

Eastern Idaho:**Alfalfa Hay Establishment in Grain Stubble**

Ben Eborn, Joseph Sagers and Reed Findlay

**Introduction to Costs & Returns Estimates**

The University of Idaho Extension produces crop costs and returns estimates every other year. The overall goal of this project is to provide the Idaho agricultural industry with an unbiased and consistently calculated estimate of the cost of producing various crops and to track the change in production costs per acre and per unit over time.

The University of Idaho's costs and returns estimates are based on economic costs, not just accounting costs. All resources are valued at a market rate or "opportunity cost". Input prices are taken from the U of I's annual survey of agricultural supply companies. The selling price is a historical average, not a current year's price. Production practices are based on data from growers, crop consultants, and extension personnel throughout Idaho. Although production practices may be similar for individual farms, each farm has a unique set of resources with different levels of productivity, different production problems, and therefore different costs. Farm size, crop rotation, age and type of equipment, and the quality and intensity of management are all crucial factors that influence costs. The cost of production estimates show the typical or representative production costs by region based on documented production practices. These production costs are not area averages, rather they are based on model farms for four areas of the state.

University of Idaho costs and returns estimates can be used as a management tool to help producers in three ways:

1. **Templates.** Excel spreadsheets have been created by the University of Idaho to make enterprise budgeting and record keeping an easy task. You can start by substituting our costs and returns estimates with your own numbers. You can also enter them in the "Your Cost" column.
2. **Marketing.** Estimating production costs on a per acre or per unit basis can help you calculate your farm's break-even prices. Knowing your break-even price to cover operating costs and total costs can help with contract negotiations and selling on the open market.
3. **Benchmarks.** The University of Idaho costs and returns estimates are based on a typical or model farm and are calculated annually using consistent methodology. You can use these estimates as benchmarks by comparing your own total costs or specific cost categories to our estimates. This is a good way to find strengths and weaknesses in your production practices.

It's important to remember, just because your production costs are similar to our estimates, that isn't necessarily a good thing. Our model farms are also typically unprofitable! Average producers usually don't make an economic profit (which includes opportunity costs and non-cash costs such as depreciation). Being profitable requires fine-tuned management and a competitive advantage that the average producer doesn't have. (Being average is not okay in farming)



Eastern Idaho:

Alfalfa Hay Establishment in Grain Stubble

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Background and Assumptions

The University of Idaho's costs and returns estimates are based on economic costs, not accounting costs. All resources are valued at a market rate or "opportunity cost". Input prices are based on the data collected annually by the University of Idaho from agricultural supply companies. The selling price for the commodity is typically an historical average, not a current year's price. The cost estimate shown here is typical for establishing irrigated alfalfa hay. Production practices are based on data from farmers, crop consultants, and extension personnel in eastern Idaho. These aren't University of Idaho recommendations. Production practices most closely resemble those in Bonneville, Clark, Jefferson and Madison counties. Although production practices may be similar for individual farms, each farm has a unique set of resources with different levels of productivity, different production problems, and therefore different costs. Farm size, crop rotation, age and type of equipment, and the quality and intensity of management are all crucial factors that influence production costs.

The Model Farm

The model farm for this costs and returns estimate is a 1,250-acre farm with 1,000 acres in alfalfa hay and 250 acres in grain. Corn may substitute for grain. The alfalfa stand is kept in production four years, including the establishment year. Approximately 250 acres of alfalfa are established every year.

The farm uses a center pivot irrigation system and surface water delivered to the farm from an irrigation district. The irrigation district charges a flat fee per acre for water. Irrigation power use is based only on pressurization (no lift). Power costs per acre-inch of water applied are calculated using

2017 Idaho Power Schedule 24 Agricultural Irrigation Service rates

Production Practices

After the straw from the preceding grain crop is removed, the ground is irrigated and disked. Fertilizer is applied in the spring by a custom applicator. In the spring the ground is roller harrowed and planted to alfalfa. Alfalfa is harvested twice in the establishment year, July and September. The cost of all harvest operations are based on rates charged by a custom operator, who swaths, rakes, bales and stacks the one-ton bales. No pesticide costs are included in the establishment year since treatments are infrequent and unpredictable. Alfalfa receives 23 inches of water during the growing season, 2 inches in May, 4 inches in June, 6 inches in July, 7 inches in August, and 4 inches in September. An additional 2 inches of water applied to the grain stubble before plowing is also credited to the alfalfa, for a total of 25 inches.

Machinery

Equipment used to establish irrigated alfalfa hay is shown in Tables 4 and 5. Table 4 lists the equipment and their hourly operating and ownership costs, while Table 5 lists the equipment and their annual ownership costs. Machinery ownership cost (capital recovery) is based on 75% of the replacement cost of a new piece of equipment, except for trucks. Capital recovery combines depreciation and interest into a single value. Equipment capital recovery (depreciation and interest) is calculated as a cost per acre. This non-cash overhead is shown in the lower part of Table 1. It comes from the Budget Planner program and is automatically calculated using the information from Table 4, taking into account the hours used and the number of acres for each piece of machinery. To keep machinery prices current between years in which a comprehensive survey is

conducted, machinery prices are adjusted using USDA’s Farm Machinery Prices Paid Index. Equipment prices are collected approximately every five years.

The University of Idaho uses the budget generator program *Budget Planner* from the University of California-Davis to produce the various tables shown in this publication. Machinery operating and ownership costs are calculated based on engineering equations in this program. Machinery operating costs include fuel, lubricants and repairs.

Labor and Management

The cost of labor used in this study includes a base wage, plus a percentage to account for various payroll taxes (FICA, SUTA & FUTA), and workman’s compensation, as well as benefits such as paid vacation/personal leave days, health insurance and bonuses. Labor is classified by the type of work performed. Labor classifications, labor rates and payroll overhead are shown on the following page.

Labor Values

| Labor Class | Base Rate | Payroll Overhead | Effective Rate |
|-------------------------|-----------|------------------|----------------|
| General Farm Labor | \$14.00 | 15% | \$17.55 |
| Truck Drivers | \$14.00 | 15% | \$17.55 |
| Equipment Operators | \$18.00 | 25% | \$22.50 |
| Irrigation Labor | | | |
| Set Move: HL & WL | \$14.00 | 30% | \$17.55 |
| Continuous Move: CP & L | \$18.00 | 25% | \$22.50 |

Set Move includes: handlines and wheellines
 Continuous Move includes: center pivots and linear move
 Payroll overhead for set move systems includes housing

Based on the speed, width and overall field efficiency, *Budget Planner* calculates equipment operator labor hours for all field operations except those performed on a custom basis. Custom operations are listed separately. General farm labor accounts for extra field labor used during planting or harvest.

A management fee based on approximately 5% of the total production costs is included. Prior to 2013, the basis of the 5% charge was expected revenue.

Capital, Land and Overhead Costs

Interest on operating capital is charged from the time an input is applied until harvest and is calculated at a nominal rate of 7.00 percent. Interest on intermediate term capital, primarily equipment, is calculated using a nominal rate of 6.75 percent. A general overhead charge, calculated at approximately 2.5 percent of operating expenses, is included to cover unallocated whole-farm costs such as office expenses, legal and accounting fees, cell phones, internet service and utilities. Irrigation power is not included as part of general farm utilities.

Land rent is based on a one-year cash lease for grain and covers the ownership costs (depreciation, interest, and insurance) of the irrigation system. Because the charge for water, irrigation system repairs and irrigation power costs are listed separately, the land rent may appear low because the landowner in many circumstances pays some or even all these expenses.

Budget Format

In addition to the Background and Assumption pages, this publication has six tables presenting a variety of cost and returns information.

Table 1 shows both expected revenue, based on a specified yield and price, and expenses. Expenses are broken into two main categories: operating and ownership. Operating expenses are those that typically vary with the level of production and involve inputs that are used in a single production cycle. Ownership expenses include a systematic cost recovery over the useful life for inputs used in the production process that have a useful life of more than one year. Machinery and land fall into this category. Operating inputs are organized by category. In addition to the cost per unit and cost per acre for each input, a total cost is given for

each category. Table 1 also gives a total of all operating, ownership and total costs per acre, as well as these same categories on a yield basis (per bushel, cwt, ton, etc.).

Table 2 has most of the same cost information presented in Table 1 but the data is organized by operation for both pre-harvest and harvest costs. Operations can define a single activity, such as seed hauling, or multiple activities as in the case of tillage. The quantity of labor is shown for each operation. The cash costs per acre for labor, machinery costs, materials and custom are also specified. Cash overhead expenses are listed separately as are the non-cash overhead.

Table 3 is a monthly cash flow of expenses based on when the operation occurs and when inputs are applied. Field operations are classified as pre-harvest, harvest and post-harvest.

Table 4 lists the equipment used to produce this crop and the costs per hour to operate this equipment. Total annual hours of use for the current crop and for all crops on the farm is also shown.

Table 5 lists the purchase price and salvage value of equipment used to produce this crop, as well annual capital recovery and cash overhead expenses.

Table 6 provides a ranging analysis, sometime referred to as a sensitivity analysis. It shows how the costs and returns per acre will vary as the yield and/or price ranges above and below the base values from Table 1.

Authors

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Disclaimer

The practices and chemicals specified in the publication are not recommendations. Always read

and follow the directions printed on the pesticide label. Due to constantly changing pesticide laws and labels, some pesticides may have been cancelled or had certain uses prohibited. The use of trade names for various products simplifies presentation of this material and should not be considered an endorsement, nor is any criticism implied of similar products not mentioned.

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TABLE 1. COSTS AND RETURNS PER ACRE TO PRODUCE ALFALFA HAY ESTABLISHMENT

| | Quantity/ Acre | Unit | Price or Cost/Unit | Value or Cost/Acre | Your Cost |
|--|-------------------|-------|-----------------------|-----------------------|---------------|
| GROSS RETURNS | | | | | |
| Alfalfa | 3.50 | ton | 160.00 | 560.00 | |
| TOTAL GROSS RETURNS | 3.50 | ton | | 560.00 | |
| OPERATING COSTS | | | | | |
| Seed: | | | | | 81.00 |
| Alfalfa Seed (pvt): inoculated | 18.00 | lb | 4.50 | 81.00 | |
| Fertilizer: | | | | | 48.20 |
| Dry Nitrogen - Pre-plant | 16.00 | lb | 0.42 | 6.72 | |
| Dry P2O5 | 78.00 | lb | 0.41 | 31.98 | |
| K2O | 20.00 | lb | 0.31 | 6.20 | |
| Sulfur | 15.00 | lb | 0.22 | 3.30 | |
| Custom: | | | | | 128.35 |
| Custom Fertilize: 0 - 400 lbs | 1.00 | acre | 7.35 | 7.35 | |
| Custom Swath Hay | 2.00 | acre | 19.00 | 38.00 | |
| Custom Rake Hay | 2.00 | acre | 6.50 | 13.00 | |
| Custom Bale Hay: 4x4 | 3.50 | ton | 15.50 | 54.25 | |
| Custom Haul/Stack Hay | 3.50 | ton | 4.50 | 15.75 | |
| Irrigation: | | | | | 81.00 |
| Irrigation Power - Center Pivot | 25.00 | ac-in | 1.93 | 48.25 | |
| Irrigation Water Assessment - AI | 1.00 | acre | 19.00 | 19.00 | |
| Irrigation Repairs - CP | 25.00 | ac-in | 0.55 | 13.75 | |
| Labor | | | | | 51.98 |
| Equipment Operator Labor | 1.08 | hrs | 22.50 | 24.19 | |
| Irrigation Labor - CP | 1.04 | hrs | 22.50 | 23.40 | |
| General Farm Labor | 0.25 | hrs | 17.55 | 4.39 | |
| Machinery | | | | | 25.02 |
| Fuel-Gas | 1.68 | gal | 3.15 | 5.30 | |
| Fuel-Diesel | 3.30 | gal | 2.90 | 9.58 | |
| Fuel-Road Diesel | 0.06 | gal | 3.40 | 0.21 | |
| Lube | | | | 2.26 | |
| Machinery Repair | | | | 7.66 | |
| Interest on Operating Capital @ 7.00% | | | | 13.44 | |
| TOTAL OPERATING COSTS/ACRE | | | | 428.98 | |
| TOTAL OPERATING COSTS/TON | | | | 122.57 | |
| NET RETURNS ABOVE OPERATING COSTS | | | | 131.02 | |

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TABLE 1. CONTINUED

| | Quantity/ Acre | Unit | Price or Cost/Unit | Value or Cost/Acre | Your Cost |
|--|-------------------|------|-----------------------|-----------------------|--------------|
| CASH OVERHEAD COSTS | | | | | |
| General Overhead | | | | 10.00 | |
| Land Rent | | | | 210.00 | |
| Management Fee | | | | 34.00 | |
| Property Taxes | | | | 0.00 | |
| Property Insurance | | | | 0.78 | |
| Investment Repairs | | | | 0.00 | |
| TOTAL CASH OVERHEAD COSTS/ACRE | | | | 254.78 | |
| TOTAL CASH OVERHEAD COSTS/TON | | | | 72.80 | |
| TOTAL CASH COSTS/ACRE | | | | 683.77 | |
| TOTAL CASH COSTS/TON | | | | 195.36 | |
| NET RETURNS ABOVE CASH COSTS | | | | -123.77 | |
| NON-CASH OVERHEAD COSTS (Capital Recovery) | | | | | |
| Equipment | | | | 30.27 | |
| TOTAL NON-CASH OVERHEAD COSTS/ACRE | | | | 30.27 | |
| TOTAL NON-CASH OVERHEAD COSTS/TON | | | | 8.65 | |
| TOTAL COST/ACRE | | | | 714.04 | |
| TOTAL COST/TON | | | | 204.01 | |
| NET RETURNS ABOVE TOTAL COST | | | | -154.04 | |

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TABLE 2. COSTS PER ACRE TO PRODUCE ALFALFA HAY ESTABLISHMENT

| Operation | Operation | Cash and Labor Costs per Acre | | | | | Total Cost | Your Cost |
|--|-----------------|-------------------------------|--------------|------------------|------------------|-----------------|---------------|--------------|
| | Time (Hrs/A) | Labor Cost | Fuel | Lube &Repairs | Material Cost | Custom/ Rent | | |
| Preharvest: | | | | | | | | |
| Remove Straw | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Irrigate | 0.00 | 23.40 | 0.00 | 0.00 | 48.25 | 0.00 | 71.65 | |
| Tillage | 0.20 | 5.27 | 6.14 | 4.97 | 0.00 | 0.00 | 16.38 | |
| Fertilize | 0.00 | 0.00 | 0.00 | 0.00 | 48.20 | 7.35 | 55.55 | |
| Plant & Pack | 0.11 | 7.34 | 3.44 | 3.01 | 81.00 | 0.00 | 94.79 | |
| Irrigation Water Assessment | 0.00 | 0.00 | 0.00 | 0.00 | 19.00 | 0.00 | 19.00 | |
| Irrigation Repairs | 0.00 | 0.00 | 0.00 | 0.00 | 13.75 | 0.00 | 13.75 | |
| General Pickup Use | 0.50 | 13.50 | 5.24 | 1.83 | 0.00 | 0.00 | 20.57 | |
| General 4-Wheeler Use | 0.07 | 1.80 | 0.05 | 0.04 | 0.00 | 0.00 | 1.89 | |
| Service Truck Use | 0.03 | 0.68 | 0.21 | 0.08 | 0.00 | 0.00 | 0.97 | |
| TOTAL PREHARVEST COSTS | 0.90 | 51.98 | 15.09 | 9.93 | 210.20 | 7.35 | 294.54 | |
| Harvest: | | | | | | | | |
| Swath | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 38.00 | 38.00 | |
| Rake | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 13.00 | 13.00 | |
| Bale | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 54.25 | 54.25 | |
| Custom Haul & Stack | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 15.75 | 15.75 | |
| TOTAL HARVEST COSTS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 121.00 | 121.00 | |
| Interest on Operating Capital at 7.00% | | | | | | | 13.44 | |
| TOTAL OPERATING COSTS/ACRE | 0.90 | 51.98 | 15.09 | 9.93 | 210.20 | 128.35 | 428.98 | |

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TABLE 2. CONTINUED

| Operation | Operation | Cash and Labor Costs per Acre | | | | | Total Cost | Your Cost |
|--------------------------------|-----------------|-------------------------------|------|---------------------------------|------------------|-----------------|---------------|--------------|
| | Time (Hrs/A) | Labor Cost | Fuel | Lube &Repairs | Material Cost | Custom/ Rent | | |
| CASH OVERHEAD: | | | | | | | | |
| General Overhead | | | | | | | 10.00 | |
| Land Rent | | | | | | | 210.00 | |
| Management Fee | | | | | | | 34.00 | |
| Property Taxes | | | | | | | 0.00 | |
| Property Insurance | | | | | | | 0.78 | |
| Investment Repairs | | | | | | | 0.00 | |
| TOTAL CASH OVERHEAD COSTS/ACRE | | | | | | | 254.78 | |
| TOTAL CASH COSTS/ACRE | | | | | | | 683.77 | |
| NON-CASH OVERHEAD: | | | | | | | | |
| | | Per Producing Acre | | Annual Cost Capital Recovery | | | | |
| Equipment | | 273.21 | | 30.27 | | | 30.27 | |
| TOTAL NON-CASH OVERHEAD COSTS | | | | | | | 30.27 | |
| TOTAL COSTS/ACRE | | | | | | | 714.04 | |

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TABLE 3. MONTHLY COSTS PER ACRE TO PRODUCE ALFALFA HAY ESTABLISHMENT

| | SEP 14 | OCT 14 | NOV 14 | DEC 14 | JAN 15 | FEB 15 | MAR 15 | APR 15 | MAY 15 | JUN 15 | JUL 15 | AUG 15 | SEP 15 | OCT 15 | Total |
|--------------------------------------|--------------|-------------|-------------|-------------|-------------|-------------|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Preharvest: | | | | | | | | | | | | | | | |
| Remove Straw | | | | | | | | | | | | | | | 0.00 |
| Irrigate | 6.56 | | | | | | | | 5.66 | 11.32 | 16.98 | 19.81 | | 11.32 | 71.65 |
| Tillage | 8.24 | | | | | | | 8.14 | | | | | | | 16.38 |
| Fertilize | | | | | | | | 55.55 | | | | | | | 55.55 |
| Plant & Pack | | | | | | | | 94.79 | | | | | | | 94.79 |
| Irrigation Water Assessment | | | | | | | | 19.00 | | | | | | | 19.00 |
| Irrigation Repairs | | | | | | | | 13.75 | | | | | | | 13.75 |
| General Pickup Use | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 20.57 |
| General 4-Wheeler Use | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 1.89 |
| Service Truck Use | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.97 |
| TOTAL PREHARVEST COSTS | 16.47 | 1.67 | 1.67 | 1.67 | 1.67 | 1.67 | 1.67 | 192.90 | 7.33 | 12.99 | 18.65 | 21.48 | 1.67 | 12.99 | 294.54 |
| Harvest: | | | | | | | | | | | | | | | |
| Swath | | | | | | | | | | | 19.00 | | 19.00 | | 38.00 |
| Rake | | | | | | | | | | | 6.50 | | 6.50 | | 13.00 |
| Bale | | | | | | | | | | | 23.25 | | 31.00 | | 54.25 |
| Custom Haul & Stack | | | | | | | | | | | 6.75 | | 9.00 | | 15.75 |
| TOTAL HARVEST COSTS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 55.50 | 0.00 | 65.50 | 0.00 | 121.00 |
| Interest on Operating Capital @7.00% | 0.10 | 0.11 | 0.12 | 0.13 | 0.14 | 0.14 | 0.15 | 1.28 | 1.32 | 1.40 | 1.83 | 1.96 | 2.35 | 2.42 | 13.44 |
| TOTAL OPERATING COSTS/ACRE | 16.57 | 1.78 | 1.79 | 1.80 | 1.81 | 1.82 | 1.83 | 194.18 | 8.66 | 14.39 | 75.98 | 23.44 | 69.52 | 15.42 | 428.98 |
| CASH OVERHEAD | | | | | | | | | | | | | | | |
| General Overhead | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 10.00 |
| Land Rent | | | | | | | 210.00 | | | | | | | | 210.00 |
| Management Fee | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 2.43 | 34.00 |
| Property Taxes | | | | | | | | | | | | | | | 0.00 |
| Property Insurance | | | | | | | | 0.78 | | | | | | | 0.78 |
| Investment Repairs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TOTAL CASH OVERHEAD COSTS | 3.14 | 3.14 | 3.14 | 3.14 | 3.14 | 3.14 | 213.14 | 3.93 | 3.14 | 3.14 | 3.14 | 3.14 | 3.14 | 3.14 | 254.78 |
| TOTAL CASH COSTS/ACRE | 19.71 | 4.92 | 4.93 | 4.94 | 4.95 | 4.96 | 214.97 | 198.11 | 11.80 | 17.53 | 79.13 | 26.58 | 72.66 | 18.56 | 683.77 |

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TABLE 4. HOURLY EQUIPMENT COSTS

| Yr | Description | ALFALFA HAY ESTABLISHMENT | | Capital Recovery | Cash Overhead | | Operating | | Total Oper. | Total Costs/Hr. |
|----|--------------------|---------------------------|------------------------|---------------------|----------------|-------|------------------|-------|----------------|--------------------|
| | | Hours Used | Total Hours Used | | Insur- ance | Taxes | Lube& Repairs | Fuel | | |
| 15 | 4-wheeler | 17 | 90 | 7.35 | 0.19 | 0.00 | 0.59 | 0.79 | 1.38 | 8.91 |
| 15 | Grain Drill - 24' | 27 | 150 | 33.61 | 0.72 | 0.00 | 12.48 | 0.00 | 12.48 | 46.81 |
| 15 | Packer - 24' | 27 | 35 | 37.50 | 0.99 | 0.00 | 1.55 | 0.00 | 1.55 | 40.04 |
| 15 | Pickup 1 - 3/4 ton | 63 | 800 | 8.74 | 0.16 | 0.00 | 3.65 | 10.49 | 14.14 | 23.04 |
| 15 | Pickup 2 - 3/4 ton | 63 | 800 | 8.74 | 0.16 | 0.00 | 3.65 | 10.49 | 14.14 | 23.04 |
| 15 | Roller-harrow -24' | 24 | 150 | 41.82 | 1.02 | 0.00 | 13.17 | 0.00 | 13.17 | 56.01 |
| 15 | Tractor - 200hp | 84 | 500 | 26.05 | 0.82 | 0.00 | 12.34 | 28.62 | 40.97 | 67.84 |
| 15 | Service Truck | 6 | 80 | 41.85 | 1.24 | 0.00 | 3.12 | 8.50 | 11.62 | 54.71 |
| 15 | Tandem Disk - 24' | 25 | 120 | 38.99 | 1.03 | 0.00 | 10.66 | 0.00 | 10.66 | 50.67 |

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TABLE 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS

ANNUAL EQUIPMENT COSTS

| Yr | Description | Price | Yrs Life | Salvage Value | Capital Recovery | Cash Overhead | | Total |
|------------------|--------------------|------------|-------------|------------------|---------------------|----------------|-------|-----------|
| | | | | | | Insur- ance | Taxes | |
| 15 | 4-wheeler | 6,000.00 | 10 | 1,500.00 | 734.56 | 18.75 | 0.00 | 753.31 |
| 15 | Grain Drill - 24' | 39,000.00 | 8 | 8,805.66 | 5,602.08 | 119.51 | 0.00 | 5,721.59 |
| 15 | Packer - 24' | 14,000.00 | 15 | 1,344.09 | 1,458.42 | 38.36 | 0.00 | 1,496.78 |
| 15 | Pickup 1 - 3/4 ton | 42,000.00 | 5 | 13,750.00 | 7,771.98 | 139.38 | 0.00 | 7,911.36 |
| 15 | Pickup 2 - 3/4 ton | 42,000.00 | 5 | 13,750.00 | 7,771.98 | 139.38 | 0.00 | 7,911.36 |
| 15 | Roller-harrow -24' | 59,900.00 | 12 | 8,296.54 | 6,970.70 | 170.49 | 0.00 | 7,141.19 |
| 15 | Tractor - 200hp | 162,000.00 | 20 | 20,786.46 | 14,474.76 | 456.97 | 0.00 | 14,931.72 |
| 15 | Service Truck | 41,000.00 | 20 | 3,000.00 | 3,720.03 | 110.00 | 0.00 | 3,830.03 |
| 15 | Tandem Disk - 24' | 49,900.00 | 15 | 4,790.72 | 5,198.21 | 136.73 | 0.00 | 5,334.94 |
| TOTAL | | 455,800.00 | - | 76,023.48 | 53,702.73 | 1,329.56 | 0.00 | 55,032.29 |
| 90% of New Cost* | | 410,220.00 | - | 68,421.13 | 48,332.45 | 1,196.60 | 0.00 | 49,529.06 |

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

| Description | Price | Yrs Life | Salvage Value | Capital Recovery | Cash Overhead | | | Total |
|------------------|-------|-------------|------------------|---------------------|----------------|-------|---------|-------|
| | | | | | Insur- ance | Taxes | Repairs | |
| INVESTMENT | | | | | | | | |
| TOTAL INVESTMENT | 0.00 | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

ANNUAL BUSINESS OVERHEAD COSTS

| Description | Units/ Farm | Unit | Price/ Unit | Total Cost |
|------------------|----------------|------|----------------|---------------|
| General Overhead | 250 | acre | 10.00 | 2,500.00 |
| Land Rent | 250 | acre | 210.00 | 52,500.00 |
| Management Fee | 250 | acre | 34.00 | 8,500.00 |

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TABLE 6. RANGING ANALYSIS - ALFALFA HAY ESTABLISHMENT

COSTS PER ACRE AND PER TON AT VARYING YIELDS TO PRODUCE ALFALFA HAY ESTABLISHMENT

| | YIELD(TON) | | | | | | |
|---------------------------------------|------------|--------|--------|--------|--------|--------|--------|
| | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 |
| OPERATING COSTS/ACRE: | | | | | | | |
| Preharvest | 294.54 | 294.54 | 294.54 | 294.54 | 294.54 | 294.54 | 294.54 |
| Harvest | 121.00 | 121.00 | 121.00 | 121.00 | 121.00 | 121.00 | 121.00 |
| Interest on Operating Capital @ 7.00% | 13.44 | 13.44 | 13.44 | 13.44 | 13.44 | 13.44 | 13.44 |
| TOTAL OPERATING COSTS/ACRE | 428.98 | 428.98 | 428.98 | 428.98 | 428.98 | 428.98 | 428.98 |
| TOTAL OPERATING COSTS/TON | 214.49 | 171.59 | 142.99 | 122.57 | 107.25 | 95.33 | 85.80 |
| CASH OVERHEAD COSTS/ACRE | 254.78 | 254.78 | 254.78 | 254.78 | 254.78 | 254.78 | 254.78 |
| TOTAL CASH COSTS/ACRE | 683.77 | 683.77 | 683.77 | 683.77 | 683.77 | 683.77 | 683.77 |
| TOTAL CASH COSTS/TON | 341.88 | 273.51 | 227.92 | 195.36 | 170.94 | 151.95 | 136.75 |
| NON-CASH OVERHEAD COSTS/ACRE | 30.27 | 30.27 | 30.27 | 30.27 | 30.27 | 30.27 | 30.27 |
| TOTAL COSTS/ACRE | 714.04 | 714.04 | 714.04 | 714.04 | 714.04 | 714.04 | 714.04 |
| TOTAL COSTS/TON | 357.02 | 285.61 | 238.01 | 204.01 | 178.51 | 158.67 | 142.81 |

Net Return Per Acre Above Operating Costs For Alfalfa Hay Establishment

| PRICE (\$/ton) | YIELD (ton/acre) | | | | | | | |
|----------------|------------------|---------|---------|--------|-------|--------|--------|--------|
| | Alfalfa | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 |
| 120.00 | | -188.98 | -128.98 | -68.98 | -8.98 | 51.02 | 111.02 | 171.02 |
| 125.00 | | -178.98 | -116.48 | -53.98 | 8.52 | 71.02 | 133.52 | 196.02 |
| 130.00 | | -168.98 | -103.98 | -38.98 | 26.02 | 91.02 | 156.02 | 221.02 |
| 135.00 | | -158.98 | -91.48 | -23.98 | 43.52 | 111.02 | 178.52 | 246.02 |
| 140.00 | | -148.98 | -78.98 | -8.98 | 61.02 | 131.02 | 201.02 | 271.02 |
| 145.00 | | -138.98 | -66.48 | 6.02 | 78.52 | 151.02 | 223.52 | 296.02 |
| 150.00 | | -128.98 | -53.98 | 21.02 | 96.02 | 171.02 | 246.02 | 321.02 |

Net Return Per Acre Above Cash Costs For Alfalfa Hay Establishment

| PRICE (\$/ton) | YIELD (ton/acre) | | | | | | | |
|----------------|------------------|---------|---------|---------|---------|---------|---------|--------|
| | Alfalfa | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 |
| 120.00 | | -443.77 | -383.77 | -323.77 | -263.77 | -203.77 | -143.77 | -83.77 |
| 125.00 | | -433.77 | -371.27 | -308.77 | -246.27 | -183.77 | -121.27 | -58.77 |
| 130.00 | | -423.77 | -358.77 | -293.77 | -228.77 | -163.77 | -98.77 | -33.77 |
| 135.00 | | -413.77 | -346.27 | -278.77 | -211.27 | -143.77 | -76.27 | -8.77 |
| 140.00 | | -403.77 | -333.77 | -263.77 | -193.77 | -123.77 | -53.77 | 16.23 |
| 145.00 | | -393.77 | -321.27 | -248.77 | -176.27 | -103.77 | -31.27 | 41.23 |
| 150.00 | | -383.77 | -308.77 | -233.77 | -158.77 | -83.77 | -8.77 | 66.23 |

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TABLE 6. RANGING ANALYSIS CONTINUED

Net Return Per Acre Above Total Costs For Alfalfa Hay Establishment

| PRICE (\$/ton) | YIELD (ton/acre) | | | | | | | |
|----------------|------------------|---------|---------|---------|---------|---------|---------|---------|
| | Alfalfa | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 |
| 120.00 | | -474.04 | -414.04 | -354.04 | -294.04 | -234.04 | -174.04 | -114.04 |
| 125.00 | | -464.04 | -401.54 | -339.04 | -276.54 | -214.04 | -151.54 | -89.04 |
| 130.00 | | -454.04 | -389.04 | -324.04 | -259.04 | -194.04 | -129.04 | -64.04 |
| 135.00 | | -444.04 | -376.54 | -309.04 | -241.54 | -174.04 | -106.54 | -39.04 |
| 140.00 | | -434.04 | -364.04 | -294.04 | -224.04 | -154.04 | -84.04 | -14.04 |
| 145.00 | | -424.04 | -351.54 | -279.04 | -206.54 | -134.04 | -61.54 | 10.96 |
| 150.00 | | -414.04 | -339.04 | -264.04 | -189.04 | -114.04 | -39.04 | 35.96 |