

[Humboldt]

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Cost of production studies

HOW MUCH CAN FARMERS PAY FOR IRRIGATION WATER

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The question of "How much can farmers pay for irrigation water?" can be answered with finality only by placing a price on the water and seeing if farmers will buy it. This solution doesn't answer the question for grower groups, irrigation districts, and other governmental agencies who are contemplating the development of irrigation water supplies and must plan for the payment of such development.

Through a process of judicious budgeting based on realistic assumptions about the area to be irrigated -- kind of crops which will be grown, expected yields, size of farm, managerial ability of the farmers, type and size of equipment which will be used, expected prices, expected costs, and other economic and technological assumptions -- it is possible to estimate income and expenses which appear reasonable after the irrigation is developed. If we budget an expense for all inputs to production - labor, whether family or hired, land, whether owned or rented, all cash costs for supplies and other inputs, and management -- and subtract this from the income we have a residual which can be applied to purchased water.

Theoretically the entire residual described above could be used for purchasing water but this would provide no incentive for the farmer to purchase water. Most analyses therefore allow part of the residual as an incentive for the farmer to use the water. In this analysis we have allowed 5% of the gross income for this incentive.

This analysis presents typical income and costs for crops which are grown in the county under irrigation and gives the net income remaining after all costs except water are subtracted. These net incomes are given for a range of prices and yields. Costs are calculated as follows:

1. Labor at current rates for hired farm labor plus the cost of Social Security and Compensation Insurance.
2. Fuel and repairs at average prices over the lifetime of the equipment.
3. Supplies at current prices.
4. Management at 5% of gross income plus 5% for incentive.
5. Depreciation at straight line method for expected years of life.
6. Interest at 7% of average value (one-half of original cost for depreciable items.)

SAMPLE COSTS TO PRODUCE IRRIGATED PASTURE
NOT INCLUDING THE COST OF WATER

Humboldt County 1970

Based on 80 acres of owned land producing 12 a.u.m. or grazing per year, labor @ \$2.00 and \$1.50 including Social Security and Compensation Insurance

Operation	Hours per Acre	Cash and labor cost per acre			Total
		Labor	Fuel and Repairs	Materials Kind and Quantity Cost	
Cultural Costs					
Fertilize	.3	.60	.30	48-60-0 11.75	12.65
Clip 2x	.6	1.20	.75		1.95
Fence repair	.2	.30	.15	.70	1.15
Irrigate 4x	2.5	3.75			3.75
Reset pipe	.2	.30	.20		.50
Misc.	.2	.30	.20	.50	1.00
TOTAL CULTURAL COSTS		6.45	1.60	12.95	21.00
Cash overhead					
Misc., office, etc.				1.75	
Taxes				15.00	
TOTAL CASH OVERHEAD				16.75	16.75
TOTAL CASH COST		6.45	1.60	29.70	37.75
Management 10% of 12 a.u.m. @ \$5 = \$60.00					6.00
<u>INVESTMENT</u>	<u>Per Acre</u>	<u>Annual Cost</u>			
		<u>Depreciation</u>	<u>Interest 7%</u>		
Land	\$600		\$ 42.00		
Stand	42	\$ 6.00	1.45		
Well & Pump, Pipe	50	2.50	1.75		
Buildings	20	1.65	.70		
Equipment	175	17.50	6.15		
Fence	25	1.65	.90		
Total	\$912	\$ 29.30	\$ 52.95		82.25
TOTAL COST PER ACRE					126.00
Cost per a.u.m. @ 12 a.u.m. yield					10.50

NET INCOME PER ACRE AFTER PAYING ALL EXPENSES EXCEPT WATER
AT VARIOUS YIELDS AND PRICES

Yield a.u.m.	Price Per Animal Unit Month				
	4.00	4.50	5.00	5.50	6.00
10	-84.00	-79.50	-75.00	-70.50	-66.00
12	-76.80	-71.40	-66.00	-60.60	-55.20
14	-69.60	-63.30	-57.00	-50.70	-44.40
16	-62.40	-55.20	-48.00	-40.80	-33.60

The above analysis indicates that farm operators are: (1) not getting \$2.00 per hour for their labor (2) not getting a 10% of income return for their management know-how (3) not getting a 7% return on their capital investment and in some cases, probably not recouping all of their cash costs.

Thus, based on the analysis of the pasture enterprise there is not economic ability to pay for more water.

The following analyses cover cost projections based on coastal production areas other than Humboldt County because of lack of irrigation experience with these crops in this area.

This is included because of cropping interest in Humboldt County and to show the relationship of ability to pay for irrigation water to the possible change in crop patterns to these crops in the future.

SAMPLE COSTS TO PRODUCE ARTICHOKE
 NOT INCLUDING THE COST OF WATER
 Humboldt County - 1970

Yield 5,000 lbs. per acre, labor \$2.00 and \$1.50 including Social Security and Compensation Insurance

Operation	Hours per Acre	Cash and labor cost per acre				Total
		Labor	Fuel and Repairs	Materials Kind and Quantity	Cost	
Cultural Costs						
Cut tops	1.1	2.20	1.40			3.60
Disc	.5	1.00	.80			1.80
Plow	1.2	2.40	2.10			4.50
Cultivate 8x	7.0	14.00	10.25			24.25
Irrigate 4x	8.0	12.00				12.00
Fertilize 3x	1.0	2.00	1.00	Material	40.00	43.00
Insecticide 10x				Material	28.00	
				Application	30.00	58.00
Slug Control				Material	7.00	
				Application	2.00	9.00
Misc.	4.0	8.00	4.00		8.00	20.00
TOTAL CULTURAL COSTS		41.60	19.55		115.00	176.15
Harvest costs						
Pick	50.00	75.00				75.00
Haul	4.00	8.00	4.00			12.00
Pack				180 crates @ 70¢	126.00	126.00
TOTAL HARVESTS COSTS		83.00	4.00		126.00	213.00
Cash overhead						
Misc., office, etc.					27.10	
Taxes					16.00	
TOTAL CASH OVERHEAD					43.10	43.10
TOTAL CASH COST		127.30	23.55		284.10	432.25
Management 10% of 5,000 lb. @ 9¢ = 450.00						45.00
INVESTMENT						
		<u>Per Acre</u>		<u>Annual Cost</u>		
				<u>Depreciation</u>	<u>Interest 7%</u>	
Land		600			42.00	
Stand		50		5.00	1.75	
Irrigation system		70		4.15	2.45	
Buildings		10		1.00	.35	
Equipment		230		23.00	8.05	
TOTAL		960		33.15	54.60	87.75
TOTAL COST PER ACRE						565.00
Cost per pound @ 5,000 lb. yield						11.3¢

NET INCOME PER ACRE AFTER PAYING ALL EXPENSES EXCEPT WATER
 AT VARIOUS YIELDS AND PRICES

Yield pounds.	Price - Cents Per pound				
	7	8	9	10	11
3,000	-246.00	-219.00	-192.00	-165.00	-138.00
4,000	-225.50	-189.50	-153.50	-117.50	- 81.50
5,000	-205.00	-160.00	-115.00	- 70.00	- 25.00
6,000	-184.50	-130.50	- 76.50	- 22.50	31.50
7,000	-164.00	-101.00	- 38.00	25.00	88.00

SAMPLE COSTS TO PRODUCE CARROTS
 NOT INCLUDING THE COST OF WATER
 Humboldt County - 1970

Yield 15 tons, labor \$2.00 and \$1.50 including Social Security and Compensation Insurance.

Operation	Hours per Acre	Cash and labor cost per acre				Total
		Labor	Fuel and Repairs	Materials		
				Kind and Quantity	Cost	
Cultural costs						
Plow	1.2	2.40	2.10			4.50
Disc 2x	1.0	2.00	1.60			3.60
Herbicide					10.00	10.00
Disc 2x	1.0	2.00	1.60			3.60
Plant	1.0	2.00	1.60	Seed 3 lb. @ \$3	9.00	12.60
Irrigate 4x	4.0	6.00				6.00
Cultivate 4x	2.4	4.80	3.80			8.60
Weed & Pest Control				Weed oil & insecticides Application	32.00 7.00	39.00
Fertilize				Material Application	25.00 2.50	27.50
TOTAL CULTURAL COSTS		19.20	10.70		85.50	115.40
TOTAL HARVEST COSTS				15 tons @ \$30	450.00	450.00
Cash Overhead						
Misc., office, etc.					25.40	
Taxes					16.00	
TOTAL CASH OVERHEAD					41.40	41.40
TOTAL CASH COST		19.20	10.70			606.80
Management 10% of 15 ton @ \$50 = \$750						75.00
INVESTMENT						
		<u>Per Acre</u>		<u>Annual Cost</u>		
				<u>Depreciation</u>	<u>Interest 7%</u>	
Land		\$ 600			42.00	
Irrigation System		70		4.15	2.45	
Buildings		10		1.00	.35	
Equipment		230		23.00	8.05	
Total		\$ 910		28.15	15.05	43.20
TOTAL COST PER ACRE						725.00
Cost per ton @ 15 ton yield						48.40

NET INCOME PER ACRE AFTER PAYING ALL EXPENSES EXCEPT WATER
AT VARIOUS YIELDS AND PRICES

Yield Tons	Price - Dollars per Ton				
	30	40	50	60	70
10	-230.00	-140.00	- 50.00	40.00	130.00
12.5	-237.50	-125.00	- 12.50	100.00	212.50
15	-245.00	-110.00	25.00	160.00	295.00
17.5	-252.50	- 95.00	62.50	220.00	377.50
20	-260.00	- 80.00	100.00	280.00	460.00

SAMPLE COSTS TO PRODUCE POTATOES
NOT INCLUDING THE COST OF WATER

Humboldt County - 1970

Yield 200 sacks marketed, labor @ \$2.00 and \$1.50 including Social Security and Compensation Insurance.

Operation	Hours per Acre	Cash and labor cost per acre				Total
		Labor	Fuel and Repairs	Materials		
				Kind and Quantity	Cost	
Cultural costs						
Plow	1.2	2.40	2.10			4.50
Disc 2x	1.0	2.00	1.60			3.60
Herbicide					10.00	10.00
Disc 2x	1.0	2.00	1.60			3.60
Cut seed	6.0	9.00		Seed 1800 lbs.	90.00	99.00
Dust or dip/seed				1800 lbs. @ 3¢	5.40	5.40
Plant & fertilize 2 men	.6	2.10	1.00	128-160-0	32.00	35.10
Aphid control 3x				Material applied	25.00	25.00
Cultivate	.6	1.20	1.00			2.20
Hand weed	5.0	7.50				7.50
Blight spray				Material applied	6.50	6.50
Irrigate 10x	10.0	15.00				15.00
TOTAL CULTURAL COSTS		41.20	7.30		78.90	217.40
Harvest costs						
Beat vines 2x	1.0	2.00	1.60			3.60
Dig				Contract	10.00	10.00
Harvest & deliver				12.5 ton @ \$5.40	67.50	67.50
TOTAL HARVEST COSTS		2.00	1.60		77.50	81.10
Cash overhead						
Misc., office, etc.					25.30	
Taxes					16.00	
TOTAL CASH OVERHEAD					41.30	41.30
TOTAL CASH COST		43.20	8.90		197.20	339.80
Management 10% of 200 cwt. @ \$2.50 - \$500						50.00
INVESTMENT						
		<u>PER ACRE</u>		<u>Annual Cost</u>		
				<u>Depreciation</u>	<u>Interest 7%</u>	
Land		600			42.00	
Irrigation system		70		4.15	2.45	
Buildings		10		1.00	.35	
Equipment		230		23.00	8.05	
Total		910		28.15	15.05	43.20
TOTAL COST PER ACRE						433.00
Cost per cwt. @ 200 cwt. yield						2.16

NET INCOME PER ACRE AFTER PAYING ALL EXPENSES EXCEPT WATER
AT VARIOUS YIELDS AND PRICES

Yield CWT	Price Per CWT				
	2.00	2.25	2.50	2.75	3.00
100	-169.25	-146.75	-124.25	-101.75	- 79.25
150	- 96.15	- 62.40	- 28.60	5.15	38.85
200	- 23.00	22.00	67.00	112.00	157.00
250	50.15	106.40	162.60	218.90	275.15
300	123.25	190.75	258.25	325.75	393.25