

U.C. COOPERATIVE EXTENSION

SAMPLE COSTS TO *ESTABLISH AND PRODUCE ALFALFA HAY* IN SHASTA AND LASSEN COUNTIES - 1992

by

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The detailed costs for alfalfa hay establishment and production in the Fall River Valley and Big Valley in Shasta and Lassen Counties are presented in this study. The hypothetical farm used in this report consists of 500 acres of alfalfa hay production.

Practices described are based on those production procedures considered typical for this crop and area. Sample costs given for labor, materials, equipment and contract services are based on current figures. Some costs and practices detailed in this study may not be applicable to your situation. This study is only intended as a guide and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans. A blank **Your Costs** column is provided to enter your actual costs on **Tables 1 and 5, Costs Per Acre To Establish Alfalfa Hay and Costs Per Acre To Produce Alfalfa Hay.**

This study consists of **General Assumptions for Establishing and Producing Alfalfa Hay** and nine tables.

| | |
|----------|---|
| Table 1. | Costs Per Acre To Establish Alfalfa Hay |
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For an explanation of calculations used for the study refer to the attached General Assumptions, call the Department of Agricultural Economics, Cooperative Extension, University of California, Davis, California, (916) 752-3589 or call the Farm Advisor in the county of interest.

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GENERAL ASSUMPTIONS FOR ESTABLISHING AND PRODUCING ALFALFA HAY

Shasta and Lassen Counties- 1992 U.C. Cooperative Extension

The following is a description of some general assumptions pertaining to sample costs of alfalfa hay establishment and production in the Fall River Valley and Big Valley in Shasta and Lassen Counties. The costs are based on all of the cultural practices used by growers in this region, some of which may not be used during every production year. Costs are represented on an annual, per acre basis. *The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products.*

1. LAND:

This cost of production study is based on a 500 acre field crop farm of which 400 acres are producing alfalfa and 100 acres have a stand being established in any given year. The land in this study is owned by the grower and is valued at \$1500 per acre. Land is not depreciated. No other crops are currently grown in rotation.

2. STAND ESTABLISHMENT:

Costs Per Acre To Establish Alfalfa Hay, Table 1, shows the cost associated with ground preparation, planting and growing an alfalfa stand until the first production year. The alfalfa stand is planted in mid summer and the first cutting of hay occurs in September of the establishment year.

Stubble discing, spreading fertilizer and applying and incorporating a pre-emergent herbicide are performed by a custom operator. After the pre-emergent herbicide is applied, most all of the successive operations are performed with the 70 hp wheel tractor.

Several different soil amendments are spread before the alfalfa is planted in order to adjust for deficiencies in the soil. Sulfur is applied at a rate of 300 pounds per acre, triple phosphate at 200 pounds per acre and gypsum is spread at a quantity of 500 pounds per acre.

Two acre feet of water are used by the crop and applied using a wheel line sprinkler system during the months of July, August and September.

Two herbicides are used to control several varieties of grasses and broadleaf weeds during the establishment year. Eptam is sprayed and incorporated as a pre-emergent herbicide in July, just after the fertilizer is spread. In August Buctril is applied to the field for fall weed control.

One cutting of hay is harvested in September yielding 1.5 tons per acre. The annual production cost in the study represents an average year's production cost from the second through life of the stand. The cost per acre to establish an alfalfa stand is represented in

Table 2 as the Net Total Cost/Acre. To obtain stand establishment cost for an average production year, the Net Total Cost/Acre for the establishment year in **Table 2** is divided by 4 years. This becomes an investment cost in **Table 4**.

3. CULTURAL PRACTICES AND INPUTS:

Cultural, pesticide and fertilizer inputs for the production of alfalfa hay vary considerably from grower to grower and field to field. While a field can produce alfalfa hay for 6 to 8 years, disease and weed infestations may reduce this period by one or more years.

Gophers can be a problem in alfalfa stands and are control in an established stand during the Spring with bait. The bait is applied using a tractor and a rented bait applicator.

Three acre inches of water is applied during each of the eight irrigations from May through September. A total of 2 acre feet of water is applied at a cost of \$24 per acre foot. Water is pumped from two wells through wheel line sprinklers.

Phosphorous and sulfur fertilizers are spread by a custom applicator on the stand in October at rates of 75 and 37.5 pounds per acre, respectively.

Soil residual herbicides for winter weed control are applied in January to established alfalfa stands. Summer grass control may be needed.

The pesticides and rates mentioned in this cost study are a few of those that are listed in the [UC IPM Alfalfa Pest Management Guidelines](#). The practices and inputs used in this cost study serve only as a typical guide. Variations in cultural inputs can vary due to seasonal pest pressures, water availability and government regulations. Contact the Shasta/Lassen County farm advisor for additional information.

4. HARVEST:

In this cost study the ranch has its hay custom harvested. Three cuttings of 2 tons each are made during the season and swathing, raking, baling and roadsiding the hay costs \$34.50 per ton. If a grower harvests his own hay, the custom charge should be subtracted from harvest costs in **Table 5** and all equipment for harvest operations should be inventoried in investment costs in **Table 4**, and labor, fuel, repairs, depreciation, and interest on investment costs would then be added to harvest costs in **Table 5**.

5. YIELDS & RETURNS:

The crop yield used in this study is 6 tons of hay per acre from a total of three cuttings per year once the stand is established. During the stand establishment, one cutting of hay is obtained for a 1.5 ton per acre yield. An estimated price of a \$90 per ton of hay is used in this study. Returns will vary and the \$90 per ton used in the cost study is, at best, an estimate taking into consideration current situations. **Table 8** indicates the effects on grower returns based on varying yields and returns.

6. RISK:

The risks associated with alfalfa production should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of alfalfa production.

Because of the risk involved, access to a market is crucial. A grower should identify potential markets and where possible, have a contract for their hay before any alfalfa production begins.

7. LABOR:

Basic hourly wages for workers are \$5.60 and \$3.73 per hour for machine operators and field workers (irrigator), respectively. Adding 34% for SDI, FICA, insurance and other benefits increases the labor rates shown to \$7.50 per hour for machine labor and \$5.00 per hour for non-machine labor. The labor hours for operations involving machinery are 10% higher than the machine hours to account for extra labor involved in equipment set-up, moving, maintenance and repair. Wages for managers are not included as a cash cost. Any returns above total costs are considered returns to management.

8. INVESTMENT:

The investments shown in **Table 4** are those that are partially or completely allocated to the alfalfa hay operation. Costs of investments such as stand establishment and hay barn are attributed only to alfalfa hay and cannot be spread over the rest of the farms operations. Other investments including land, shop buildings and irrigation systems can be used by the whole farm so only a portion of the costs can be assigned to the alfalfa hay operation and the rest of the costs are distributed to the other farm enterprises. Annual investments shown in **Tables 1** and **6** represent depreciation and opportunity cost for each investment on an annual per acre basis.

9. OVERHEAD:

County taxes are calculated as 1% of the average value of equipment, buildings and improvements. Insurance for equipment and improvements to the farm is charged at 0.5% of the average value over the assets useful life. Liability insurance covers accidents on the farm and costs \$550 for the entire farm or \$1.10 per acre. Office and business costs are estimated at \$30 per acre for the ranch. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc.

10. INTEREST:

Interest on operating capital is based on cash costs and is calculated monthly until harvest at a rate of 9.00% per year. Real interest rates are used in this study, so no adjustments for inflation are included. Nominal interest rates would contain a factor for inflation which might run 3% to 4% higher than the real interest rate. Interest is also charged on investment at 4.00% per year to account for income foregone that could be received from an alternative investment (opportunity cost) and is based on the average value of the buildings and equipment.

11. EQUIPMENT COSTS:

Most of the equipment inventory on typical alfalfa farms in the Fall River Valley and Big Valley of Shasta and Lassen Counties is purchased used and has a reduced value. This study shows current purchase price for new equipment with an adjustment to 40% of new value to indicate a mix of new and used equipment.

In allocating the equipment costs per acre, the following calculations were made and shown in **Tables 4** and **9**: (a) **Original Cost** of equipment is the cost of the new equipment plus sales tax. (b) **Depreciation** is straight line with a 10% salvage value. (c) **Interest** on investment is calculated as the average value per acre of the equipment during its useful life, multiplied by an interest rate of 4.00%. Average value equals new cost plus salvage value divided by 2 on a per acre basis. (d) The total investment costs of the depreciation and the interest reflect a mix of new and used equipment. These values are also used in **Tables 1** and **6**. Hourly equipment costs are shown in **Tables 5** and **10**. The equipment listed in **Tables 4, 5, 9** and **10** indicate only that equipment which is used in the alfalfa enterprise and does not necessarily include all of the equipment that would be found on a typical farm growing alfalfa. All of this equipment is used on the entire 500 acre ranch.

12. FUEL & REPAIR:

The fuel and repair cost per acre for each operation in **Tables 1** and **6**, is determined by multiplying the total hourly operating cost for each piece of equipment in **Table 5** and **9**, by the number of hours per acre for that operation. Prices for on-farm delivery of diesel and gasoline are \$0.71 and \$0.98 per gallon respectively.

Table 1.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO ESTABLISH ALFALFA HAY
 SHASTA & LASSEN COUNTIES - 1992

Labor Rate: \$7.50/hr. machine labor Interest Rate: 9.00%
 \$5.00/hr. non-machine labor Yield per Acre: 1.50 ton

| Operation | Time (Hrs/A) | Labor Cost | Fuel & Repairs | Cash and Labor Material Cost | Costs per Acre Custom/ Rent | Total Cost | Your Cost |
|---------------------------------------|-----------------------|---------------|-------------------|------------------------------------|-----------------------------------|---------------|--------------|
| Cultural: | | | | | | | |
| Disc Stubble 2X | 0.29 | 2.57 | 0.00 | 0.00 | 15.00 | 17.57 | |
| Land Plane Field | 0.25 | 2.25 | 1.58 | 0.00 | 0.00 | 3.83 | |
| Fertilize - Custom | 0.00 | 0.00 | 0.00 | 53.00 | 13.50 | 66.50 | |
| Apply Herbicide & Incorporate | 0.00 | 0.00 | 0.00 | 11.13 | 16.00 | 27.13 | |
| Ring Roll Field | 0.19 | 1.72 | 1.03 | 0.00 | 0.00 | 2.75 | |
| Plant | 0.23 | 2.05 | 1.62 | 56.00 | 0.00 | 59.68 | |
| Irrigate | 1.20 | 6.00 | 0.00 | 48.00 | 0.00 | 54.00 | |
| Apply Post Emergent Herbicide | 0.10 | 0.89 | 0.64 | 7.76 | 0.00 | 9.29 | |
| Pickup Truck Use | 0.53 | 4.77 | 2.19 | 0.00 | 0.00 | 6.96 | |
| TOTAL CULTURAL COSTS | 2.78 | 20.26 | 7.06 | 175.89 | 44.50 | 247.70 | |
| Harvest: | | | | | | | |
| Harvest - Custom | 0.00 | 0.00 | 0.00 | 0.00 | 51.75 | 51.75 | |
| TOTAL HARVEST COSTS | 0.00 | 0.00 | 0.00 | 0.00 | 51.75 | 51.75 | |
| Interest on operating capital @ 9.00% | | | | | | 5.43 | |
| TOTAL OPERATING COSTS/ACRE | | 20.26 | 7.06 | 175.89 | 96.25 | 304.89 | |
| TOTAL OPERATING COSTS/TON | | | | | | 203.26 | |
| CASH OVERHEAD: | | | | | | | |
| Office Expense | | | | | | 5.00 | |
| Liability Insurance | | | | | | 1.10 | |
| Property Taxes | | | | | | 19.00 | |
| Equipment Insurance | | | | | | 9.50 | |
| Investment Repairs | | | | | | 4.55 | |
| TOTAL CASH OVERHEAD COSTS | | | | | | 39.15 | |
| TOTAL CASH COSTS/ACRE | | | | | | 344.03 | |
| TOTAL CASH COSTS/TON | | | | | | 229.36 | |
| NON-CASH OVERHEAD: | | | | | | | |
| Investment | Per producing Acre | Depreciation | Annual Cost | | Interest @ 4.00% | | |
| Land | 1500.00 | | | | 60.00 | 60.00 | |
| Irrigation System | 257.00 | 7.71 | | | 5.65 | 13.36 | |
| Shop Tools | 20.00 | 1.20 | | | 0.44 | 1.64 | |
| Hay Barns 1000 Ton | 240.00 | 10.80 | | | 5.28 | 16.08 | |
| Shop Building | 40.00 | 2.00 | | | 0.80 | 2.80 | |
| Fuel Tanks & Pumps | 16.10 | 0.81 | | | 0.32 | 1.13 | |
| Wheel Line Sprinklers | 112.50 | 3.38 | | | 2.47 | 5.85 | |
| Equipment | 46.19 | 3.83 | | | 1.02 | 4.85 | |
| TOTAL NON-CASH OVERHEAD COSTS | 2231.79 | 29.72 | | | 75.99 | 105.71 | |
| TOTAL COSTS/ACRE | | | | | | 449.74 | |
| TOTAL COSTS/TON | | | | | | 299.83 | |

U.C. COOPERATIVE EXTENSION

Table 3.

MONTHLY CASH COSTS PER ACRE TO ESTABLISH ALFALFA HAY
SHASTA & LASSEN COUNTIES - 1992

| Beginning JUL 92 | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|----------------------------|--------|-------|-------|-----|-----|-----|-------|-----|-----|-----|-----|-----|--------|
| Ending JUN 93 | 92 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 93 | 93 | 93 | 93 | |
| ----- | | | | | | | | | | | | | |
| Cultural: | | | | | | | | | | | | | |
| Disc Stubble 2X | 17.57 | | | | | | | | | | | | 17.57 |
| Land Plane Field | 3.83 | | | | | | | | | | | | 3.83 |
| Fertilize | 66.50 | | | | | | | | | | | | 66.50 |
| Apply Herbicide & Incorp. | 27.13 | | | | | | | | | | | | 27.13 |
| Ring Roll Field | 2.75 | | | | | | | | | | | | 2.75 |
| Plant | 59.68 | | | | | | | | | | | | 59.68 |
| Irrigate | 18.00 | 18.00 | 18.00 | | | | | | | | | | 54.00 |
| Apply Post Emergent Herb. | | 9.29 | | | | | | | | | | | 9.29 |
| Pickup Truck Use | 2.32 | 2.32 | 2.32 | | | | | | | | | | 6.96 |
| ----- | | | | | | | | | | | | | |
| TOTAL CULTURAL COSTS | 197.77 | 29.61 | 20.32 | | | | | | | | | | 247.70 |
| ----- | | | | | | | | | | | | | |
| Harvest: | | | | | | | | | | | | | |
| Harvest - Custom | | | 51.75 | | | | | | | | | | 51.75 |
| ----- | | | | | | | | | | | | | |
| TOTAL HARVEST COSTS | | | 51.75 | | | | | | | | | | 51.75 |
| ----- | | | | | | | | | | | | | |
| Interest on oper. capital | 1.48 | 1.71 | 2.25 | | | | | | | | | | 5.43 |
| ----- | | | | | | | | | | | | | |
| TOTAL OPERATING COSTS/ACRE | 199.26 | 31.31 | 74.32 | | | | | | | | | | 304.89 |
| TOTAL OPERATING COSTS/TON | 132.84 | 20.88 | 49.54 | | | | | | | | | | 203.26 |
| ----- | | | | | | | | | | | | | |
| OVERHEAD: | | | | | | | | | | | | | |
| Office Expense | 1.67 | 1.67 | 1.67 | | | | | | | | | | 5.00 |
| Liability Insurance | 0.37 | 0.37 | 0.37 | | | | | | | | | | 1.10 |
| Property Taxes | 9.50 | | | | | | 9.50 | | | | | | 19.00 |
| Equipment Insurance | 4.75 | | | | | | 4.75 | | | | | | 9.50 |
| Investment Repairs | 1.52 | 1.52 | 1.52 | | | | | | | | | | 4.55 |
| ----- | | | | | | | | | | | | | |
| TOTAL CASH OVERHEAD COSTS | 17.80 | 3.55 | 3.55 | | | | 14.25 | | | | | | 39.15 |
| ----- | | | | | | | | | | | | | |
| TOTAL CASH COSTS/ACRE | 217.05 | 34.86 | 77.87 | | | | 14.25 | | | | | | 344.03 |
| TOTAL CASH COSTS/TON | 144.70 | 23.24 | 51.91 | | | | 9.50 | | | | | | 229.36 |
| ===== | | | | | | | | | | | | | |

Tables 4. U.C. COOPERATIVE EXTENSION
 ANNUAL AND HOURLY EQUIPMENT COSTS FOR ALFALFA HAY ESTABLISHMENT AND PRODUCTION
 SHASTA & LASSEN COUNTIES - 1992

ANNUAL EQUIPMENT COSTS

| Yr | Description | Price | Yrs Life | - Non-Cash Over. - | | - Cash Overhead - | | Total |
|-------------------------------------|-----------------------|-------|-------------|--------------------|----------|-------------------|--------|---------|
| | | | | Depre- ciation | Interest | Insur- ance | Taxes | |
| ESTABLISHMENT YEAR ONLY: | | | | | | | | |
| 92 | Triplane - 16' | 16000 | 15 | 960.00 | 352.00 | 44.00 | 88.00 | 1444.00 |
| 92 | Seeder - Alfalfa | 7100 | 7 | 912.86 | 156.20 | 19.52 | 39.05 | 1127.63 |
| 92 | Cultipacker - 12' | 3250 | 15 | 195.00 | 71.50 | 8.94 | 17.88 | 293.32 |
| Subtotal: | | 26350 | | 2076.86 | 579.70 | 72.46 | 144.93 | 2864.95 |
| ESTABLISHMENT AND PRODUCTION YEARS: | | | | | | | | |
| 92 | 70 hp 2wd Tractor | 38000 | 17 | 2011.76 | 836.00 | 104.50 | 209.00 | 3161.26 |
| 92 | Spray Boom - 25' | 3500 | 10 | 315.00 | 77.00 | 9.63 | 19.25 | 420.88 |
| 92 | Pickup - 3/4 Ton | 16000 | 7 | 2057.14 | 352.00 | 44.00 | 88.00 | 2541.14 |
| 92 | Saddle Tank - 300 Gal | 1500 | 10 | 135.00 | 33.00 | 4.13 | 8.25 | 180.38 |
| Subtotal: | | 59000 | | 4518.90 | 1298 | 162.26 | 324.50 | 6303.66 |
| TOTAL | | 85350 | | 6586.76 | 1877.70 | 234.72 | 469.43 | 9168.61 |
| 40% of New Cost * | | 34140 | | 2634.70 | 751.08 | 93.89 | 187.77 | 3667.44 |

* Used to reflect a mix of new and used equipment.

HOURLY EQUIPMENT COSTS

| Yr | Description | Actual Hours Used | ----- COSTS PER HOUR ----- | | | | | | | Total Costs/Hr. |
|----|-----------------------|-------------------------|--------------------------------------|-------------------------------|----------------|-------|---------|-----------------------------|----------------|--------------------|
| | | | -Non-Cash Over- Depre- ciation | - Cash Overhead - Interest | Insur- ance | Taxes | Repairs | Operating Fuel & Lube | Total Oper. | |
| 92 | Triplane - 16' | 166.0 | 2.31 | 0.85 | 0.11 | 0.21 | 1.55 | 0.00 | 1.55 | 5.03 |
| 92 | Seeder - Alfalfa | 169.8 | 2.15 | 0.37 | 0.05 | 0.09 | 2.37 | 0.00 | 2.37 | 5.03 |
| 92 | Cultipacker - 12' | 165.1 | 0.47 | 0.17 | 0.02 | 0.04 | 0.62 | 0.00 | 0.62 | 1.33 |
| 92 | 70 hp 2wd Tractor | 761.0 | 1.06 | 0.44 | 0.05 | 0.11 | 1.51 | 2.81 | 4.32 | 5.98 |
| 92 | Pickup - 3/4 Ton | 267.0 | 3.08 | 0.53 | 0.07 | 0.13 | 1.89 | 2.25 | 4.14 | 7.94 |
| 92 | Saddle Tank - 300 Gal | 119.9 | 0.45 | 0.11 | 0.01 | 0.03 | 0.50 | 0.00 | 0.50 | 1.10 |
| 92 | Spray Boom - 25' | 119.9 | 1.05 | 0.26 | 0.03 | 0.06 | 1.17 | 0.00 | 1.17 | 2.58 |

Table 5.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO PRODUCE ALFALFA HA
 SHASTA & LASSEN COUNTIES - 1992

Labor Rate: \$7.50/hr. machine labor Interest Rate: 9.00%
 \$5.00/hr. non-machine labor Yield per Acre: 6 ton

| Operation | Operation Time (Hrs/A) | Cash and Labor Costs per Acre | | | | Total Cost | Your Cost |
|---------------------------------------|------------------------|-------------------------------|----------------|------------------|---------------|---------------|-----------|
| | | Labor Cost | Fuel & Repairs | Material Cost | Custom/Rent | | |
| Cultural: | | | | | | | |
| Gopher Control | 0.06 | 0.56 | 0.30 | 1.38 | 0.13 | 2.36 | |
| 1st Irrigation | 0.40 | 2.00 | 0.00 | 6.00 | 0.00 | 8.00 | |
| 2nd Irrigation | 0.40 | 2.00 | 0.00 | 6.00 | 0.00 | 8.00 | |
| 3rd Irrigation | 0.40 | 2.00 | 0.00 | 6.00 | 0.00 | 8.00 | |
| 4th Irrigation | 0.40 | 2.00 | 0.00 | 6.00 | 0.00 | 8.00 | |
| 5th Irrigation | 0.40 | 2.00 | 0.00 | 6.00 | 0.00 | 8.00 | |
| 6th Irrigation | 0.40 | 2.00 | 0.00 | 6.00 | 0.00 | 8.00 | |
| 7th Irrigation | 0.40 | 2.00 | 0.00 | 6.00 | 0.00 | 8.00 | |
| 8th Irrigation | 0.40 | 2.00 | 0.00 | 6.00 | 0.00 | 8.00 | |
| Pickup Truck Use | 0.53 | 4.82 | 2.21 | 0.00 | 0.00 | 7.03 | |
| TOTAL CULTURAL COSTS | 3.80 | 21.38 | 2.51 | 49.38 | 0.13 | 73.39 | |
| Harvest: | | | | | | | |
| 1st Harvest | 0.00 | 0.00 | 0.00 | 0.00 | 86.25 | 86.25 | |
| 2nd Harvest | 0.00 | 0.00 | 0.00 | 0.00 | 69.00 | 69.00 | |
| 3rd Harvest | 0.00 | 0.00 | 0.00 | 0.00 | 51.75 | 51.75 | |
| TOTAL HARVEST COSTS | 0.00 | 0.00 | 0.00 | 0.00 | 207.00 | 207.00 | |
| Postharvest: | | | | | | | |
| Fall Fertilization | 0.00 | 0.00 | 0.00 | 10.87 | 2.25 | 13.13 | |
| Winter Weed Control | 0.10 | 0.89 | 0.64 | 14.26 | 0.00 | 15.79 | |
| TOTAL POSTHARVEST COSTS | 0.10 | 0.89 | 0.64 | 25.14 | 2.25 | 28.91 | |
| Interest on operating capital @ 9.00% | | | | | | 6.11 | |
| TOTAL OPERATING COSTS/ACRE | | 22.27 | 3.15 | 74.51 | 209.38 | 315.41 | |
| TOTAL OPERATING COSTS/TON | | | | | | 52.57 | |
| CASH OVERHEAD: | | | | | | | |
| Office Expense | | | | | | 5.00 | |
| Liability Insurance | | | | | | 1.10 | |
| Property Taxes | | | | | | 25.18 | |
| Equipment Insurance | | | | | | 12.59 | |
| Investment Repairs | | | | | | 5.05 | |
| TOTAL CASH OVERHEAD COSTS | | | | | | 48.92 | |
| TOTAL CASH COSTS/ACRE | | | | | | 364.32 | |
| TOTAL CASH COSTS/TON | | | | | | 60.72 | |
| NON-CASH OVERHEAD: | | | | | | | |
| Investment | Per producing Acre | Annual Cost | | Interest @ 4.00% | | | |
| Land | 1500.00 | | | 60.00 | | 60.00 | |
| Irrigation System | 253.00 | 7.59 | | 5.57 | | 13.16 | |
| Wheel Line Sprinklers | 975.60 | 29.27 | | 21.46 | | 50.73 | |
| Shop Building | 40.00 | 2.00 | | 0.80 | | 2.80 | |
| Shop Tools | 20.00 | 1.20 | | 0.44 | | 1.64 | |
| Hay Barns 2 @ 1000 Tons Each | 240.00 | 10.80 | | 5.28 | | 16.08 | |
| Fuel Tanks & Pumps | 16.10 | 0.81 | | 0.32 | | 1.13 | |
| Establishment Cost | 322.24 | 80.56 | | 6.44 | | 87.00 | |
| Equipment | 18.02 | 1.99 | | 0.40 | | 2.38 | |
| TOTAL NON-CASH OVERHEAD COSTS | 3384.96 | 134.21 | | 100.71 | | 234.92 | |
| TOTAL COSTS/ACRE | | | | | | 599.25 | |
| TOTAL COSTS/TON | | | | | | 99.87 | |

Table 7.

U.C. COOPERATIVE EXTENSION
 MONTHLY CASH COSTS PER ACRE TO PRODUCE ALFALFA HAY
 SHASTA & LASSEN COUNTIES - 1992

| Beginning MAR 92 | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | TOTAL |
|----------------------------|------|------|------|--------|-------|-------|-------|------|-------|------|-------|------|--------|
| Ending FEB 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | |
| ----- | | | | | | | | | | | | | |
| Cultural: | | | | | | | | | | | | | |
| Gopher Control | 2.36 | | | | | | | | | | | | 2.36 |
| 1st Irrigation | | | 8.00 | | | | | | | | | | 8.00 |
| 2nd Irrigation | | | | 8.00 | | | | | | | | | 8.00 |
| 3rd Irrigation | | | | 8.00 | | | | | | | | | 8.00 |
| 4th Irrigation | | | | | 8.00 | | | | | | | | 8.00 |
| 5th Irrigation | | | | | | 8.00 | | | | | | | 8.00 |
| 6th Irrigation | | | | | | 8.00 | | | | | | | 8.00 |
| 7th Irrigation | | | | | | | 8.00 | | | | | | 8.00 |
| 8th Irrigation | | | | | | | 8.00 | | | | | | 8.00 |
| Pickup Truck Use | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 7.03 |
| ----- | | | | | | | | | | | | | |
| TOTAL CULTURAL COSTS | 3.00 | 0.64 | 8.64 | 16.64 | 8.64 | 16.64 | 16.64 | 0.64 | 0.64 | 0.64 | 0.64 | | 73.39 |
| ----- | | | | | | | | | | | | | |
| Harvest: | | | | | | | | | | | | | |
| 1st Harvest | | | | 86.25 | | | | | | | | | 86.25 |
| 2nd Harvest | | | | | 69.00 | | | | | | | | 69.00 |
| 3rd Harvest | | | | | | | 51.75 | | | | | | 51.75 |
| ----- | | | | | | | | | | | | | |
| TOTAL HARVEST COSTS | | | | 86.25 | 69.00 | | 51.75 | | | | | | 207.00 |
| ----- | | | | | | | | | | | | | |
| Postharvest: | | | | | | | | | | | | | |
| Fall Fertilization | | | | | | | | | 13.13 | | | | 13.13 |
| Winter Weed Control | | | | | | | | | | | 15.79 | | 15.79 |
| ----- | | | | | | | | | | | | | |
| TOTAL POSTHARVEST COSTS | | | | | | | | | 13.13 | | 15.79 | | 28.91 |
| ----- | | | | | | | | | | | | | |
| Interest on oper. capital | 0.02 | 0.03 | 0.09 | 0.86 | 1.45 | 1.57 | 2.08 | | | | | | 6.11 |
| ----- | | | | | | | | | | | | | |
| TOTAL OPERATING COSTS/ACRE | 3.02 | 0.67 | 8.73 | 103.75 | 79.09 | 18.21 | 70.47 | 0.64 | 13.76 | 0.64 | 16.43 | | 315.41 |
| TOTAL OPERATING COSTS/TON | 0.50 | 0.11 | 1.46 | 17.29 | 13.18 | 3.03 | 11.75 | 0.11 | 2.29 | 0.11 | 2.74 | | 52.57 |
| ----- | | | | | | | | | | | | | |
| OVERHEAD: | | | | | | | | | | | | | |
| Office Expense | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 5.00 |
| Liability Insurance | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 1.10 |
| Property Taxes | | | | | 12.59 | | | | | | 12.59 | | 25.18 |
| Equipment Insurance | | | | | 6.29 | | | | | | 6.29 | | 12.59 |
| Investment Repairs | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 5.05 |
| ----- | | | | | | | | | | | | | |
| TOTAL CASH OVERHEAD COSTS | 1.01 | 1.01 | 1.01 | 1.01 | 19.90 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 | 19.90 | | 48.92 |
| ----- | | | | | | | | | | | | | |
| TOTAL CASH COSTS/ACRE | 4.03 | 1.68 | 9.74 | 104.77 | 98.98 | 19.22 | 71.49 | 1.65 | 14.78 | 1.65 | 36.32 | | 364.32 |
| TOTAL CASH COSTS/TON | 0.67 | 0.28 | 1.62 | 17.46 | 16.50 | 3.20 | 11.91 | 0.28 | 2.46 | 0.28 | 6.05 | | 60.72 |
| ===== | | | | | | | | | | | | | |

Table 8.

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
SHASTA & LASSEN COUNTIES - 1992

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ALFALFA HAY

| | YIELD (TON/ACRE) | | | | | | |
|-------------------------------|------------------|--------|--------|-------|-------|-------|-------|
| | 4.5 | 5.0 | 5.5 | 6.0 | 6.5 | 7.0 | 7.5 |
| OPERATING COSTS/ACRE: | | | | | | | |
| Cultural Cost | 73 | 73 | 73 | 73 | 73 | 73 | 73 |
| Harvest Cost | 155 | 173 | 190 | 207 | 224 | 242 | 259 |
| Postharvest Cost | 29 | 29 | 29 | 29 | 29 | 29 | 29 |
| Interest on operating capital | 5 | 5 | 6 | 6 | 6 | 7 | 7 |
| TOTAL OPERATING COSTS/ACRE | 263 | 280 | 298 | 315 | 333 | 351 | 368 |
| TOTAL OPERATING COSTS/TON | 58.34 | 56.03 | 54.14 | 52.57 | 51.24 | 50.09 | 49.11 |
| CASH OVERHEAD COSTS/ACRE | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| TOTAL CASH COSTS/ACRE | 311 | 329 | 347 | 364 | 382 | 400 | 417 |
| TOTAL CASH COSTS/TON | 69.21 | 65.81 | 63.04 | 60.72 | 58.76 | 57.08 | 55.63 |
| NON-CASH OVERHEAD COSTS/ACRE | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| TOTAL COSTS/ACRE | 546 | 564 | 582 | 599 | 617 | 634 | 652 |
| TOTAL COSTS/TON | 121.41 | 112.80 | 105.75 | 99.87 | 94.90 | 90.64 | 86.95 |

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR ALFALFA HAY

| PRICE (DOLLARS PER TON) | YIELD (TON/ACRE) | | | | | | |
|----------------------------|------------------|-----|-----|-----|-----|-----|-----|
| | 4.5 | 5.0 | 5.5 | 6.0 | 6.5 | 7.0 | 7.5 |
| 75.00 | 75 | 95 | 115 | 135 | 154 | 174 | 194 |
| 80.00 | 97 | 120 | 142 | 165 | 187 | 209 | 232 |
| 85.00 | 120 | 145 | 170 | 195 | 219 | 244 | 269 |
| 90.00 | 142 | 170 | 197 | 225 | 252 | 279 | 307 |
| 95.00 | 165 | 195 | 225 | 255 | 284 | 314 | 344 |
| 100.00 | 187 | 220 | 252 | 285 | 317 | 349 | 382 |
| 105.00 | 210 | 245 | 280 | 315 | 349 | 384 | 419 |

NET RETURNS PER ACRE ABOVE CASH COSTS FOR ALFALFA HAY

| PRICE (DOLLARS PER TON) | YIELD (TON/ACRE) | | | | | | |
|----------------------------|------------------|-----|-----|-----|-----|-----|-----|
| | 4.5 | 5.0 | 5.5 | 6.0 | 6.5 | 7.0 | 7.5 |
| 75.00 | 26 | 46 | 66 | 86 | 106 | 125 | 145 |
| 80.00 | 49 | 71 | 93 | 116 | 138 | 160 | 183 |
| 85.00 | 71 | 96 | 121 | 146 | 171 | 195 | 220 |
| 90.00 | 94 | 121 | 148 | 176 | 203 | 230 | 258 |
| 95.00 | 116 | 146 | 176 | 206 | 236 | 265 | 295 |
| 100.00 | 139 | 171 | 203 | 236 | 268 | 300 | 333 |
| 105.00 | 161 | 196 | 231 | 266 | 301 | 335 | 370 |

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR ALFALFA HAY

| PRICE (DOLLARS PER TON) | YIELD (TON/ACRE) | | | | | | |
|----------------------------|------------------|------|------|------|------|------|-----|
| | 4.5 | 5.0 | 5.5 | 6.0 | 6.5 | 7.0 | 7.5 |
| 75.00 | -209 | -189 | -169 | -149 | -129 | -109 | -90 |
| 80.00 | -186 | -164 | -142 | -119 | -97 | -74 | -52 |
| 85.00 | -164 | -139 | -114 | -89 | -64 | -39 | -15 |
| 90.00 | -141 | -114 | -87 | -59 | -32 | -4 | 23 |
| 95.00 | -119 | -89 | -59 | -29 | 1 | 31 | 60 |
| 100.00 | -96 | -64 | -32 | 1 | 33 | 66 | 98 |
| 105.00 | -74 | -39 | -4 | 31 | 66 | 101 | 135 |

Table 9.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS / BREAKEVEN ANALYSIS
 SHASTA & LASSEN COUNTIES - 1992

COSTS AND RETURNS - PER ACRE BASIS

| Crop | 1. Gross Returns | 2. Operating Costs | 3. Net Returns Above Oper. Costs (1-2) | 4. Cash Costs | 5. Net Returns Above Cash Costs (1-4) | 6. Total Costs | 7. Net Returns Above Total Costs (1-6) |
|-------------|------------------|--------------------|--|---------------|---------------------------------------|----------------|--|
| Alfalfa Hay | 540 | 315 | 225 | 364 | 176 | 599 | -59 |

COSTS AND RETURNS - TOTAL ACREAGE

| Crop | 1. Gross Returns | 2. Operating Costs | 3. Net Returns Above Oper. Costs (1-2) | 4. Cash Costs | 5. Net Returns Above Cash Costs (1-4) | 6. Total Costs | 7. Net Returns Above Total Costs (1-6) |
|-------------|------------------|--------------------|--|---------------|---------------------------------------|----------------|--|
| Alfalfa Hay | 216000 | 126163 | 89837 | 145730 | 70270 | 239698 | -23698 |

BREAKEVEN PRICES PER YIELD UNIT

| CROP | Base Yield (Units/Acre) | Yield Units | Breakeven Price To Cover | | |
|-------------|-------------------------|-------------|--------------------------|------------|-------------|
| | | | Operating Costs | Cash Costs | Total Costs |
| Alfalfa Hay | 6.0 | ton | 52.57 | 60.72 | 99.87 |

BREAKEVEN YIELDS PER ACRE

| CROP | Yield Units | Base Price (\$/Unit) | Breakeven Yield To Cover | | |
|-------------|-------------|----------------------|--------------------------|------------|-------------|
| | | | Operating Costs | Cash Costs | Total Costs |
| Alfalfa Hay | ton | 90.00 | 3.5 | 4.0 | 6.7 |