.14	.16	5.05	3.00	1.55	.00	.00	.15	4.70	9.74
CHOP GRASS*	140HP-WT, 20' FLAIL	JUN	1989	.14	.16	5.05	3.00	1.55	.00	.00	.10	4.65	9.69
CHOP GRASS*	140HP-WT, 20' FLAIL	AUG	1989	.14	.16	5.05	3.00	1.55	.00	.00	.00	4.55	9.60
MISC. USE	PICK-UP	ANN	1989	.25	.25	1.18	.81	2.50	.00	.00	.21	3.52	4.70
MISC. USE	SHOP TOOLS	ANN	1989	.00	.00	7.86	.00	.00	.00	.00	.00	.00	7.86
TAXES	LAND TAXES	ANN	1989	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	INTEREST ON LAND INVESTMENT	SEA	1989	.00	.00	80.00	.00	.00	.00	.00	.00	.00	80.00
OVERHEAD	UTILITIES, LEGAL, ACCT., ETC.	ANN	1989	.00	.00	.00	.00	.00	6.77	.00	.00	6.77	6.77
TOTAL PER ACRE				1.31	1.90	202.17	32.12	18.95	52.77	29.21	9.13	142.18	344.35

* CAN BE REPLACED BY GRAZING, RESULTING IN AN INCOME RATHER THAN AN EXPENDITURE.

Table 2: Materials and Service Provided by Operation for the Establishment of Bluegrass Under Center Pivot Irrigation in the Lincoln-Adams Area.

Operation	Month and Year	Materials and /or Service
Burn stubble	August 1988	Propane gas @ $ .05/acre
		DOE burn fee @ $ .50/acre
Irrigation	Season 1988/89	Irrigation & power charge @ $40/acre
Spray	September 1988	Rental Sprayer @ $1/acre
		1 pt. of Roundup @ $71.53/gal.
Plant	October 1988	Rental drill @ $3.50/acre
		3 lbs. of grass seed @ $4.50/lb
Spray	May 1989	Rental sprayer @ $1/acre
		3/4 lb. of 2-4-D @ $2.75/lb.
		4 oz. of Banvil @ $1.09/oz.
Spot spraying	Season 1989	1/2 gal. Roundup for 120 acres @ $71.53/gal.

TABLE 3: ITEMIZED COST PER ACRE OF ESTABLISHING BLUEGRASS UNDER CENTER PIVOT IRRIGATION IN THE LINCOLN-ADAMS AREA, FOLLOWING WHEAT.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
VARIABLE COSTS		$		$	
DOE BURN FEE	ACRE	.50	1.00	.50	
PROPANE GAS	ACRE	.05	1.00	.05	
ROUNDUP	GAL.	71.53	.13	8.94	
ROUNDUP (SPOT SPRAY)	ACRE	.30	1.00	.30	
GRASS SEED	LB.	4.50	3.00	13.50	
2-4-D	LB.	2.75	.75	2.06	
BANVIL	OZ.	1.09	4.00	4.36	
DRILL RENTAL	ACRE	3.50	1.00	3.50	
SPRAYER RENTAL	ACRE	1.00	2.00	2.00	
IRR.&POWER CHG	ACRE	40.00	1.00	40.00	
TRACTOR REPAIR	ACRE	5.76	1.00	5.76	
TRACTOR FUEL/LUBE	ACRE	4.88	1.00	4.88	
MACHINERY REPAIRS	ACRE	20.92	1.00	20.92	
MACHINE FUEL/LUBE	ACRE	.56	1.00	.56	
LABOR(TRAC/MACH)	ACRE	18.95	1.00	18.95	
OVERHEAD	ACRE	6.77	1.00	6.77	
INTEREST ON OP. CAP.	DOL.	.13	70.21	9.13	
TOTAL VARIABLE COST				142.18	
FIXED COSTS		$		$	
TRACTOR DEPRECIATION	ACRE	6.86	1.00	6.86	
TRACTOR INTEREST	ACRE	6.24	1.00	6.24	
TRACTOR INSURANCE	ACRE	.37	1.00	.37	
TRACTOR TAXES	ACRE	1.12	1.00	1.12	
TRACTOR HOUSING	ACRE	.14	1.00	.14	
MACHINE DEPRECIATION*	ACRE	44.86	1.00	44.86	
MACHINE INTEREST*	ACRE	45.65	1.00	45.65	
MACHINE INSURANCE*	ACRE	2.74	1.00	2.74	
MACHINE TAXES*	ACRE	8.22	1.00	8.22	
MACHINE HOUSING	ACRE	.97	1.00	.97	
LAND TAX	ACRE	5.00	1.00	5.00	
INT. ON LAND	ACRE	80.00	1.00	80.00	
TOTAL FIXED COST				202.17	
TOTAL COST				344.35	

* INCLUDES THE IRRIGATION SYSTEM.

TABLE 4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE OF PRODUCING BLUEGRASS SEED IN THE LINCOLN-ADAMS AREA UNDER CENTER PIVOT IRRIGATION.*

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
SPRAY	140HP-WT, RENTED SPRAYER	SEP	1989	.03	.04	.21	.42	.40	1.00	8.60	1.24	11.66	11.86
FERTILIZE	CUSTOM APPLIED	OCT	1989	.00	.00	.00	.00	.00	3.50	76.85	8.70	89.05	89.05
IRRIGATE	CENTER PIVOT IRRIGATION	SEA	1990	.00	.50	78.48	16.41	5.00	40.00	.00	3.99	65.40	143.89
SPRAY	CUSTOM AERIAL	APR	1990	.00	.00	.00	.00	.00	5.00	11.00	.69	16.69	16.69
SPOT SPRAY	LABOR, BACKBACK SPRAYER	SEA	1990	.20	.20	.19	.07	2.00	.00	.30	.15	2.53	2.72
SWATH	14' SWATHER	JUN	1990	.33	.37	8.15	2.36	3.70	.00	.00	.13	6.19	14.35
COMBINE	COMBINE WITH PICK-UP HEADER	JUL	1990	.60	.66	35.98	7.19	6.60	.00	.00	.15	13.94	49.91
LOADING DRYMASS	80HP-WT, FORAGE BLOWER	JUL	1990	.10	.00	1.78	1.50	.00	.00	.00	.02	1.52	3.29
TRANSPORTATION	CUSTOM HIRE	JUL	1990	.00	.00	.00	.00	.00	6.15	.00	.07	6.22	6.22
BALE GRASS STRAW	CUSTOM BALE	JUL	1990	.00	.00	.00	.00	.00	25.00	.00	.27	25.27	25.27
BURN STUBBLE	LABOR, PROPANE TORCH	AUG	1990	.10	.10	.10	.00	1.00	.50	.05	.00	1.55	1.65
MISC. USE	PICK-UP	ANN	1990	.25	.25	1.18	.81	2.50	.00	.00	.21	3.52	4.70
MISC. USE	SHOP TOOLS	ANN	1990	.00	.00	7.86	.00	.00	.00	.00	.00	.00	7.86
TAXES	LAND TAXES	ANN	1990	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	INTEREST ON LAND INVESTMENT	SEA	1990	.00	.00	80.00	.00	.00	.00	.00	.00	.00	80.00
ESTABLISHMT COST	AMORTIZED ESTABLISHMENT COST	ANN	1990	.00	.00	77.86	.00	.00	.00	.00	.00	.00	77.86
OVERHEAD	UTILITIES, LEGAL, ACCT., ETC.	ANN	1990	.00	.00	.00	.00	.00	12.18	.00	.00	12.18	12.18
TOTAL PER ACRE				1.61	2.12	296.79	28.76	21.20	93.33	96.80	15.63	255.72	552.50

* COST OF REMOVING THE GRASS SEED STAND UPON COMPLETING THE LAST YEAR OF PRODUCTION IS NOT INCLUDED IN THIS COST ESTIMATE.

Table 5: Materials and Service Provided by Operation for the Production of Bluegrass Seed Under Center Pivot Irrigation in the Lincoln-Adams Area.

Operation	Month and Year	Materials and/or Service
Spray	September 1989	Rental sprayer @ $1/acre
		1 pt. of Banvil @ $55/gal.
Fertilize	October 1989	Custom applied @ $3.50/acre
		180 lbs. Nitrogen @ $ .25/lb.
		100 lbs. Phosphorous @ $ .26/lb.
		45 lbs. Sulfur @ $ .13/lb.
Irrigate	Season 1989/90	Irrigation and power charge @ $40/acre
Spray	April 1990	Custom aerial @ $5/acre
		General spray for disease or pest @ $11/acre
Spot spray	Season 1990	1/2 gal. Roundup for the 120 acres @ $71.53/gal.
Transportation	July 1990	Custom hauling of seed $6.15/acre
Bale grass straw	July 1990	Custom bale & haul @ $25/acre
Burn stubble	August 1990	Propane gas @ $ .05/acre
		DOE burn fee @ $ .50/acre

TABLE 6. ITEMIZED COST PER ACRE OF PRODUCING BLUEGRASS SEED IN THE LINCOLN-ADAMS AREA UNDER CENTER PIVOT IRRIGATION.*

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
VARIABLE COSTS		$		$	
BANVIL	GAL.	68.78	.13	8.60	
NITROGEN	LB.	.25	180.00	45.00	
PHOSPHOROUS	LB.	.26	100.00	26.00	
SULFUR	LB.	.13	45.00	5.85	
GENERAL SPRAY	ACRE	11.00	1.00	11.00	
ROUNDUP (SPOT SPRAY)	ACRE	.30	1.00	.30	
PROPANE GAS	ACRE	.05	1.00	.05	
SPRAYER RENTAL	ACRE	1.00	1.00	1.00	
CUSTOM FERT.	ACRE	3.50	1.00	3.50	
CUSTOM AERIAL	ACRE	5.00	1.00	5.00	
CUSTOM BALE&HAL	ACRE	25.00	1.00	25.00	
CUSTOM HAULING	ACRE	6.15	1.00	6.15	
DOE BURN FEE	ACRE	.50	1.00	.50	
IRR.&POWER CHG	ACRE	40.00	1.00	40.00	
TRACTOR REPAIR	ACRE	.81	1.00	.81	
TRACTOR FUEL/LUBE	ACRE	.51	1.00	.51	
MACHINERY REPAIRS	ACRE	22.46	1.00	22.46	
MACHINE FUEL/LUBE	ACRE	4.99	1.00	4.99	
LABOR(TRAC/MACH)	ACRE	21.20	1.00	21.20	
OVERHEAD	ACRE	12.18	1.00	12.18	
INTEREST ON OP. CAP.	DOL.	.13	120.26	15.63	
TOTAL VARIABLE COST				255.72	
FIXED COSTS		$		$	
TRACTOR DEPRECIATION	ACRE	.36	1.00	.36	
TRACTOR INTEREST	ACRE	.34	1.00	.34	
TRACTOR INSURANCE	ACRE	.02	1.00	.02	
TRACTOR TAXES	ACRE	.06	1.00	.06	
TRACTOR HOUSING	ACRE	.01	1.00	.01	
MACHINE DEPREC.**	ACRE	61.50	1.00	61.50	
MACHINE INTEREST**	ACRE	56.82	1.00	56.82	
MACHINE INSURANCE**	ACRE	3.41	1.00	3.41	
MACHINE TAXES**	ACRE	10.23	1.00	10.23	
MACHINE HOUSING	ACRE	1.18	1.00	1.18	
LAND TAX	ACRE	5.00	1.00	5.00	
ESTAB. COST***	ACRE	77.86	1.00	77.86	
INT. ON LAND	ACRE	80.00	1.00	80.00	
TOTAL FIXED COST				296.79	
TOTAL COST				552.50	

* DOES NOT INCLUDE A CHARGE FOR MANAGEMENT OR COSTS OF REMOVING THE GRASS SEED STAND AFTER COMPLETING THE LAST YEAR OF PRODUCTION.

** INCLUDES THE IRRIGATION SYSTEM.

*** FIRST YEAR ESTABLISHMENT COST AMORTIZED OVER 7 YEARS AT 13%.

Table 7: Total Cost per Acre of Producing Bluegrass Seed Given Different Levels of Machinery Valuation.*

Value of Machinery	Total Cost of Production
100% replacement value	$552.50
75% replacement value	$512.76
50% replacement value	$473.00

* Does not consider cost to management.

Table 8: Break-Even Prices*

Break-even Prices Necessary to Cover Variable Cost plus Amortized Variable Cost of Establishment Year:

($255.72 + $32.14**)/500 lbs. = $ .58

($255.72 + $32.14)/ 600 lbs. = $ .48

($255.72 + $32.14)/ 700 lbs. = $ .41

($255.72 + $32.14)/ 800 lbs. = $ .36

Break-even Prices Necessary to Cover Total Cost (100% machinery replacement value):

$552.50/500 lbs. = $1.10

$552.50/600 lbs. = $ .92

$552.50/700 lbs. = $ .79

$552.50/800 lbs. = $ .69

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* Does not include income from Government Programs or the sale of grass hay or grazing fees resulting form pasture use.

** Establishment year variable cost ($141.59) amortized over seven years at 13%.

TABLE 9: MACHINE COMPLEMENT

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	$			COST PER HOUR									
80HP-WT	27,750.00	10	800	2.45	2.25	.13	.40	.07	5.30	5.00	3.17	8.17	13.47
140HP-WT	41,250.00	10	1000	2.91	2.67	.16	.48	.08	6.30	7.90	4.76	12.66	18.96
150HP-CT	65,000.00	15	300	13.07	11.86	.71	2.14	.24	28.02	5.00	6.35	11.35	39.37
COMBINE	95,000.00	10	250	30.82	22.59	1.36	4.07	1.13	59.96	7.22	4.76	11.98	71.94
.75T-PICKUP	14,500.00	10	500	2.39	1.71	.10	.31	.20	4.71	.99	2.23	3.22	7.93
20' PACKER	2,200.00	8	300	.71	.45	.03	.08	.00	1.27	1.67	.00	1.67	2.93
24' OFFSET DISC	16,000.00	15	140	6.89	6.26	.38	1.13	.00	14.65	6.08	.00	6.08	20.73
28'TINE HARROW	1,500.00	15	100	.90	.82	.05	.15	.00	1.92	.75	.00	.75	2.67
28' CULTIVATOR	14,000.00	15	250	3.37	3.07	.18	.55	.00	7.18	2.30	.00	2.30	9.48
14'SWATHER	38,000.00	10	250	12.33	9.04	.54	1.63	1.17	24.71	2.40	4.76	7.16	31.87
20' FLAIL	10,500.00	15	50	12.67	11.50	.69	2.07	2.18	29.11	7.50	.00	7.50	36.61
BACKPACK SPRAYER	250.00	10	40	.44	.40	.02	.07	.00	.94	.37	.00	.37	1.31
FORAGE BLOWER	1,500.00	10	20	5.29	4.86	.29	.87	.63	11.94	6.01	.00	6.01	17.95
PROPANE TORCH	250.00	10	40	.63	.31	.02	.06	.00	1.01	.00	.00	.00	1.01
				COST PER ACRE									
SHOP TOOLS	15,000.00	5	-	6.00	1.50	.09	.27	.00	7.86	.00	.00	.00	7.86
CENTER PIVOT	38,000.00	10	-	18.85	19.81	1.19	3.57	.00	43.41	13.85	.00	13.85	57.25
WELL,PANEL&SYS.	120,000.00	20	-	12.82	17.95	1.08	3.23	.00	35.08	2.56	.00	2.56	37.64

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