

**1988 SAMPLE COST TO ESTABLISH & PRODUCE
DRIP-IRRIGATED PRUNES
IN THE
SACRAMENTO VALLEY**



by

John Edstrom, Colusa County Farm Advisor
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Bill Olson, Butte County Farm Advisor
Joe Osgood, Tehama County Farm Advisor
Craig Weakley, Sutter-Yuba Counties Farm Advisor
Karen Klonsky, Farm Management Specialist, U.C. Davis
and
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UC Cooperative Extension

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This cost study provides detailed information on the sample cost of establishing and producing drip-irrigated prunes in the Sacramento Valley. Costs are projected for a hypothetical 100 acre orchard on 105 acres of land. The 5 non-producing acres are for buildings, roads, ditches, burn area, etc.

This study is part of a series of cost study worksheets which describe the sample cost of establishing drip-irrigated prunes, the cost of producing drip-irrigated prunes, the cost of producing sprinkler - irrigated prunes, and the cost of producing flood-irrigated (mowed) and flood-irrigated (cultivated) prunes. Each study in the series shares a common list of assumptions, but each production study has a separate Cost of Production Worksheet, Monthly Summary of Sample Costs, Equipment List, and Ranging Analysis. Costs given in this sample study are for those of a typical well-managed orchard and are not intended to reflect an average of all orchards in the Sacramento Valley.

Practices listed 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 1988 figures. Some costs or practices listed in this study may not be applicable to your situation. Production costs for prunes can vary based on a number of factors including age of orchard, spacing of trees, type of irrigation system, annual variations in pest pressure and differing management practices. This study is intended only as a guide and can be used as an aid in making production decisions, determining potential returns, preparing budgets and evaluating production loans. A blank "Your Costs" column is provided on the Cost of Production Worksheets to enter your actual costs.

For explanation of calculations used for the study refer to the attached List of Assumptions, call Agricultural Economics Extension, University of California, Davis, California (916) 752-2745, or contact the Farm Advisor in your county.

ESTABLISHMENT AND PRODUCTION COST ASSUMPTIONS FOR GROWING PRUNES

IN THE SACRAMENTO VALLEY - 1988

The following list contains a description of some general assumptions pertaining to the sample costs of establishing and producing prunes in the Sacramento Valley. The establishment assumptions apply to current sample costs for establishing a new orchard. The production assumptions apply to typical sample costs for a well managed, 12 year old prune orchard in full production.

A. ESTABLISHMENT ASSUMPTIONS ONLY

1. Land and trees for establishing a new orchard in 1988:
Bare land value (105 acres): \$2,500/acre
Trees - 155 Trees/acre - 18' X 18' equilateral triangle.
2. Drip irrigation system.
3. Orchard floor management includes herbicide strip spray with mowed centers.

B. ESTABLISHMENT AND PRODUCTION ASSUMPTIONS

1. Land and trees for 12 year old orchard:
Bare land value (105 acres): \$1,335/acre
Establishment costs - 108 Trees/acre -
20' X 20' Spacing. \$4,000/acre

Since only 100 of the 105 total acres are in production, the land value per acre needs to be adjusted to \$1400 per producing acre. Investment costs for land and trees reflect actual cost incurred at time of planting. The annual costs for depreciation are obtained by dividing the initial establishment costs by 20 years. Land is not depreciated. Interest on the investment in land and trees is calculated by multiplying the interest rate (11%) by the average value of land and trees. The average value of the trees is estimated to be one-half of the establishment costs.

2. Labor rates: (include 27% for SDI, FICA, insurance, and other benefits)
Skilled labor (machinery operators): \$7.25/hr
Field labor (irrigators & misc. labor): \$5.40/hr

To account for maintenance and repair time, labor hours for operations involving machinery are 10% higher than the machine hours.

3. Equipment costs:

In allocating the equipment costs per acre, the following calculations were made: (a) "Original Cost" of equipment is the new cost including sales tax. (b) "Depreciation" is straight line with no adjustment for Salvage Value. It is calculated by dividing new cost per acre by the years to trade. (c) "Interest" on investment is figured as one-half of the new cost per acre multiplied by the interest rate. One-half of the new cost is the average value of the equipment during its useful life. (d) The investment per acre used in the cost study is calculated at 60% of the depreciation and interest costs for all new equipment to reflect a mix of new and used equipment.

4. Fuel and repair costs:

The cost of production worksheets contain numbers in two columns with the headings Tractor/Implement No. and Implement No. which refer to the item number on the equipment table. The far right-hand column on the equipment table shows the fuel and repair costs per hour which is multiplied by the hours used per acre for each piece of equipment to obtain the cost per acre for fuel and repairs.

5. Office and business costs include phone, office supplies, accounting fees, etc.

6. County taxes are calculated at 1% of land at acquisition plus 1% of the average value of trees, equipment, buildings and improvements.

7. Equipment insurance is at 0.8% of the average value of equipment.

8. Pickup costs are based on 10,000 miles/year of farm operation at \$0.15/mile.

9. Supervisory fees are not included in the cost study, but are estimated to be between \$30 - \$100/acre.

10. Safe chemical storage is included with the shop building.

11. Irrigation assumptions:

Surface water is assumed as the water source for all systems. If water is pumped from a well then material costs for irrigation (pumping costs) and the ownership costs of a well and pump should be included.

a. Flood irrigated/mowed and Flood irrigated cultivated:

Flood system, six irrigations, 36.00 acre inches/year total.
Gravity flow. Water costs = \$10.00/acre-foot.

b. Sprinkler irrigated: Solid set sprinklers, six irrigations -
24 hour/10 acre sets - 36.00 acre inches/year total. 50 HP Pump.
Capacity: 900 gal/min - 2 acre inches/hour. Electricity costs @
50% plant efficiency (booster pump) = \$25.00/acre-foot.

- c. Drip irrigated: Drip system, daily irrigations, 36.00 acre inches/year total, 25 HP Pump., Capacity: 900 gal/min - 2 acre inches/hour. Electricity costs @ 50% plant efficiency = \$17.00/acre-foot.
12. Harvest costs are based on custom harvest and custom dehydration.
13. Interest on operating capital is based on cultural costs and assumes a 9 month loan at 11%.
14. Orchard floor management:
- a. Flood Irrigated/Mowed and Sprinkler Irrigated: Herbicide strip spray applied in fall, centers mowed for weed control five times, brush chopped in spring, spot treatment with post-emergence herbicide in spring.
 - b. Flood Irrigated/Cultivated: Cross cultivation for weed control three times, cross cultivation for brush disposal in spring.
 - c. Drip Irrigated: Herbicide strip spray applied in fall, spot treatment with post-emergence herbicide in spring and summer, centers mowed for weed control three times, brush chopped in spring.
15. Insect and disease control:
Dormant spray with organophosphate insecticide and oil for control of twig borer, aphids, scale, and mite eggs. Full bloom spray with fungicide for control of brown rot and russet scab.
16. Potassium sulfate (K_2SO_4) is applied at a maintenance level, not at a level high enough to correct a deficiency.

SAMPLE COSTS TO ESTABLISH DRIP IRRIGATED PRUNE ORCHARD
Sacramento Valley - 1988

Skilled labor: \$7.25 per hour
 Field labor: \$5.40 per hour

Interest rate: 11.0%
 155 Trees per acre, 18' X 18' eq. triangle.

| YEAR | Costs per Acre | | | | | | |
|---------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th |
| YIELD (Fresh tons/acre) | | | | 2.4 | 4.8 | 8.0 | 11.0 |
| Planting costs | | | | | | | |
| Pre-plant fumigation, 10' strip | \$200 | | | | | | |
| Land preparation | 75 | | | | | | |
| Survey and mark | 20 | | | | | | |
| Plant, water, and paint | 194 | | | | | | |
| Trees - 155 @ \$3.25 | 504 | | | | | | |
| TOTAL PLANTING COSTS | \$993 | | | | | | |
| Cultural costs: | | | | | | | |
| Training and prune | \$28 | \$70 | \$105 | \$140 | \$155 | \$194 | \$194 |
| Brush chopping | 0 | 0 | 0 | 23 | 23 | 23 | 23 |
| Mow | 14 | 19 | 19 | 14 | 14 | 14 | 14 |
| Irrigation labor | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| Irrigation water @ \$25/ac. ft. + R&M | 63 | 63 | 63 | 79 | 79 | 104 | 104 |
| Fertilizer applied | 14 | 18 | 26 | 32 | 32 | 32 | 107 |
| Strip weed spray | 47 | 47 | 47 | 47 | 47 | 47 | 47 |
| Dormant spray | 0 | 0 | 11 | 22 | 22 | 22 | 22 |
| Disease spray | 0 | 0 | 0 | 0 | 15 | 30 | 30 |
| Replants | 0 | 20 | 10 | 0 | 0 | 0 | 0 |
| Bees, 1 hive/acre @ \$5 | 0 | 0 | 0 | 0 | 5 | 5 | 5 |
| Costs for pick-up truck | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| TOTAL CULTURAL COSTS | \$196 | \$266 | \$309 | \$386 | \$421 | \$500 | \$575 |
| Harvesting Costs: | | | | | | | |
| Harvest | | | | 48 | 96 | 160 | 220 |
| Haul | | | | 17 | 34 | 56 | 77 |
| Dehydrate | | | | 156 | 312 | 520 | 715 |
| TOTAL HARVEST COSTS | | | | \$221 | \$442 | \$736 | \$1,012 |
| Overhead Costs: | | | | | | | |
| Office and business costs | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| County Taxes | 19 | 19 | 19 | 19 | 32 | 35 | 39 |
| Insurance | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| TOTAL OVERHEAD COSTS | \$84 | \$84 | \$84 | \$84 | \$97 | \$100 | \$104 |
| TOTAL CASH COSTS | \$1,272 | \$350 | \$393 | \$691 | \$959 | \$1,336 | \$1,691 |
| ACCUMULATED CASH COSTS | \$1,272 | \$1,622 | \$2,015 | \$2,706 | \$3,665 | \$5,001 | \$6,692 |

| YEAR | Costs per Acre | | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th |
| Depreciation: | | | | | | | |
| Building & equipment | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| TOTAL DEPRECIATION | \$89 | \$89 | \$89 | \$89 | \$89 | \$89 | \$89 |
| Interest on Investment at 11% | | | | | | | |
| Building & equipment | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| Land \$1400/acre | 154 | 154 | 154 | 154 | 154 | 154 | 154 |
| Interest on accumulated cash costs | 140 | 178 | 222 | 298 | 403 | 550 | 736 |
| TOTAL INTEREST ON INVESTMENT | \$358 | \$396 | \$440 | \$516 | \$621 | \$768 | \$954 |
| TOTAL COST FOR THE YEAR | \$1,719 | \$835 | \$922 | \$1,295 | \$1,669 | \$2,193 | \$2,734 |
| CREDIT FROM HARVEST @ \$0.35/POUND (3.2 Dry away) | | | | \$525 | \$1,050 | \$1,750 | \$2,406 |
| NET COST FOR THE YEAR | \$1,719 | \$835 | \$922 | \$770 | \$619 | \$443 | \$327 |
| TOTAL ACCUMULATED NET COST | \$1,719 | \$2,554 | \$3,476 | \$4,246 | \$4,865 | \$5,309 | \$5,636 |

SAMPLE COSTS TO PRODUCE PRUNES - DRIP IRRIGATED/MOWED
Sacramento Valley - 1988

Labor Rate: \$7.25/hr. skilled labor **Interest Rate:** 11%
 \$5.40/hr. field labor **Yield fresh(tns/acre):** 11.0

| Operation | Tractor/ Implement | | Hours | Cash and Labor Costs per Acre | | | | Total Cost | Your Cost |
|-------------------------------------|-----------------------|------------------|-----------|-------------------------------|-------------------|------------------|-----------------|---------------|--------------|
| | No. | Implement No. | | Labor Cost/A | Fuel & Repairs | Material Cost | Custom /Rent | | |
| Cultural costs: | | | | | | | | | |
| Pruning - 108 trees/acre | | | | \$135.00 | | | | \$135 | |
| Brush Chopping | 1 | 5 | 1.1 | 13.92 | \$8.92 | | | 23 | |
| Fertilize (100# N @ \$.19) | | | | | | \$19.00 | \$2.75 | 22 | |
| Potassium sulfate 4 lbs/tree | | | | | | 51.84 | | 52 | |
| Dormant spray | 1 | 4 | .5 | 3.99 | 5.11 | 13.00 | | 22 | |
| Disease spray | 1 | 4 | .5 | 3.99 | 5.11 | 20.51 | | 30 | |
| Mow (3X) | 1 | 5 | .9 | 6.98 | 7.10 | | | 14 | |
| Herbicide (3X) | 2 | 3 | 1.5 | 11.96 | 7.65 | 27.00 | | 47 | |
| Irrigation (Daily) 3 Ac.ft. | 10 | 11 | | | 20.00 | 51.00 | | 71 | |
| Labor | | | 6.0 | 32.40 | | | | 32 | |
| Bees - 1 Hive/acre @ \$5 | | | | | | | 5.00 | 5 | |
| Costs for pick up truck | | | | | 15.00 | | | 15 | |
| Interest on operating capital @ 11% | | | | | | | | | 39 |
| TOTAL CULTURAL COSTS | | | 10 | \$208 | \$69 | \$182 | \$8 | \$506 | |

| | | | | | | | | | |
|----------------------------|--------------|--|--|--|--|--|----------------|----------------|--|
| Harvest Costs: | | | | | | | | | |
| Harvest Costs | \$20 per ton | | | | | | \$220 | \$220 | |
| Haul | \$7 per ton | | | | | | 77 | 77 | |
| Dehydrate (Incl. bin rent) | \$65 per ton | | | | | | 715 | 715 | |
| TOTAL HARVEST COSTS | | | | | | | \$1,012 | \$1,012 | |

| | | | | | | | | | |
|----------------------------------|--|--|--|--|--|--|--|--------------|--|
| Cash overhead: | | | | | | | | | |
| Office and business costs | | | | | | | | \$60 | |
| County Taxes | | | | | | | | 40 | |
| Equipment Insurance | | | | | | | | 5 | |
| TOTAL CASH OVERHEAD COSTS | | | | | | | | \$104 | |

| | | | | | | | | | |
|-------------------------|--|--|--|--|--|--|--|----------------|--|
| TOTAL CASH COSTS | | | | | | | | \$1,623 | |
|-------------------------|--|--|--|--|--|--|--|----------------|--|

| | | | | | | | | | |
|---------------------------------|---------------------|--|--------------|--|--|--|--|--------------|--|
| TOTAL CASH COST/DRY TON: | 11 fresh tons/ac. @ | | 3.2 dry away | | | | | \$472 | |
|---------------------------------|---------------------|--|--------------|--|--|--|--|--------------|--|

| Investment | Per production Acre | Annual Cost | | Total |
|-------------------------------|------------------------|--------------|----------------|--------------|
| | | Depreciation | Interest @ 11% | |
| Land @ \$1,335/acre (bare) | \$1,400 | | \$154 | \$154 |
| Equipment & buildings | 1,163 | \$89 | 64 | 153 |
| Trees (20 yr. depreciation) | 4,000 | 200 | 220 | 420 |
| TOTAL INVESTMENT COSTS | \$6,563 | \$289 | \$438 | \$727 |

| | | | | |
|-----------------------------|---------------------|--|--------------|----------------|
| TOTAL COSTS PER ACRE | | | | \$2,350 |
| TOTAL COST/DRY TON: | 11 fresh tons/ac. @ | | 3.2 dry away | \$684 |

MONTHLY SUMMARY OF
SAMPLE COSTS TO PRODUCE PRUNES - DRIP IRRIGATED/MOWED

Sacramento Valley - 1988

| Operation | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | TOTAL |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|-------------|-------------|------------|-------------|----------------|
| Cultural costs: | | | | | | | | | | | | | |
| Pruning - 108 trees/A | 67.5 | | | | | | | | | | | 67.5 | \$135 |
| Brush Removal | 11.4 | 11.4 | | | | | | | | | | | 23 |
| Fertilize (100# N) | | | | | | | 21.8 | | | | | | 22 |
| K2SO4 - 4 lbs./tree | | | | 8.0 | 12.0 | 16.0 | 16.0 | | | | | | 52 |
| Dormant spray | | 22.1 | | | | | | | | | | | 22 |
| Disease spray | | | 29.6 | | | | | | | | | | 30 |
| Mow (3X) | | | | 4.7 | | 4.7 | | 4.7 | | | | | 14 |
| Herbicide (3X) | | | | 15.5 | | 15.5 | | | | 15.5 | | | 47 |
| Irrigation (Daily) | | | | 7.1 | 10.7 | 14.2 | 14.2 | 14.2 | 10.7 | | | | 71 |
| Labor | | | | 12.2 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | | | | 32 |
| Bees - 1 Hive/acre | | | 5.0 | | | | | | | | | | 5 |
| Pick-up truck costs | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 15 |
| Int.operating capital | .7 | 1.1 | 1.4 | 1.9 | 2.1 | 2.7 | 3.2 | 12.7 | 13.0 | | | | 39 |
| TOTAL CULTURAL COSTS | \$81 | \$36 | \$37 | \$51 | \$30 | \$58 | \$60 | \$37 | \$29 | \$17 | \$1 | \$69 | \$506 |
| Harvest Costs: | | | | | | | | | | | | | |
| Harvest Costs | | | | | | | | 220.0 | | | | | 220 |
| Haul | | | | | | | | 77.0 | | | | | 77 |
| Dehydrate | | | | | | | | 715.0 | | | | | 715 |
| TOTAL HARVEST COSTS | | | | | | | | \$1,012 | | | | | \$1,012 |
| Cash overhead: | | | | | | | | | | | | | |
| Office and business | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 60 |
| County Taxes | | | | 19.9 | | | | | | | | 19.9 | 40 |
| Equipment Insurance | 4.7 | | | | | | | | | | | | 5 |
| TOTAL CASH OVERHEAD | \$10 | \$5 | \$5 | \$25 | \$5 | \$5 | \$5 | \$5 | \$5 | \$5 | \$5 | \$25 | \$104 |
| TOTAL CASH COSTS | \$91 | \$41 | \$42 | \$75 | \$35 | \$63 | \$65 | \$1,054 | \$34 | \$22 | \$6 | \$94 | \$1,623 |

EQUIPMENT AND BUILDING LIST FOR PRUNES - DRIP IRRIGATED/MOWED
Sacramento Valley - 1988

Interest Rate: 11%

Fuel Cost per Gallon \$.65 diesel
 \$.75 unleaded

| ITEM # | DESCRIPTION | NEW COST | ANNUAL USE (ACRES) | COST PER ACRE | LIFE (HRS) | YEARS TO TRADE | OVERHEAD* | | TAR* | HOURLY COSTS -- | | |
|--------------------------|--------------------------|------------------|--------------------|----------------|------------|----------------|--------------|--------------|------|-----------------|----------|--------|
| | | | | | | | INTEREST* | DEPRECIATION | | FUEL* | REPAIRS* | TOTAL |
| Tractors: | | | | | | | | | | | | |
| 1 | 60 HP wheel diesel | \$22,000 | 100 | \$220 | 12,000 | 10 | \$22.00 | \$12.10 | 120% | \$2.61 | \$2.20 | \$4.81 |
| 2 | 30 HP wheel diesel | 15,000 | 100 | 150 | 12,000 | 10 | 15.00 | 8.25 | 120 | 1.31 | 1.50 | 2.81 |
| 3 | Weed sprayer, P.T.O. | 2,750 | 100 | 28 | 1,200 | 10 | 2.75 | 1.51 | 100 | | 2.29 | 2.29 |
| 4 | PTO sprayer, 500 gal. | 13,500 | 100 | 135 | 2,000 | 10 | 13.50 | 7.43 | 80 | | 5.40 | 5.40 |
| 5 | Rotary mower, 10 foot | 5,500 | 100 | 55 | 2,000 | 10 | 5.50 | 3.03 | 120 | | 3.30 | 3.30 |
| 6 | Mounted forklift attach. | 4,500 | 100 | 45 | 3,000 | 10 | 4.50 | 2.48 | 60 | | .90 | .90 |
| 7 | Ladders & Pruning equip. | 1,200 | 100 | 12 | | 10 | 1.20 | .66 | 100 | | | |
| 8 | Truck, 1 1/2 ton | 17,500 | 100 | 175 | 2,000 | 8 | 21.88 | 9.63 | 80 | | | |
| 9 | Pick-up, 1/2 ton | 14,000 | 100 | 140 | 2,000 | 5 | 28.00 | 7.70 | 60 | | | |
| 10 | Drip irrigation system | 55,500 | 100 | 555 | 27,000 | 40 | 13.88 | 30.53 | 36 | | .74 | .74 |
| 11 | Irrigation pump (25 HP) | 8,000 | 100 | 80 | 35,000 | 20 | 4.00 | 4.40 | 36 | | .08 | .08 |
| 12 | Offset disc, 9' 9" | 5,336 | 100 | 53 | 2,500 | 10 | 5.34 | 2.93 | 120 | | 2.56 | 2.56 |
| | Buildings | 25,000 | 100 | 250 | | 35 | 7.14 | 13.75 | | | | |
| | Miscellaneous shop tools | 4,000 | 100 | 40 | | 10 | 4.00 | 2.20 | | | | |
| TOTAL COST | | \$193,786 | | \$1,938 | | | \$149 | \$107 | | | | |
| 60% OF NEW COSTS* | | \$116,272 | | \$1,163 | | | \$89 | \$64 | | | | |

*** DEFINITIONS:**

YEARS TO TRADE----- The projected life of the machine in years adjusted for excessive annual use.

OVERHEAD ----- Per acre per year.

DEPRECIATION ----- "COST PER ACRE" divided by "YEARS TO TRADE"

INTEREST----- ("COST PER ACRE" X "INTEREST RATE") divided by 2 = average interest cost per acre per year.

TAR----- Total accumulated repairs. The total cost of repairs during the machine's life expressed as a percent of "NEW COST". Calculated from equations based on equipment type and annual use.

HOURLY COST OF FUEL----- Diesel fuel, oil and lube costs per hour = HP x cost of diesel fuel/gal X 0.0667.

Gasoline fuel, oil and lube costs per hour = HP x cost of gasoline/gal X 0.0889.

HOURLY COST OF REPAIRS-- ("NEW COST" X "TAR") divided by ("LIFE IN HOURS").

60% OF NEW COSTS ----- Used to reflect a mix of new and used equipment.

PER ACRE COST TO PRODUCE DRIP IRRIGATED/MOWED PRUNES AT VARYING PRICES AND YIELDS

| | YIELD (Dry Tons/acre) | | | | | | |
|-----------------|-----------------------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Cultural Costs | 506 | 506 | 506 | 506 | 506 | 506 | 506 |
| Harvest Costs | 294 | 589 | 883 | 1,178 | 1,472 | 1,766 | 2,061 |
| Cash Overhead | 104 | 104 | 104 | 104 | 104 | 104 | 104 |
| Cash cost/acre | 905 | 1,199 | 1,494 | 1,788 | 2,083 | 2,377 | 2,671 |
| Cash cost/ton | 905 | 600 | 498 | 447 | 417 | 396 | 382 |
| Investment cost | 727 | 727 | 727 | 727 | 727 | 727 | 727 |
| TOTAL COST/ACRE | 1,632 | 1,927 | 2,221 | 2,515 | 2,810 | 3,104 | 3,399 |
| TOTAL COST/TON | 1,632 | 963 | 740 | 629 | 562 | 517 | 486 |

PER ACRE INCOME ABOVE CASH COSTS AT VARYING PRICES AND YIELDS

| \$ per Dry Ton | YIELD (Dry Tons/acre) | | | | | | |
|----------------|-----------------------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 600 | -305 | 1 | 306 | 612 | 917 | 1,223 | 1,529 |
| 700 | -205 | 201 | 606 | 1,012 | 1,417 | 1,823 | 2,229 |
| 800 | -105 | 401 | 906 | 1,412 | 1,917 | 2,423 | 2,929 |
| 900 | -5 | 601 | 1,206 | 1,812 | 2,417 | 3,023 | 3,629 |
| 1,000 | 95 | 801 | 1,506 | 2,212 | 2,917 | 3,623 | 4,329 |
| 1,100 | 195 | 1,001 | 1,806 | 2,612 | 3,417 | 4,223 | 5,029 |
| 1,200 | 295 | 1,201 | 2,106 | 3,012 | 3,917 | 4,823 | 5,729 |

PER ACRE INCOME ABOVE TOTAL COSTS AT VARYING PRICES AND YIELDS

| \$ per Dry Ton | YIELD (Dry Tons/acre) | | | | | | |
|----------------|-----------------------|------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 600 | -1,032 | -727 | -421 | -115 | 190 | 496 | 801 |
| 700 | -932 | -527 | -121 | 285 | 690 | 1,096 | 1,501 |
| 800 | -832 | -327 | 179 | 685 | 1,190 | 1,696 | 2,201 |
| 900 | -732 | -127 | 479 | 1,085 | 1,690 | 2,296 | 2,901 |
| 1,000 | -632 | 73 | 779 | 1,485 | 2,190 | 2,896 | 3,601 |
| 1,100 | -532 | 273 | 1,079 | 1,885 | 2,690 | 3,496 | 4,301 |
| 1,200 | -432 | 473 | 1,379 | 2,285 | 3,190 | 4,096 | 5,001 |