

# **Dryland Cereal Grain Production Cost Analysis: Conventional versus Notill .**

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**Riverside County, 1987-88**

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## **Aknowledgement**

**We would like to thank all the small grain growers and equipment dealers in western Riverside County who took part in this study and contributed information and time.**

**To simplify information, trade names of products have been used. No endorsement of named products is intended nor is criticism implied of similar products which are not mentioned.**



## INTRODUCTION

The goal of this study is to provide a sample of production costs for dryland cereals that growers and managers can use as a guideline to evaluate their operations. Two terms, *cereals* or *small grains*, will be used to indicate wheat or barley. The information presented here is a **sample and not a county average**. Several assumptions were made and different approaches were considered and are explained in their appropriate spaces.

## SMALL GRAIN PRODUCTION AND ACREAGE IN RIVERSIDE COUNTY

Riverside County has more than 50,000 acres of cereals planted each year for grain production. The major portion of the dryland cereal production is located in western Riverside County. Table 1 shows the acreage and yield fluctuation over eight years.

**Table 1. SMALL GRAIN ACREAGE AND PRODUCTION IN RIVERSIDE COUNTY, 1980-88**

YEARS	BARLEY			OATS			WHEAT		
	ACRES	TONS	LB/A	ACRES	TONS	LB/A	ACRES	TONS	LB/A
1980	20800	15060	1448	1600	2663	3329	18750	41035	4377
1981	25300	15270	1207	1454	880	1207	28876	72028	4989
1982	24625	32362	2628	1695	1279	1509	23457	58355	4975
1983	14115	16514	2340	1500	2205	2940	16354	35488	4340
1984	23460	3988	340	6593	659	200	25137	47871	3809
1985	16346	3923	480	6625	928	280	27414	41121	3000
1986	17069	17410	2040	3179	1589	1000	35686	81364	4560
1987	10920	2730	500	1815	454	500	20350	34595	3400
1988	9600	1728	360	2460	787	640	29319	29298	2760
Mean	18026	12109	1260	2992	1271	1289	24141	49017	4023

Data based on Agricultural Commissioner's reports 1980-88

Table 2 shows western Riverside County small grain acreage and production.

**TABLE 2. WESTERN RIVERSIDE COUNTY SMALL GRAIN ACREAGE AND RELATIVE YIELD, 1980-88**

Year	BARLEY			OATS			WHEAT		
	Acres	Lb/a	Lb/a (%) <sup>1</sup>	Acres	Lb/a	Lb/a (%)	Acres	Lb/a	Lb/a (%)
1980	20700	1440	99.4	1600	3329	100.0	4350	1598	36.5
1981	25200	1200	99.4	1458	1207	100.0	6300	2000	40.1
1982	24625	2628	100.0	1660	1457	96.6	7800	3768	75.7
1983	14115	2340	100.0	1500	2940	100.0	9050	3000	69.1
1984	23320	320	94.1	6593	200	100.0	10729	540	14.2
1985	15971	420	87.5	6625	280	100.0	13780	540	18.0
1986	16789	2020	99.0	3179	1000	100.0	18364	2620	57.5
1987	10800	500	100.0	1750	400	80.0	11250	882	25.9
1988	9600	360	100.0	2300	400	62.5	14020	610	22.1
MEAN	17902	1247	97.7	2963	1246	93.2	10227	1786	39.9

1- Western Riverside yield as percent of county yield

Data based on Agricultural Commissioner's annual reports for 1980 through 1988

## TECHNICAL INFORMATION

### 1. System description: no-till and conventional tillage.

No-till is a cultural practice that excludes soil tillage (discing operations). In its simplest form, it includes a preplant herbicide application, seed and fertilizer drilling, and any other mid season fertilization and weed control.

In Riverside County, conventional tillage has been reduced to its bare minimum: one or two discing operations to prepare the soil and control the weeds; fertilizing and seeding that can be combined, and a midseason herbicide spraying and fertilizing. The remainder of activities are similar in both systems.

### 2. Cultural Practices in Western Riverside County -- A Summary

Small grains are grown on a variety of soils. However, soils of fine texture are preferred to sandy soils because of their higher water retention. This becomes critical in low rain fall years.

### Land Preparation

The number of operations performed depends on the type of practice a grower follows. In summer fallow, one discing operation may suffice. If fallow extends for a year, which is not very common, a plowing and one or two discing operations may be required.

### Planting

Varieties. Several varieties are used by growers. Gus and Prato are two of the most popular varieties used for barley, while Yecora Rojo and sometimes Anza are used for wheat.

Rates. Seeding rate varies from 50 to 80 pounds/acre for barley and from 65 to 100 pounds/acre for wheat.

Dates. Planting begins in late November and extends through December. Occasionally, planting takes place as late as the first two weeks in January. *Harvesting* takes place beginning June and extends through July.

### Weed Control

Weeds are controlled either by preplant cultivation--after the first good rains of the season--or preplant chemical spray. Generally, Glyphosate® is used in this instance. Postemergence treatments are solely chemical and include 2,4-D®, Buctril/brominal®, Glean®, Avenge®, Hoelon®, and /or other arrays of chemicals. Main targeted weeds are wild oats, mustard and lambsquarter families.

### Yield

Yields differ by crop. Averaged over the last five years (1984-88), barley and oats netted about 540 to 720 lb/acre each and wheat produced 1150 lb/acre. One should keep in mind that the last five years (1984-88) have been dry and production levels have been low.

## DRYLAND CEREALS PRODUCTION COST DEVELOPMENT AND ANALYSIS

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### 1. Assumptions

To arrive at meaningful information and relevant sample costs, several assumptions were made and are briefly explained below.

- *Yield* level was set at 2000 lb/acre (1 ton/acre) regardless of production system.
- The prevailing *price* at the time of the study was \$ 5.15/cwt (\$ 0.0515/lb).
- *Discing* for conventional tillage was limited to one operation.
- *Machine time* was calculated with 80% efficiency. The 20% deduction is to account for turning around, fueling, lubricating, etc.

- *Fuel and lubrication* were calculated using the American Society Agricultural Engineers guidelines [Yearbook, 1977]
- *Repair* cost estimates were also based on the above mentioned guidelines.
- *Interest rate* on operating capital and average investment was set at 10%. Interest on operating capital was calculated as follows:

$$\underline{C = (M) * P * (I/12)}$$

- Where C = interest on capital;
- M = operating cost of equipment (fuel, lube, repair) and material used during the month;
- P = period between the operation and harvest time in months;
- and (I/12) = interest rate per month (annual rate divided by 12 months).

- *Interest* on investment was calculated as follows:

$$\underline{I = AI * i}$$

- where I = interest on investment;
- AI = Average Investment (,i.e,Purchase Price/2);
- and i = interest rate.

- *Equipment taxes, insurance and housing* (TIH) on average investment was set at 2%.
- *Depreciation* was calculated on straight line basis.
- *Land* cost was assumed to be 25% of gross revenue.
- No *management charge* was included in the cost of production. However, the difference between total costs and gross revenues reflects management returns.
- *Equipment listing and Values*. Variation in ages and values of equipment made it impossible to come up with an average or typical profile for the county. We used the following procedure to reflect the impact of various levels of equipment values on production costs. Taking the equipment complement listed in Table 3 which we thought would be typical for a farm with 1000 acres or more, we assigned three levels of equipment values. First we used current value (100% or new machinery value) then reduced it to 60% and 30% to reflect the existence and impacts of the mix of old and new equipment in the farm. These three levels of equipment values are hereafter referred to as high, medium and low, for 100%, 60%, and 30%, respectively.

**Table 3. Equipment List For 1000 Acres or More, Dryland Cereal Grains. Riverside County, 1987-88**

Item	Size	List Price	Purchase Price
Tractor (4WD)	150 HP	62,500	50,000
Combine	18 FT	93,750	75,000
Sprayer (SP)	50 FT	18,750	15,000
Truck	50 HP	27,500	22,000
Truck	50 HP	27,500	22,000
Grain Drill	24 FT	27,000	24,300
Disk	21 FT	17,000	17,000
Total		274,000	225,300
100% of new value (high)		274,000	225,300
60% of new value (medium)		164,000	135,180
30% of new value (low)		82,200	40,500

## 2. Cost Analysis

Table 4 provides the summary of estimated costs based on our assumptions and procedures of calculations. Detail cost figures are provided in Tables 8 through 13.

**Table 4. Summary of Dryland Cereal Grain Production Cost Estimates at Different Equipment Values. Riverside County, 1987-88**

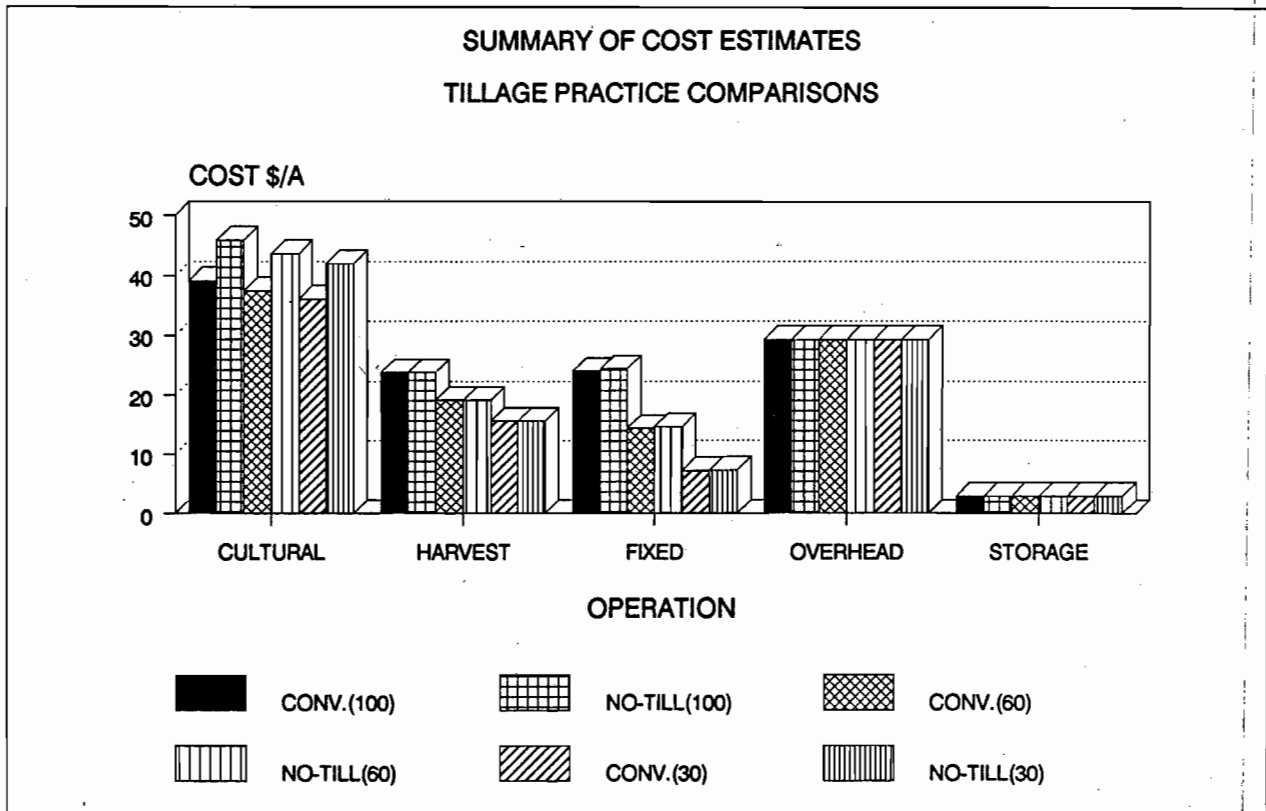
Costs (\$/a)	High		Medium		Low	
	Conv.	No-Till	Conv.	No -Till	Conv.	No -Till
Cultural	39.18	45.84	37.40	43.66	36.07	42.01
Harvesting	23.84	23.84	19.19	19.19	15.70	15.70
Overhead	29.25	29.25	29.25	29.25	29.25	29.25
Fixed	24.06	24.42	14.43	14.65	7.22	7.33
Storage	3.00	3.00	3.00	3.00	3.00	3.00
<b>Total</b>	<b>119.33</b>	<b>126.36</b>	<b>103.27</b>	<b>109.74</b>	<b>91.23</b>	<b>97.29</b>

Notice that production costs are highest and profits are lowest in the high value machinery category (100%, new) when compared to medium and low value machinery complement (60



and 30%). However, one should realize that the difference between the machinery costs in the high category and the other two categories reflects the amount that should be saved in order to replace the old equipment with new equipment.

The following graph is a pictorial representation of the data presented in Table 4. It compares the cost of production in relation to the three levels of machinery values under the two tillage practices: conventional and no-till systems.



Overall, no-till was found to be more costly than the conventional tillage. This is because no-till requires more spraying than the conventional tillage. If the assumption that there is no yield difference between the no-till and conventional method is accurate, and everything else being equal, the no-till will be less profitable than the conventional method. However, beneficial effects of no-till (such as soil and water conservation) are not accounted for here.

### 3. Break-even Analysis

This is a valuable tool, the calculation of which can aid in managerial decision making. Table 5 provides **break-even yields** at various levels of expected prices. Similarly, **break-even prices** can be calculated at various levels of expected yields. By studying the various combinations of such break-even prices and yields, managers can form their own expectations about the probability of obtaining a price and yield combination that would cover their costs. Break-even prices and yields can also be calculated based on variable costs. The results can help the manager decide what course of action to take .

Break-even yields are calculated as follows:

$$\frac{\text{Total Cost}}{\text{Price}}$$

Break-even Prices are calculated as follows:

$$\frac{\text{Total Cost}}{\text{Yield}}$$

**TABLE 5. BREAK-EVEN YIELD AND PRICE MATRIX FOR DRYLAND CEREAL GRAINS. RIVERSIDE COUNTY, 1987-88**

	High <sup>1</sup>		Medium		Low	
	Conv <sup>2</sup> \$/a	No-till \$/a	Conv \$/a	No-till \$/a	Conv \$/a	No-till \$/a
Price \$/lb	119.3 <sup>3</sup>	126.4	103.3	109.3	91.2	97.3
.035	3409.4 <sup>4</sup>	3610.3	2950.6	3122.0	2606.6	2779.7
.040	2983.2	3159.0	2581.8	2731.8	2280.8	2432.2
.045	2651.8	2808.0	2294.9	2428.2	2027.3	2162.0
.050	2386.6	2527.2	2065.4	2185.4	1824.6	1945.8
.055	2169.6	2297.5	1877.6	1986.7	1658.7	1768.9
.060	1988.8	2106.0	1721.2	1821.2	1520.5	1621.5

- 1- High, medium, and low refer to 100, 60, and 30% machinery values
- 2- Conventional tillage
- 3- Production cost in dollars per acre.
- 4- Required yield (lb/A) to break-even.

Graphical presentations of the break-even analysis are included in the appendix (figures 2-4). Note that the break-even level will be at the point where the horizontal cost lines cross the gross return lines. The break-even point of covering variable costs at different levels of gross return will be determined by locating the intersection of the variable cost line and the gross return lines. The break-even point of covering the total cost is also determined in a similar fashion.

#### 4. Returns to Management.

As the total cost did not include management charges, a sample analysis such as in Tables 6 and 7 will help show what returns to management could be at various levels of yields and prices, given the cost of production.

Following is the formula to calculate returns to management.

$$\text{Returns to Management} = (\text{Price} * \text{Yield}) - \text{Production Costs}$$

**TABLE 6. RETURNS TO MANAGEMENT, DRYLAND CEREAL GRAIN PRODUCTION: CONVENTIONAL TILLAGE AT LOW MACHINERY VALUE. RIVERSIDE COUNTY, 1987-88**

PRICE (\$/lb)	YIELD IN POUNDS PER ACRE									
	1200 <sup>1</sup>	1400	1600	1800	2000	2200	2400	2600	2800	3000
.035	-49.23 <sup>2</sup>	-42.23	-35.23	-28.23	-21.23	-14.23	-7.23	-0.20	6.77	13.70
.040	-43.23	-35.23	-27.23	-19.23	-11.23	-3.23	4.77	12.77	20.77	28.77
.045	-37.23	-28.23	-19.23	-10.23	-1.23	7.77	16.77	25.77	34.70	43.77
.050	-31.23	-21.23	-11.23	-1.23	8.77	18.77	28.77	38.77	48.77	58.77
.055	-25.23	-14.23	-3.23	7.77	18.77	29.77	40.77	51.77	62.77	73.77
.060	-19.23	-7.23	4.77	16.77	28.77	40.77	52.77	64.77	76.77	88.77
.065	-13.23	-0.23	12.77	25.77	38.77	51.77	64.77	77.7	90.77	103.77

1- Yield in pounds/acre

2- Returns in dollars/acre

Total cost/acre (variable and fixed costs) = \$ 91.23 .

**TABLE 7. RETURNS TO MANAGEMENT, DRYLAND CEREAL GRAIN PRODUCTION :NO-TILL AT LOW MACHINERY VALUE. RIVERSIDE COUNTY, 1987-88**

PRICE (\$/LB)	YIELD IN POUNDS PER ACRE									
	1200 <sup>1</sup>	1400	1600	1800	2000	2200	2400	2600	2800	3000
.035	-55.29 <sup>2</sup>	-48.29	-41.29	-34.29	-27.29	-20.29	-13.29	-6.29	0.71	7.71
.040	-49.29	-41.29	-33.29	-25.29	-17.29	-9.29	-1.29	6.71	14.71	22.71
.045	-43.29	-34.29	-25.29	-16.29	-7.29	1.71	10.71	19.71	28.71	37.71
.050	-37.29	-27.29	-17.29	-7.29	2.71	12.71	22.71	32.71	42.71	52.71
.055	-31.29	-20.29	-9.29	1.71	12.71	23.71	34.71	45.71	56.71	67.71
.060	-25.29	-13.29	-1.29	10.71	22.71	34.71	46.71	58.71	70.71	82.71
.065	-19.29	-6.29	6.71	19.71	32.71	45.71	58.71	71.71	84.71	97.71

1- Yield in pounds/acre

2- Returns in dollars/acre

Total cost/acre (variable and fixed costs). = \$ 97.29

## **APPENDICES**

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Table 8. Dryland Cereal Grain Sample Enterprise Budget-Conventional Tillage  
Riverside County, 1987-88

BASED ON:

1000 acres dryland cereals (in a farm of more than 1000 A)  
Machinery value @ 100% of new cost  
\$8.00/hour labor wage  
Dry land farming

Gross Income @ Yield 2000 lbs/acre and price of \$.0515/lb. 103.00

Cultural Operations	Hours/Acre	Labor Cost \$	Equipment Cost \$	Materials					Total Cost/Acre \$
				Kind	Amount	Unit	Price/Unit (\$)	Cost/Acre (\$)	
Disk 1X	0.16	1.41	2.19						3.60
Plant	0.14	1.23	3.33	Seed	90.00	lb.	0.09	8.10	12.66
Fertilize				Nit.	65.00	lb.	0.18	11.70	11.70
				Phos.	3.50	lb.	1.17	4.10	4.10
Herbicide	0.04	0.35	0.38	Glean	0.20	oz.	15.00	3.00	3.73
				2,4-D	0.66	pt.	2.00	1.32	1.32
Interest on operating capital									2.08
Total cultural costs:									39.19
Harvest Costs:									
Combine	0.19	1.67	8.33						10.00
Hauling	0.60	5.28	8.56						13.84
Total Harvest Cost:									23.84
INCOME ABOVE CULTURAL AND HARVEST COSTS:									39.97
Cash overhead (office supplies, clerical, etc.)									3.50
Land rent @ one-fourth of crop value									25.75
Total cash overhead and land rent									29.25
INCOME ABOVE CULTURAL, HARVEST AND OVERHEAD COSTS:									36.47
FIXED COSTS:									
Equipment depreciation									
Disking									1.40
Planting									2.26
Spraying									0.23
Combining									4.54
Hauling									4.75
Total depreciation:									13.18
Equipment Interest @10% of average investment									
Disking									1.26
Planting									1.90
Spraying									0.22
Combining									2.94
Hauling									2.74
Total Interest:									9.06
Equipment taxes, insurance and housing (TIH) @2% of average investment									
Disking									0.25
Planting									0.38
Spraying									0.04
Combining									0.59
Hauling									0.55
Total TIH:									1.81
TOTAL FIXED COSTS:									24.05
Storage @\$3/ton									3.00
TOTAL OF ALL COSTS:									119.33
INCOME ABOVE CULTURAL, HARVEST, OVERHEAD & FIXED COSTS:									-16.33

Table 9. Dryland Cereal Grain Sample Enterprise Budget-Conventional Tillage  
Riverside County, 1987-88

BASED ON:

1000 acres dryland cereals (in a farm of more than 1000 A)  
Machinery value @ 60% of new cost  
\$8.00/hour labor wage  
Dry land farming

Gross Income @ Yield 2000 lbs/acre and price of \$.0515/lb. 103.00

Cultural Operations	Hours/Acre	Labor Cost \$	Equipment Cost \$	Materials			Price/Unit (\$)	Cost/Acre (\$)	Total Cost/Acre \$
				Kind	Amount	Unit			
Disk 1X	0.16	1.41	1.62					3.03	
Plant	0.14	1.23	2.26	Seed	90.00	lb.	0.09	8.10	11.60
Fertilize				Nit.	65.00	lb.	0.18	11.70	11.70
				Phos.	3.50	lb.	1.17	4.10	4.10
Herbicide	0.04	0.35	0.33	Glean	0.20	oz.	15.00	3.00	3.68
				2,4-D	0.66	pt.	2.00	1.32	1.32
Interest on operating capital									1.98
Total cultural costs:									37.40
Harvest Costs:									
Combine	0.19	1.67	5.36						7.03
Hauling	0.60	5.28	6.88						12.16
Total Harvest Cost:									19.19
INCOME ABOVE CULTURAL AND HARVEST COSTS:									46.41
Cash overhead (office supplies, clerical, etc.)									
Land rent @ one-fourth of crop value									3.50
Total cash overhead and land rent									25.75
									29.25
INCOME ABOVE CULTURAL, HARVEST AND OVERHEAD COSTS:									42.91
FIXED COSTS:									
Equipment depreciation									
Disking									0.84
Planting									1.36
Spraying									0.14
Combining									2.72
Hauling									2.85
Total depreciation:									7.91
Equipment Interest @10% of average investment									
Disking									0.76
Planting									1.14
Spraying									0.13
Combining									1.76
Hauling									1.64
Total Interest:									5.44
Equipment taxes, insurance and housing (TIH) @2% of average investment									
Disking									0.15
Planting									0.23
Spraying									0.03
Combining									0.35
Hauling									0.33
Total TIH:									1.09
TOTAL FIXED COSTS:									14.43
Storage @\$3/ton									3.00
TOTAL OF ALL COSTS:									103.27
INCOME ABOVE CULTURAL, HARVEST, OVERHEAD & FIXED COSTS:									-0.27

Table 10. Dryland Cereal Grain Sample Enterprise Budget-Conventional Tillage  
Riverside County, 1987-88

BASED ON:

1000 acres dryland cereals (in a farm of more than 1000 A)  
Machinery value @ 30% of new cost  
\$8.00/hour labor wage  
Dry land farming

Gross Income @ Yield 2000 lbs/acre and price of \$.0515/lb. 103.00

Cultural Operations	Hours/ Acre	Labor Cost \$	Equipment Cost \$	Materials				Total Cost/ Acre \$	
				Kind	Amount	Unit	Price/ Unit (\$)		Cost/ Acre (\$)
Disk 1X	0.16	1.41	1.19					2.60	
Plant	0.14	1.23	1.47	Seed	90.00	lb.	0.09	8.10	10.80
Fertilize				Nit.	65.00	lb.	0.18	11.70	11.70
				Phos.	3.50	lb.	1.17	4.10	4.10
Herbicide	0.04	0.35	0.29	Glean	0.20	oz.	15.00	3.00	3.64
				2,4-D	0.66	pt.	2.00	1.32	1.32
Interest on operating capital								1.91	
Total cultural costs:								36.07	

Harvest Costs:									
Combine	0.19	1.67	3.13					4.81	
Hauling	0.60	5.28	5.61					10.89	
Total Harvest Cost:								15.70	

INCOME ABOVE CULTURAL AND HARVEST COSTS: 51.23

Cash overhead (office supplies, clerical, etc.)								3.50	
Land rent @ one-fourth of crop value								25.75	
Total cash overhead and land rent								29.25	

INCOME ABOVE CULTURAL, HARVEST AND OVERHEAD COSTS: 47.73

FIXED COSTS:									
Equipment depreciation									
Disking								0.42	
Planting								0.68	
Spraying								0.07	
Combining								1.36	
Hauling								1.43	
Total depreciation:								3.96	

Equipment interest @10% of average investment									
Disking								0.38	
Planting								0.57	
Spraying								0.07	
Combining								0.88	
Hauling								0.82	
Total interest:								2.72	

Equipment taxes, insurance and housing (TIH) @2% of average investment									
Disking								0.08	
Planting								0.11	
Spraying								0.01	
Combining								0.18	
Hauling								0.16	
Total TIH:								0.54	

TOTAL FIXED COSTS:								7.22	
Storage @\$3/ton								3.00	

TOTAL OF ALL COSTS: 91.23

INCOME ABOVE CULTURAL, HARVEST, OVERHEAD & FIXED COSTS: 11.77

Table 11. Dryland Cereal Grain Sample Enterprise Budget-No Till  
Riverside County, 1987-88

BASED ON:

1000 acres dryland cereals (in a farm of more than 1000 A)  
Machinery value @ 100% of new cost  
\$8.00/hour labor wage  
Dry land farming

Gross Income @ Yield 2000 lbs/acre and price of \$.0515/lb.										103.00
Cultural Operations	Hours/Acre	Labor Cost \$	Equipment Cost \$	Materials					Total Cost/Acre \$	
				Kind	Amount	Unit	Price/Unit (\$)	Cost/Acre (\$)		
Disk 1X	0.00	0.00	0.00						0.00	
Plant	0.17	1.50	5.74	Seed	90.00	lb.	0.09	8.10	15.34	
Fertilize				Nit.	65.00	lb.	0.18	11.70	11.70	
				Phos.	3.50	lb.	1.17	4.10	4.10	
Herbicide	0.04	0.35	0.38	Glean	0.20	oz.	15.00	3.00	3.73	
				2,4-D	0.66	pt.	2.00	1.32	1.32	
	0.04	0.35	0.38	RNDUP	12.00	oz.	0.54	6.48	7.21	
Interest on operating capital									2.45	
Total cultural costs:									45.84	
Harvest Costs:										
Combine	0.19	1.67	8.33						10.00	
Hauling	0.60	5.28	8.56						13.84	
Total Harvest Cost:									23.84	
INCOME ABOVE CULTURAL AND HARVEST COSTS:										33.32
Cash overhead (office supplies, clerical, etc.)										3.50
Land rent @ one-fourth of crop value										25.75
Total cash overhead and land rent									29.25	
INCOME ABOVE CULTURAL, HARVEST AND OVERHEAD COSTS:										29.82
FIXED COSTS:										
Equipment depreciation										
Disking									0.00	
Planting									3.62	
Spraying									0.47	
Combining									4.54	
Hauling									4.75	
Total depreciation:									13.38	
Equipment Interest @10% of average investment										
Disking									0.00	
Planting									3.08	
Spraying									0.45	
Combining									2.94	
Hauling									2.74	
Total Interest:									9.20	
Equipment taxes, insurance and housing (TIH) @2% of average investment										
Disking									0.00	
Planting									0.62	
Spraying									0.09	
Combining									0.59	
Hauling									0.55	
Total TIH:									1.84	
TOTAL FIXED COSTS:									24.42	
Storage @\$3/ton										3.00
TOTAL OF ALL COSTS:									126.36	
INCOME ABOVE CULTURAL, HARVEST, OVERHEAD & FIXED COSTS:										-23.36



Table 12. Dryland Cereal Grain Sample Enterprise Budget-No Till  
Riverside County, 1987-88

**BASED ON:**

1000 acres dryland cereals (in a farm of more than 1000 A)  
Machinery value @ 60% of new cost  
\$8.00/hour labor wage  
Dry land farming

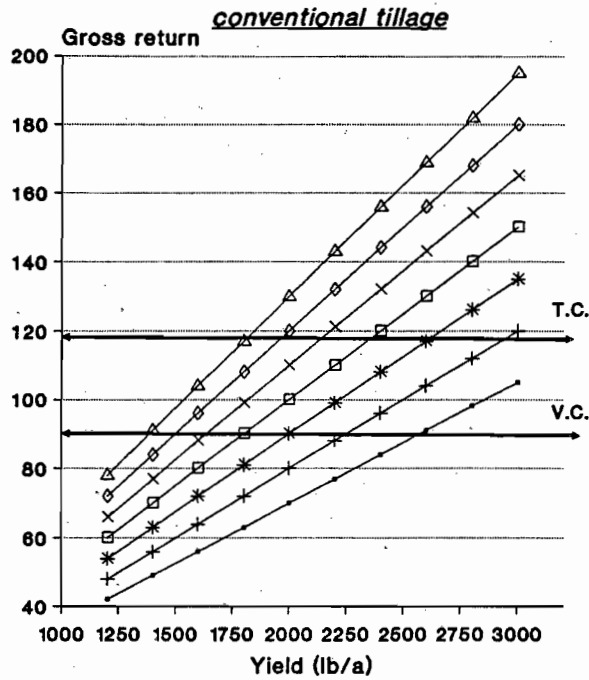
Gross Income @ Yield 2000 lbs/acre and price of \$.0515/lb.										103.00
Cultural Operations	Hours/Acre	Labor Cost \$	Equipment Cost \$	Materials					Total Cost/Acre \$	
				Kind	Amount	Unit	Price/Unit (\$)	Cost/Acre (\$)		
Disk 1X	0.00	0.00	0.00						0.00	
Plant	0.17	1.50	3.77	Seed	90.00	lb.	0.09	8.10	13.37	
Fertilize				Nit.	65.00	lb.	0.18	11.70	11.70	
				Phos.	3.50	lb.	1.17	4.10	4.10	
Herbicide	0.04	0.35	0.33	Glean	0.20	oz.	15.00	3.00	3.68	
	0.04	0.35	0.33	2,4-D	0.66	pt.	2.00	1.32	1.32	
				RNDUP	12.00	oz.	0.54	6.48	7.16	
Interest on operating capital									2.33	
<b>Total cultural costs:</b>										<b>43.65</b>
<b>Harvest Costs:</b>										
Combine	0.19	1.67	5.36						7.03	
Hauling	0.60	5.28	6.88						12.16	
<b>Total Harvest Cost:</b>										<b>19.19</b>
<b>INCOME ABOVE CULTURAL AND HARVEST COSTS:</b>										<b>40.16</b>
Cash overhead (office supplies, clerical, etc.)										3.50
Land rent @ one-fourth of crop value										25.75
<b>Total cash overhead and land rent</b>										<b>29.25</b>
<b>INCOME ABOVE CULTURAL, HARVEST AND OVERHEAD COSTS:</b>										<b>36.66</b>
<b>FIXED COSTS:</b>										
Equipment depreciation										
									0.00	
									2.17	
									0.28	
									2.72	
									2.85	
<b>Total depreciation:</b>										<b>8.03</b>
Equipment Interest @10% of average investment										
									0.00	
									1.85	
									0.27	
									1.76	
									1.64	
<b>Total Interest:</b>										<b>5.52</b>
Equipment taxes, insurance and housing (TIH) @2% of average investment										
									0.00	
									0.37	
									0.05	
									0.35	
									0.33	
<b>Total TIH:</b>										<b>1.10</b>
<b>TOTAL FIXED COSTS:</b>										<b>14.65</b>
									3.00	
<b>TOTAL OF ALL COSTS:</b>										<b>109.74</b>
<b>INCOME ABOVE CULTURAL, HARVEST, OVERHEAD &amp; FIXED COSTS:</b>										<b>-6.74</b>

Table 13. Dryland Cereal Grain Sample Enterprise Budget-No Till  
Riverside County, 1987-88

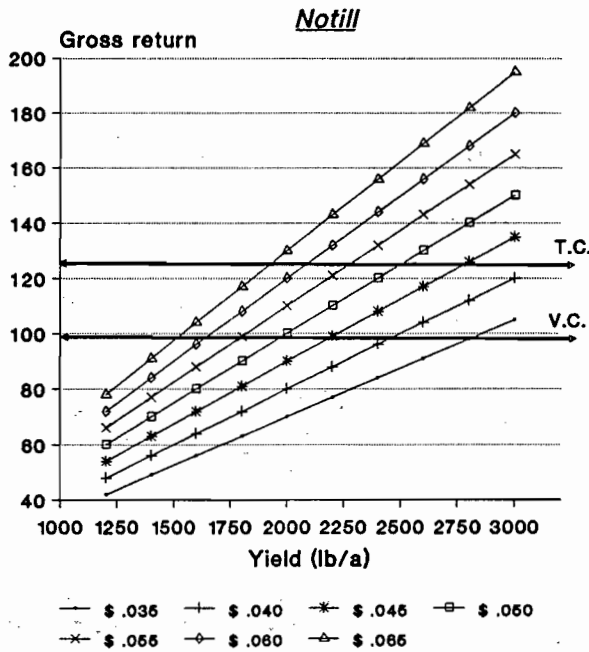
BASED ON:  
1000 acres dryland cereals (In a farm of more than 1000 A)  
Machinery value @ 30% of new cost  
\$8.00/hour labor wage  
Dry land farming

Gross Income @ Yield 2000 lbs/acre and price of \$.0515/lb.										103.00
Cultural Operations	Hours/Acre	Labor Cost \$	Equipment Cost \$	Materials				Total Cost/Acre \$		
				Kind	Amount	Unit	Price/Unit (\$)		Cost/Acre (\$)	
Disk 1X	0.00	0.00	0.00					0.00		
Plant	0.17	1.50	2.29	Seed	90.00	lb.	0.09	8.10	11.89	
Fertilize				Nit.	65.00	lb.	0.18	11.70	11.70	
				Phos.	3.50	lb.	1.17	4.10	4.10	
Herbicide	0.04	0.35	0.29	Glean	0.20	oz.	15.00	3.00	3.64	
				2,4-D	0.66	pt.	2.00	1.32	1.32	
	0.04	0.35	0.29	RNDUP	12.00	oz.	0.54	6.48	7.12	
Interest on operating capital									2.24	
Total cultural costs:									42.01	
Harvest Costs:										
Combine	0.19	1.67	3.13						4.81	
Hauling	0.60	5.28	5.61						10.89	
Total Harvest Cost:									15.70	
INCOME ABOVE CULTURAL AND HARVEST COSTS:										45.29
Cash overhead (office supplies, clerical, etc.)										3.50
Land rent @ one-fourth of crop value										25.75
Total cash overhead and land rent									29.25	
INCOME ABOVE CULTURAL, HARVEST AND OVERHEAD COSTS:										41.79
FIXED COSTS:										
Equipment depreciation										
Disking									0.00	
Planting									1.09	
Spraying									0.14	
Combining									1.36	
Hauling									1.43	
Total depreciation:									4.01	
Equipment interest @10% of average investment										
Disking									0.00	
Planting									0.93	
Spraying									0.13	
Combining									0.88	
Hauling									0.82	
Total Interest:									2.76	
Equipment taxes, insurance and housing (TIH) @2% of average investment										
Disking									0.00	
Planting									0.19	
Spraying									0.03	
Combining									0.18	
Hauling									0.16	
Total TIH:									0.55	
TOTAL FIXED COSTS:									7.33	
Storage @\$3/ton										3.00
TOTAL OF ALL COSTS:										97.29
INCOME ABOVE CULTURAL, HARVEST, OVERHEAD & FIXED COSTS:										5.71

Fig. 2. Break-even analysis--high machinery value at various yields & prices--dryland cereal grains

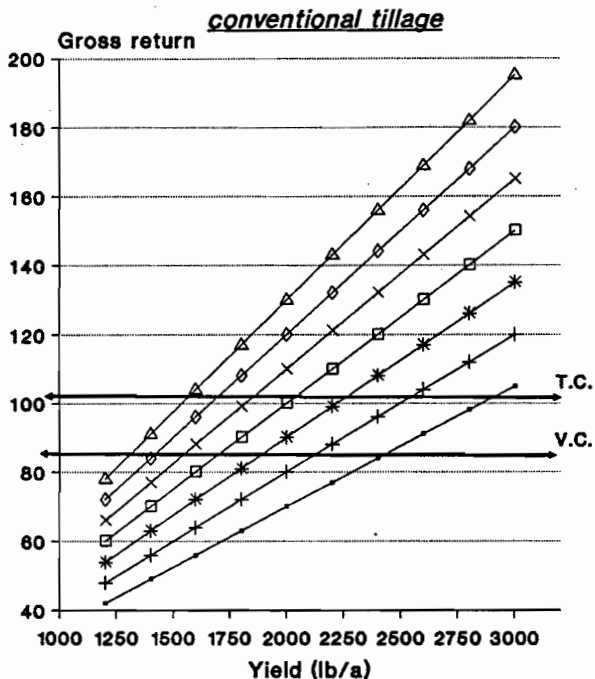


T.C.= total cost; V.C.= variable costs

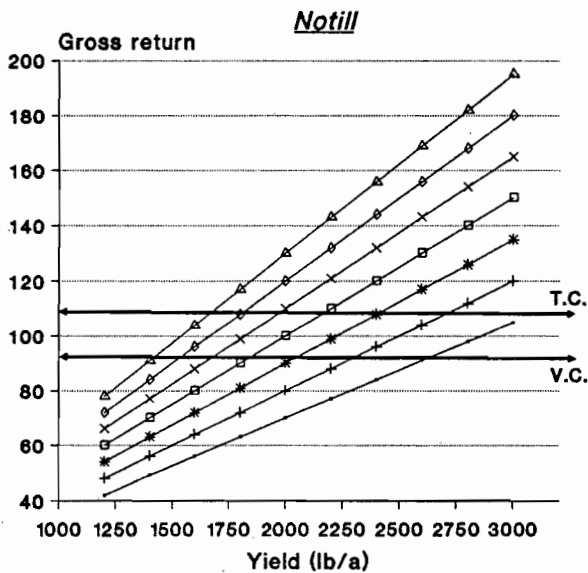


T.C.= total cost; V.C.= variable costs

Fig. 3. Break-even analysis--medium machinery value at various yields & prices--dryland cereal grains



T.C.- total cost; V.C.- variable costs



— \$ .035    + \$ .040    \* \$ .045    □ \$ .050  
 × \$ .055    ◊ \$ .060    △ \$ .065

T.C.- total cost; V.C.- variable costs