2005

## SAMPLE COSTS TO PRODUCE LEMONGRASS <br> ASIAN VEGETABLE



## SAN JOAQUIN VALLEY - SOUTH

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## UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE<br>LEMONGRASS<br>San Joaquin Valley - South 2005<br>STUDY CONTENTS

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## INTRODUCTION

Sample costs to produce lemongrass in the San Joaquin Valley are shown in this study. The study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. The practices described are based on production operations considered typical for this crop and region, but will not apply to every farm. Sample costs for labor, materials, equipment and custom services are based on current figures. "Your Costs" columns in Tables 1 and 2 are provided for entering your farm costs.

The hypothetical farm operations, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, California, (530) 752-3589 or the local UC Cooperative Extension office.

Sample Cost of Production Studies for many commodities can be downloaded at http://coststudies.ucdavis.edu, requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-4424 or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

## ASSUMPTIONS

The assumptions refer to Tables 1 through 7 and pertain to sample costs to produce lemongrass in the San Joaquin Valley. The cultural practices described and materials used are considered typical for a well-managed field in the region. The costs, materials, and practices will not apply to all situations every production year. Cultural practices vary among growers within the region and can be significant. The study is intended as a cost of production guide only. The use of trade names and cultural practices 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 or cultural practices.

Farm. This report is based on a hypothetical 10 contiguous acre farm. The land is rented and farmed by the grower. Two acres are planted to lemongrass and the remaining acres to other Asian vegetables. The grower and family do the majority of the labor for the operations, but a labor cost (opportunity cost) is shown for each operation.

## Production Operating Costs

Land Preparation. In February or March, a custom operator plows the land one time, discs two times and lists the beds.

Plant. Lemongrass is a perennial crop grown usually as an annual. The crop is planted in March and is propagated from stems saved from the previous year; therefore no cost is shown for planting materials The grower plants 4,030 stems per acre on the 36 -inch listed beds, three-feet apart in-row. The stems are placed at a 45 -degree angle, two to three inches in the soil. Every sixth row is left unplanted to allow for room to install the crop protection houses that cover the crop during the winter months. Rows are usually 250 to 300 feet long. Two people ( 16 man hours) plant one acre per day.

Irrigation. Irrigation includes the water costs and irrigation labor. Lay flat vinyl pipe is laid at the end of the rows or furrows where the water is run down the furrows. Irrigation begins in March after planting. The field is irrigated every five days during March and April, every three days during July, August, and September and once a week during October and November. Water at $\$ 2.50$ per irrigation is assumed to be a typical cost. Water costs were calculated from the growers pumping charges for the summer months. Assuming the crop uses 30 acres-inches per season, this equates to a cost of $\$ 4.83$ per acre-inch. Irrigation labor is calculated as one-half hour per acre per irrigation.

Fertilization. The crop is fertilized with 15-15-15 at 225 pounds per acre in April and again in June. Some growers may apply a third application in July. The fertilizer is dissolved in water for dripping into the irrigation water as it runs down the furrow. Labor costs for applying the fertilizer are included in the irrigation labor.

Crop Protection. The grower builds 9 to 10 (9.6) crop protection houses (tunnels) per acre in November to protect the plants from the cold weather. Each house is 250 feet long and equivalent to 6 rows wide. The row length varies from farm to farm as do the number of rows planted (usually either 5 or 6 ) between skips or unplanted rows. In this study, five rows are planted; the sixth is unplanted and is used to secure the house. Seven-foot stakes, 2-inch x 2inch, are spaced 6-feet apart in the center of each house. Foam covers are taped over the top of each stake. Twine is then strung across the posts to hold and secure the house. The plastic, 28 feet x 100 feet and $4-6$ mil thick, is laid over the twine and posts sometime in November-December. About 24 rolls of plastic are used per acre. In March after harvest, the houses are dismantled, and the plastic and string are hauled to the landfill.

Pest Management. Pesticides for insects and diseases are not currently available for lemongrass. If diseases or insects appear, contact your local farm advisor or pest control adviser.

Weeds. The field is hand weeded in April and takes about 24 man-hours per acre (3 people).
Insects. None
Diseases. A rust fungus is a minor problem, but is not controlled in this study.
Vertebrates. Field mice can be a potential problem, but are not controlled in this study.

Pickup/ATV. Costs for a $1 / 2$-ton pickup are included in the study. The pickup and a trailer are used for hauling the harvested lemongrass to the packing shed and is included in that cost. In addition, the grower drives another 250 miles per acre for farming purposes.

Harvest. The crop is usually harvested during January to March depending upon the price, or may be harvested year-round if the price is low. Shovels are used to dig the plants and a machete is used for cutting the plant into pieces. The plant pieces are packed in 40-pound boxes and hauled to a packinghouse. One house (tunnel) can be harvested per day with three people. This study assumes everything is harvested all at once; but in reality, the grower harvests some of the house each week so as not to flood the market. The grower uses a pickup with a trailer to haul a harvested load to the packinghouse each day. The number of deliveries will vary by picking schedule and yield.

Food Use: The stems are added to many dishes for lemon flavoring or used to make a tea drink.
Yields. The crop yield used in this study is 1,411 forty-pound boxes per acre averaging 147 boxes per house.

Returns. According to the growers the average return is $\$ 8.00$ to $\$ 10.00$ per 40-pound box. To calculate returns over a range of yields, a return of $\$ 8.00$ per box is used in this study. The packinghouse pays the grower approximately 30 days after delivery.

Labor. Labor rates of $\$ 12.42$ per hour for machine operators and $\$ 9.32$ for general labor includes payroll overhead of $38 \%$. The basic hourly wages are $\$ 9.00$ for machine operators and $\$ 6.75$ for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for truck crops (code 0172), and a percentage for other possible benefits. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2005 (California Department of Insurance). Labor for operations involving machinery are $20 \%$ higher than the operation time given in Table 1 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum Power Take Off (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are $\$ 1.51$ and $\$ 2.05$ per gallon, respectively. The cost includes a $2 \%$ local sales tax on diesel fuel and $8 \%$ sales tax on gasoline. Gasoline also includes federal and state excise tax, which are refundable for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in

Table 1 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is $10 \%$ higher than implement time for a given operation to account for setup, travel and down time.

Interest On Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of $7.65 \%$ per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post hrvest operations is discounted back to the last harvest month using a negative interest charge.

Risk. Production risks 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.

## Cash Overhead

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, and investment repairs.

Property Taxes. Counties charge a base property tax rate of $1 \%$ on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as $1 \%$ of the average value of all property. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

Insurance. Insurance for farm investments varies depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at $0.690 \%$ of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $\$ 429$ for the entire farm.

Office Expense. Office and business expenses are estimated at $\$ 10$ per acre. These expenses include office supplies, telephones, bookkeeping, accounting, and legal fees. The cost is a general estimate and not based on any actual data.

Land Rent. The 10 acres are rented for cash at $\$ 300$ per acre. The rented land includes the irrigation system that is maintained by the landlord. The owner also pays the land property taxes. Land rents range from $\$ 250$ to $\$ 350$ per acre.

Investment Repairs. Annual maintenance is calculated as two percent of the purchase price.

## Non-cash Overhead

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments for the entire ranch. The investments are allocated to the various crops.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and
salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is ((Purchase Price - Salvage Value) x Capital Recovery Factor) + (Salvage Value x Interest Rate).

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE by the annual hours of use in this operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in the tables.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1 . The amortization factor is a table value that corresponds to the interest rate used and the life of the machine.

Interest Rate. The interest rate of $6.01 \%$ used to calculate capital recovery cost is the USDA-ERS's ten-year average of California's agricultural sector long-run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector.

Tools. This includes shop tools, hand tools, and miscellaneous field tools such as shovels, hoes, and machete. The tools are an estimated value and not taken from any specific data.

Irrigation. The grower purchases 1,742 feet of 8 -inch lay flat vinyl pipe for the ten acres. The pipe is used to deliver the water to the furrows. The cost is allocated between the lemongrass and the other crops on the farm.

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to $60 \%$ to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are shown in the Whole Farm Annual Equipment, Investment, and Business Overhead Costs table. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components.

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## UC COOPERATIVE EXTENSION

## Table 1. COST PER ACRE TO PRODUCE LEMONGRASS

 SAN JOAQUIN VALLEY 2005

## UC COOPERATIVE EXTENSION

Table 2. COST PER ACRE TO PRODUCE LEMONGRASS SAN JOAQUIN VALLEY - 2005

|  | Quantity/ Acre | Unit | Price or Cost/Unit | Value or Cost/Acre | $\begin{aligned} & \text { Your } \\ & \text { Cost } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| GROSS RETURNS |  |  |  |  |  |
| Lemongrass | 1,410.00 | box | 8.00 | 11,280 |  |
| OPERATING COSTS |  |  |  |  |  |
| Custom: |  |  |  |  |  |
| Land Preparation (Plow, Disc, List) | 1.00 | acre | 100.00 | 100 |  |
| Irrigation: |  |  |  |  |  |
| Water Pumped | 58.00 irrigation |  | 2.50 | 145 |  |
| Fertilizer: |  |  |  |  |  |
| 15-15-15 | 450.00 | lb | 0.20 | 89 |  |
| Crop Protection: |  |  |  |  |  |
| Plastic Clear 28 'x $100{ }^{\prime} 4$ mil (approx. $50 \mathrm{lbs} / \mathrm{roll}$ ) | 24.00 | roll | 37.00 | 888 |  |
| Stakes Regular PT 7 ' | 400.00 | each | 1.39 | 556 |  |
| Twine 350' roll | 9.60 | roll | 12.00 | 115 |  |
| Discard Plastic | 1225.00 | lb | 0.02 | 25 |  |
| Carton: |  |  |  |  |  |
| Boxes 40 lb | 1,410.00 | each | 1.10 | 1,551 |  |
| Labor (machine) | 18.00 | hrs | 12.42 | 224 |  |
| Labor (non-machine) | 488.20 | hrs | 9.32 | 4,550 |  |
| Fuel - Gas | 62.47 | gal | 2.05 | 128 |  |
| Lube |  |  |  | 19 |  |
| Machinery repair |  |  |  | 34 |  |
| Interest on operating capital @ 7.65\% |  |  |  | 232 |  |
| TOTAL OPERATING COSTS/ACRE |  |  |  | 8,656 |  |
| NET RETURNS ABOVE OPERATING COSTS |  |  |  | 2,624 |  |
| CASH OVERHEAD COSTS: |  |  |  |  |  |
| Liability Insurance |  |  |  | 43 |  |
| Office Expense |  |  |  | 10 |  |
| Land Rent |  |  |  | 300 |  |
| Property Taxes |  |  |  | 7 |  |
| Property Insurance |  |  |  | 5 |  |
| Investment Repairs |  |  |  | 3 |  |
| TOTAL CASH OVERHEAD COSTS/ACRE |  |  |  | 369 |  |
| TOTAL CASH COSTS/ACRE |  |  |  | 9,024 |  |
| NON-CASH OVERHEAD COSTS (Capital Recovery): |  |  |  |  |  |
| Miscellaneous Field/Shop Tools |  |  |  | 24 |  |
| Irrigation Flat Pipe |  |  |  | 25 |  |
| Equipment |  |  |  | 155 |  |
| TOTAL NON-CASH OVERHEAD COSTS/ACRE |  |  |  | 204 |  |
| TOTAL COSTS/ACRE |  |  |  | 9,228 |  |
| NET RETURNS ABOVE TOTAL COSTS |  |  |  | 2,052 |  |

UC COOPERATIVE EXTENSION
Table 3. COST PER ACRE TO PRODUCE LEMONGRASS
SAN JOAQUIN VALLEY - 2005

| Beginning FEB 04 | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | TOTAL |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ending MAR 05 | 04 | 04 | 04 | 04 | 04 | 04 | 04 | 04 | 04 | 04 | 04 | 05 | 05 | 05 |  |
| Cultural: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Land Prep: Plow, Disc, List (Custom) | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  | 100 |
| Plant (no seed cost) |  | 149 |  |  |  |  |  |  |  |  |  |  |  |  | 149 |
| Irrigate |  | 14 | 29 | 29 | 72 | 72 | 72 | 72 | 29 | 29 |  |  |  |  | 415 |
| Fertilize: In irrigation water (15-15-15) 2X |  |  | 45 |  | 45 |  |  |  |  |  |  |  |  |  | 89 |
| Weed: Hand |  |  | 224 |  |  |  |  |  |  |  |  |  |  |  | 224 |
| Crop Protection: Install Plastic Houses |  |  |  |  |  |  |  |  |  | 3,144 |  |  |  |  | 3,144 |
| Crop Protection: Dismantle Houses |  |  |  |  |  |  |  |  |  |  |  |  |  | 203 | 203 |
| Miscellaneous Pickup Use | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 133 |
| TOTAL CULTURAL COSTS | 109 | 173 | 306 | 38 | 126 | 81 | 81 | 81 | 38 | 3,182 | 9 | 9 | 9 | 213 | 4,457 |
| Harvest: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hand Harvest |  |  |  |  |  |  |  |  |  |  |  | 1,542 | 1,542 | 612 | 3,695 |
| Haul to packingshed |  |  |  |  |  |  |  |  |  |  |  | 109 | 109 | 54 | 272 |
| TOTAL HARVEST COSTS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,650 | 1,650 | 666 | 3,967 |
| Interest on operating capital @ 7.65\% | 1 | 2 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 27 | 27 | 38 | 48 | 54 | 232 |
| TOTAL OPERATING COSTS/ACRE | 110 | 175 | 310 | 42 | 130 | 86 | 87 | 87 | 45 | 3,209 | 36 | 1,697 | 1,708 | 933 | 8,656 |
| OVERHEAD: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Liability Insurance |  | 43 |  |  |  |  |  |  |  |  |  |  |  |  | 43 |
| Office Expense | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| Land Rent |  |  |  |  |  |  |  |  |  |  | 300 |  |  |  | 300 |
| Property Taxes |  |  |  |  |  |  |  |  |  |  |  | 7 |  |  | 7 |
| Property Insurance |  |  |  |  |  |  |  |  |  |  |  | 5 |  |  | 5 |
| Investment Repairs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  | 3 |
| TOTAL CASH OVERHEAD COSTS | 1 | 44 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 301 | 14 | 1 | 1 | 369 |
| TOTAL CASH COSTS/ACRE | 111 | 219 | 311 | 43 | 131 | 87 | 88 | 88 | 46 | 3,210 | 337 | 1,711 | 1,709 | 933 | 9,024 |

## UC COOPERATIVE EXTENSION

Table 4. RANGING ANALYSIS FOR LEMONGRASS
SAN JOAQUIN VALLEY - 2005
COSTS PER ACRE AT VARYING YIELD TO PRODUCE LEMONGRASS

|  | YIELD (40 lb boxes/acre) |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
|  | 1,010 | 1,110 | 1,210 | 1,310 | 1,410 | 1,510 | 1,610 |
| OPERATING COSTS/ACRE: |  |  |  |  |  |  |  |
| Cultural Cost | 4,457 | 4,457 | 4,457 | 4,457 | 4,457 | 4,457 | 4,457 |
| Harvest Cost-Pick | 2,646 | 2,909 | 3,171 | 3,433 | 3,695 | 3,957 | 4,219 |
| Harvest Cost-Haul | 195 | 214 | 233 | 253 | 272 | 291 | 311 |
| Interest on operating capital | 216 | 220 | 224 | 228 | 232 | 236 | 240 |
| TOTAL OPERATING COSTS/ACRE | 7,514 | 7,800 | 8,085 | 8,371 | 8,656 | 8,941 | 9,227 |
| TOTAL OPERATING COSTS/cwt | 7.44 | 7.03 | 6.68 | 6.39 | 6.14 | 5.92 | 5.73 |
| CASH OVERHEAD COSTS/ACRE | 366 | 367 | 367 | 368 | 369 | 369 | 370 |
| TOTAL CASH COSTS/ACRE | 7,880 | 8,167 | 8,452 | 8,739 | 9,025 | 9,310 | 9,597 |
| TOTAL CASH COSTS/cwt | 7.80 | 7.36 | 6.99 | 6.67 | 6.40 | 6.17 | 5.96 |
| NON-CASH OVERHEAD COSTS/ACRE | 176 | 183 | 190 | 197 | 204 | 211 | 217 |
| TOTAL COSTS/ACRE | 8,056 | 8,350 | 8,642 | 8,936 | 9,229 | 9,521 | 9,814 |
| TOTAL COSTS/cwt | 7.98 | 7.52 | 7.14 | 6.82 | 6.55 | 6.31 | 6.10 |

NET RETURNS PER ACRE ABOVE OPERATING COSTS

| PRICE | YIELD (40 lb boxes/acre) |  |  |  |  |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $\$ / \mathrm{box}$ | 1,010 | 1,110 | 1,210 | 1,310 | 1,410 | 1,510 | 1,610 |
| 4.00 | $-3,474$ | $-3,360$ | $-3,245$ | $-3,131$ | $-3,016$ | $-2,901$ | $-2,787$ |
| 6.00 | $-1,454$ | $-1,140$ | -825 | -511 | -196 | 119 | 433 |
| 8.00 | 566 | 1,080 | 1,595 | 2,109 | 2,624 | 3,139 | 3,653 |
| 10.00 | 2,586 | 3,300 | 4,015 | 4,729 | 5,444 | 6,159 | 6,873 |
| 12.00 | 4,606 | 5,520 | 6,435 | 7,349 | 8,264 | 9,179 | 10,093 |
| 14.00 | 6,626 | 7,740 | 8,855 | 9,969 | 11,084 | 12,199 | 13,313 |
| 16.00 | 8,646 | 9,960 | 11,275 | 12,589 | 13,904 | 15,219 | 16,533 |

NET RETURNS PER ACRE ABOVE CASH COSTS

| PRICE | YIELD (40 lb boxes/acre) |  |  |  |  |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $\$ /$ box | 1,010 | 1,110 | 1,210 | 1,310 | 1,410 | 1,510 | 1,610 |
| 4.00 | $-3,840$ | $-3,727$ | $-3,612$ | $-3,499$ | $-3,385$ | $-3,270$ | $-3,157$ |
| 6.00 | $-1,820$ | $-1,507$ | $-1,192$ | -879 | -565 | -250 | 63 |
| 8.00 | 200 | 713 | 1,228 | 1,741 | 2,255 | 2,770 | 3,283 |
| 10.00 | 2,220 | 2,933 | 3,648 | 4,361 | 5,075 | 5,790 | 6,503 |
| 12.00 | 4,240 | 5,153 | 6,068 | 6,981 | 7,895 | 8,810 | 9,723 |
| 14.00 | 6,260 | 7,373 | 8,488 | 9,601 | 10,715 | 11,830 | 12,943 |
| 16.00 | 8,280 | 9,593 | 10,908 | 12,221 | 13,535 | 14,850 | 16,163 |

NET RETURNS PER ACRE ABOVE TOTAL COSTS

| PRICE | YIELD (40 lb boxes/acre) |  |  |  |  |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $\$ /$ box | 1,010 | 1,110 | 1,210 | 1,310 | 1,410 | 1,510 | 1,610 |
| 4.00 | $-4,016$ | $-3,910$ | $-3,802$ | $-3,696$ | $-3,589$ | $-3,481$ | $-3,374$ |
| 6.00 | $-1,996$ | $-1,690$ | $-1,382$ | $-1,076$ | -769 | -461 | -154 |
| 8.00 | 24 | 530 | 1,038 | 1,544 | 2,051 | 2,559 | 3,066 |
| 10.00 | 2,044 | 2,750 | 3,458 | 4,164 | 4,871 | 5,579 | 6,286 |
| 12.00 | 4,064 | 4,970 | 5,878 | 6,784 | 7,691 | 8,599 | 9,506 |
| 14.00 | 6,084 | 7,190 | 8,298 | 9,404 | 10,511 | 11,619 | 12,726 |
| 16.00 | 8,104 | 9,410 | 10,718 | 12,024 | 13,331 | 14,639 | 15,946 |

UC COOPERATIVE EXTENSION
Table 5. WHOLE FARM ANNUAL EQUPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS SAN JOAQUIN VALLEY - 2005

ANNUAL EQUIPMENT COSTS

| Yr | Description | Price | $\begin{gathered} \text { Yrs } \\ \text { Life } \end{gathered}$ | Salvage Value | Capital Recovery | Cash Overhead |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Insurance | Taxes |  |
| 05 | Pickup 1/2 ton | 28,000 | 5 | 12,549 | 4,423 | 140 | 203 | 4,766 |
| 05 | Trailer 12' x 16' | 4,500 | 20 | 235 | 386 | 16 | 24 | 426 |
|  | TOTAL | 32,500 |  | 12,784 | 4,809 | 156 | 226 | 5,192 |
|  | 60\% of New Cost * | 19,500 |  | 7,670 | 2,886 | 94 | 136 | 3,115 |

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

| Description | Price | $\begin{gathered} \text { Yrs } \\ \text { Life } \end{gathered}$ | Salvage <br> Value | Capital <br> Recovery | Cash Overhead |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Insurance | Taxes | Repairs |  |
| Irrigation Flat Vinyl Pipe | 455 | 2 |  | 248 | 0 | 0 | 9 | 257 |
| Miscellaneous Tools | 1,000 | 5 |  | 237 | 3 | 0 | 20 | 261 |
| TOTAL INVESTMENT | 1,455 |  | 0 | 486 | 3 | 0 | 29 | 518 |

ANNUAL BUSINESS OVERHEAD COSTS

|  | Units/ | Price/ | Total |  |
| :--- | ---: | ---: | ---: | ---: |
| Description | Farm | Unit | Unit | Cost |
| Land Rent | 10 | acre | 300.00 | 3,000 |
| Liability Insurance | 10 | acre | 42.90 | 429 |
| Office Expense | 10 | acre | 10.00 | 100 |

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
SAN JOAQUIN VALLEY - 2005

| Yr | Description | Actual <br> Hours <br> Used | Capital <br> Recovery | Cash Overhead |  | Operating |  |  | TotalCosts/Hr. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Insurance | Taxes | Repairs | Fuel \& Lube | Total Oper. |  |
| 05 | Pickup 1/2 ton | 285 | 9.31 | 0.29 | 0.43 | 1.81 | 9.82 | 11.63 | 21.67 |
| 05 | Trailer 12' x 16' | 150 | 1.55 | 0.07 | 0.09 | 0.66 | 0.00 | 0.66 | 2.37 |

## UC COOPERATIVE EXTENSION

Table 7. OPERATIONS WITH EQUIPMENT
SAN JOAQUIN VALLEY - 2005

| Operation | Operation <br> Month | Tractor | Implement | NonMachine Labor Hrs/Ac | Material | Broadcast Rate/acre | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Cultural: |  |  |  |  |  |  |  |
| Land Preparation (plow, disc, list) | February | Custom |  |  |  |  |  |
| Plant: | March |  |  | 16.00 |  |  |  |
| Irrigate 2X | March |  |  | 1.00 |  |  |  |
| Irrigate 4X | April |  |  | 2.00 |  |  |  |
| Irrigate 4X | May |  |  | 2.00 |  |  |  |
| Irrigate 10X | June |  |  | 5.00 |  |  |  |
| Irrigate 10X | July |  |  | 5.00 |  |  |  |
| Irrigate 10X | August |  |  | 5.00 |  |  |  |
| Irrigate 10X | September |  |  | 5.00 |  |  |  |
| Irrigate 4X | October |  |  | 2.00 |  |  |  |
| Irrigate 4X | November |  |  | 2.00 |  |  |  |
| Fertilize | April |  |  |  | 15-15-15 | 225.00 | lb |
|  | June |  |  |  | 15-15-15 | 225.00 | lb |
| Weed: Hand | April |  |  | 24.00 |  |  |  |
| Crop Protection: Install Tunnels | November |  |  | 72.00 | See Table 2, Crop |  |  |
| Crop Protection: Dismantle Tunnels | March |  |  |  | Protection |  |  |
| Harvest \& Haul | January | Pickup | Trailer | 96.00 | Boxes | 588.00 | boxes |
|  | February | Pickup | Trailer | 96.00 | Boxes | 588.00 | boxes |
|  | March | Pickup | Trailer | 38.00 | Boxes | 234.00 | boxes |

