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UNIVERSITY OF MINNESOTA
Institute of Agriculture
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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Economics
Cooperating

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CROP COSTS - 1951

RED RIVER VALLEY

by

L. J. Downing, S. A. Engene, G. A. Pond

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Report No. 204
Department of Agricultural Economics
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INTRODUCTION

The general objectives of this study of Red River Valley crop production were:

1. To determine comparative costs and returns for the major crops in order to assist in selecting the best rotation.
2. To determine labor and power used per unit on crops.
3. To determine seasonal distribution of labor and power used on crops.
4. To get some comparisons of efficiency in the use of labor and power.
5. To determine rates of performance with the different kinds and sizes of machinery.

SOURCE OF DATA

The data for this study were obtained in cooperation with 26 farmers in the Red River Valley of Minnesota. Information was obtained from them in two ways:

1. Each was interviewed on his farm three times during the year -- in early April, June, and September. Machinery inventories, farm maps (with acreages and crops grown in 1951 and the three previous years), yields, seed and fertilizer applications, wages paid and other supplementary information were obtained in these interviews.
2. Each kept a weekly record of work done during the week: acres covered, operation performed, crop on which work was done, man hours and tractor hours expended, work custom-hired, cash crop costs, yields obtained and total hours of work done on the farm during the week.

DESCRIPTION

The farms in this study were located within twenty-five miles of the Red River, extending from the northern boundary of Minnesota approximately one hundred and seventy-five miles south. Five of the farms were in Kittson county, eight in Marshall county, two in Polk county, six in Clay county, and five in Wilkin county.

Twenty-one of the twenty-six farms had heavy Red River clay soils; the other five had somewhat lighter soils.

The average size of these farms was 550 total acres, as compared to the average size of 322 acres for all farms in these counties. Of the 550 acres per farm, 497 acres were being used for crops. The number of farms and the average size, grouped by cropland acreage, are shown in Table 1.

The use of cropland on these farms is shown in Table 2. Most of these farmers raised small grain crops--wheat, barley, oats, or flax. Almost two-thirds of the cropland was used for these crops. Another sixth of the land was used for summerfallow.

Table 1. Number and Average Size of Farms Studied
Red River Valley - 1951

Acres of cropland	No. of farms	Average acres	
		Crop land	All land
138 - 320	7	226	275
321 - 480	8	390	441
481 - 640	4	544	584
641 - 800	3	690	741
801 and over	4	992	1075
All farms	26	497	550

Table 2. Use of Cropland
Red River Valley - 1951

Crop	No. of Farmers who grew each crop	Average acreage for those who grew the crop	Average acres per farm	Per cent in each crop
Wheat	25	147	150	30
Barley	23	92	86	17
Oats	24	43	40	8
Flax	17	56	39	8
Sugar beets	6	149	37	8
Alfalfa	21	41	33	7
Corn	15	29	17	4
Soy beans	6	34	8	2
Potatoes	2	26	2	***
Sweet Clover* (for hay and seed)	1	47	2	***
Rye	2	20	2	***
Other Crops**	3	10	1	***
Summerfallow	23	87	80	16
Total			497	

* Sweet clover grown for green manure is shown under summerfallow.
** Onions and sudan grass.
***Less than 0.5 per cent.

The cooperating farmers operated larger farms than the average for their communities. They also were doing a better job of farming, as indicated by their crop yields. The average yields on these farms for 1951 are shown in Table 3 in comparison with average yields of farmers in the same counties for the years 1931-50. Most of the cooperating farmers said that their 1951 crop yields were approximately equal to their long time yields. Their 1951 yields can then be compared with the long time yields of farmers.

THE WEATHER

The total precipitation for 1951 at Crookston (near the center of the area) was 17.15 inches -- 3.48 inches below normal. In 1950, at the same point, total precipitation was 25.24 inches -- 4.61 inches above normal. In the fall of 1950 precipitation was 6.71 inches -- 2.97 inches above normal. The heavy rainfall in 1950 helped to increase moisture reserves in the soil and helped to offset the deficiency of precipitation during the 1951 growing season.

Table 3. Comparisons of Yields on the 26 Cooperating Farms With Average Yields for the Area

Item	Wheat	Oats	Barley	Flax
These 26 farms in 1951	25.0	40.5	34.0	10.0
Av. for 6 northern Red River counties:				
1951	18.9	34.1	28.1	9.1
1941-50	20.4	37.1	28.8	8.8
1931-40	12.4	24.7	19.3	6.3
1931-50	17.5	30.9	24.0	7.5

COSTS AND RETURNS BY CROPS

Data on costs and returns for the principal crops grown by the 26 cooperating farmers are shown in the following tables. These data were calculated primarily to aid in comparing the profitability of different crops. Management costs and overhead costs that apply equally to all crops were not included. Excluding these items does not affect the comparative profitability of the different crops, but it does materially reduce the cost of gathering the information.

The costs and returns for each farmer growing these crops are shown in the tables. By showing data for individual farmers, the reader will be able to study the variations among these farmers. The cooperating farmers will also be able to compare themselves with others in the group.

The following methods were used in calculating the crop costs and returns:

The data for each farmer were computed as if he were a full owner. Man labor was charged at $1.00 per hour. Tractor costs were calculated for each tractor separately, as explained in the section on machinery costs. Other machinery costs were calculated separately for each farm and for each type of machinery as explained in the section on machinery costs. These items include only costs for labor, power, and machinery supplied by the farmer, costs of work hired is shown as custom work. Summerfallow costs were calculated separately for each farm; the per acre cost of summerfallow was divided among the costs of the crops that came after summerfallow, as follows: 50% to the first crop, 30% to the second crop, and 20% to the third crop. If seed was purchased it was charged at cost; if the seed was home-grown it was charged at farm prices plus the cost of cleaning. Manure was charged at $3.00 per ton: 40% of the charge was allocated to the crop where manure was spread the previous year and the balance was divided equally among the other crops. Trucks were charged at 20¢ per mile or $2.00 per hour for 2 ton trucks; 10¢ per mile or $1.00 per hour for 1 ton or smaller trucks. The land was charged at $10.00 per acre, which is the approximate amount which could be obtained for land rented on the usual terms of 1/3 share--calculated by using 10 year average yields for the area and prices prevailing in the fall of 1951. Pasture was credited to the crops at $2.00 per head per month. The price and value of crops was the price and value actually received if the crop had been sold, or the farmer's estimate of the price and value he could receive.

The average costs and returns for the individual crops were calculated by averaging the per-acre costs and returns for the farmers growing that crop.

Table 4. COSTS AND RETURNS PER ACRE FOR WHEAT
Red River Valley - 1951

Farm Number	10	22	19	25	13	20	1	18
Acres Wheat	39	90	80	108	170	181	57	648
Quantities								
Hours - Preharvest:								
Man labor	1.31	1.38	1.24	1.21	.53	.95	.79	.60
Small tractor	1.21	.37	1.24	-	.32	.41	.28	-
Large tractor	-	.94	-	1.19	.21	.51	.49	.60
Hours - Harvest:								
Man labor	.79	1.36	1.52	1.42	1.06	1.39	.65	.66
Small tractor	.26	.27	1.25	.92	.08	.29	-	-
Large tractor	-	-	-	-	.47	-	.16	.40
Bushels:								
Seed	1.44	1.18	1.25	1.25	1.50	1.52	1.50	1.56
Yield	42	31	30	32	25	28	28	26
Preharvest Costs								
Man labor	$1.31	$1.38	$1.24	$1.21	$.53	$.95	$.79	$.60
Small tractor	1.10	.19	1.00	-	.23	.22	.18	-
Large tractor	-	.79	-	1.20	.17	.48	.70	.70
Other machinery	1.46	1.00	.70	.46	1.07	.76	.90	.58
Custom work	-	-	-	-	-	-	-	-
Summerfallow	-	2.66	-	3.95	2.13	4.79	6.52	4.26
Seed	3.37	3.08	3.12	3.12	3.30	3.60	3.36	3.51
Spray material	.10	-	.30	-	.05	.50	-	.03
Manure	.43	.24	6.09	-	-	-	-	2.31
Fertilizer	-	-	-	2.78	.29	-	-	.99
Miscellaneous	-	-	-	-	-	-	-	-
Total	$7.77	$9.34	$12.45	$12.72	$7.77	$11.30	$12.45	$12.98
Harvest Costs								
Man labor	$.80	$1.36	$1.53	$1.43	$1.07	$1.39	$.65	$.65
Small tractor	.23	.14	.59	.69	.06	.15	-	-
Large tractor	-	-	-	-	.38	-	.22	.47
Other machinery	-	3.15	2.17	3.23	2.23	3.68	3.07	.87
Custom work	3.50	-	1.09	-	-	.60	-	-
Truck	.07	.33	.02	.41	.49	.27	-	.40
Miscellaneous	-	-	-	-	-	.41	.13	-
Total	$4.60	$4.98	$5.40	$5.74	$4.23	$6.50	$4.07	$2.39
Land Charges	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Costs	$22.37	$24.32	$27.85	$28.46	$22.00	$27.80	$26.52	$25.37
By-products	-	-	2.27	-	-	.62	-	-
Net Costs	$22.37	$24.32	$25.58	$28.46	$22.00	$27.18	$26.52	$25.37
Returns								
Value of crop	$144.84	$63.59	$66.36	$74.54	$51.88	$62.87	$60.96	$56.18
Net Return	122.47	39.27	40.78	46.08	29.88	35.69	34.44	30.81
Price	$3.44	$2.07	$2.24	$2.30	$2.10	$2.21	$2.21	$2.20
Cost per Bushel	$0.53	$0.79	$0.86	$0.88	$0.89	$0.96	$0.96	$0.99

Table 4. COSTS AND RETURNS PER ACRE FOR WHEAT (cont'd.)
Red River Valley - 1951

24	5	26	6	17	14	15	21	7	8
51	98	121	71	301	179	295	105	268	106
.98	1.22	2.45	1.67	1.07	.85	1.46	1.66	.52	.76
.92	.38	.66	1.62	.37	.35	.34	.50	.01	.27
-	.86	1.73	-	.68	.38	1.11	.80	.48	.40
1.43	.72	1.33	2.01	1.08	.80	1.30	.74	.80	1.07
1.02	.65	.76	.87	.24	.19	.20	.18	.29	.83
-	-	-	-	-	.23	-	-	.32	-
1.50	1.28	1.48	1.41	1.50	1.56	1.57	1.38	1.58	2.00
21	24	29	32	22	23	24	21	22	21
$.98	$1.22	$2.45	$1.67	$1.07	$.85	$1.46	$1.66	$.52	$.76
.60	.18	.50	1.62	.29	.25	.31	.33	.01	.17
-	1.20	1.47	-	.75	.23	1.39	.81	.82	.36
.70	.82	1.47	.76	.72	.56	.94	.66	.73	.60
-	-	-	.35	-	-	-	-	-	-
-	1.32	5.35	3.24	4.51	7.45	2.40	2.49	6.73	6.20
3.60	3.06	4.09	4.22	3.59	3.44	3.76	3.11	3.73	4.70
-	.54	.14	.21	.27	-	-	.14	.02	.08
1.18	-	.64	2.53	.40	-	-	.97	.90	-
-	-	1.32	3.90	.52	.25	-	-	-	1.77
-	-	-	-	-	-	.72	-	-	-
$7.06	$8.34	$17.43	$18.50	$12.12	$13.03	$10.98	$10.17	$13.46	$14.64
1.43	.72	1.33	2.01	1.08	.80	1.30	.74	.80	1.07
.66	.30	.55	.87	.19	.14	.18	.12	.27	.50
-	-	-	-	-	.14	-	-	.55	-
1.38	2.13	1.65	1.67	.69	.67	2.91	2.52	1.43	1.63
.59	3.06	-	.85	-	.83	.96	-	-	-
.07	.48	.11	.37	.03	.17	.41	-	.63	.24
-	-	-	-	-	-	-	.06	-	.28
$4.13	$6.69	$3.64	$5.77	$1.99	$2.75	$5.76	$3.44	$3.68	$3.72
10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
$21.19	$25.02	$31.07	$34.27	$24.11	$25.78	$26.74	$23.61	$27.14	$28.36
-	-	.41	-	-	-	-	-	-	.38
$21.19	$25.02	$30.66	$34.27	$24.11	$25.78	$26.74	$23.61	$27.14	$27.98
$43.67	$50.04	$57.48	$70.24	$44.48	$47.63	$49.89	$44.00	$44.47	$45.57
22.48	25.02	26.82	35.97	20.37	21.85	23.15	20.39	17.33	17.59
$2.07	$2.11	$1.99	$2.20	$2.00	$2.10	$2.11	$2.10	$2.00	$2.20
$1.01	$1.06	$1.06	$1.07	$1.09	$1.14	$1.13	$1.13	$1.22	$1.35

Table 4. COSTS AND RETURNS PER ACRE FOR WHEAT (cont'd.)
Red River Valley - 1951

Farm Number	9	3	12	11	4	2	Ave.
Acres Wheat	178	111	39	57	45	142	148
Quantities							
Hours - Preharvest:							
Man labor	1.01	1.23	2.18	1.63	1.22	1.46	1.23
Small tractor	.17	.96	2.13	1.46	.57	.77	.64
Large tractor	.84	.27	-	-	.35	.56	.52
Hours - Harvest:							
Man labor	.51	1.95	1.59	.53	1.84	2.53	1.21
Small tractor	.16	1.08	1.59	.53	.56	.82	.54
Large tractor	-	2.32	-	-	-	-	.15
Bushels:							
Seed	1.37	1.16	1.50	1.49	1.91	1.06	1.46
Yield	17	15	21	16	16	26	25
Preharvest Costs							
Man labor	$1.01	$1.23	$2.18	$1.63	$1.22	$1.46	$1.23
Small tractor	.22	.59	2.13	.95	.19	.57	.49
Large tractor	1.06	.38	-	-	.66	.86	.58
Other machinery	1.20	.40	1.59	.52	.50	1.12	.84
Custom work	-	-	-	-	.66	-	.04
Summerfallow	4.57	.61	8.00	6.97	4.31	7.69	4.01
Seed	3.12	2.61	3.46	3.50	5.36	5.28	3.63
Spray material	-	-	.29	.14	-	.08	.12
Manure	.24	-	1.02	-	4.00	.25	.88
Fertilizer	.02	-	-	2.34	-	1.06	.64
Miscellaneous	-	-	.07	-	-	.27	.04
Total	$11.44	$5.82	$18.74	$16.05	$16.90	$18.64	$12.50
Harvest Costs							
Man labor	.51	1.94	1.59	.53	1.84	2.53	1.21
Small tractor	.22	.66	1.59	.34	.25	.61	.39
Large tractor	-	3.24	-	-	-	-	.21
Other machinery	2.62	2.58	3.37	2.46	1.61	2.60	2.09
Custom work	-	-	-	-	-	-	.48
Truck	.13	.23	.46	.09	.20	1.30	.29
Miscellaneous	-	-	-	-	-	12.84	.57
Total	$3.48	$8.65	$7.01	$3.42	$3.90	$19.88	$5.24
Land Charges	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Costs	$24.92	$24.47	$35.75	$29.47	$30.80	$48.52	$27.74
By-products	.62	-	-	-	-	-	.18
Net Costs	$24.30	$24.47	$35.75	$29.47	$30.80	$48.52	$27.56
Returns							
Value of crop	$35.98	$33.10	$42.56	$33.15	$30.06	$107.74	$56.72
Net Return	11.68	8.63	6.81	3.69	-.74	59.22	29.16
Price	$2.10	$2.20	$2.00	$2.10	$1.90	$4.35	$2.26
Cost per Bushel	$1.42	$1.63	$1.68	$1.87	$1.95	$1.97	$1.19

Table 5. COSTS AND RETURNS PER ACRE OF PRODUCING OATS
Red River Valley - 1951

Farm Number	2	15	4	25	5	24	17
Acres Oats	21	40	49	51	27	30	28
Quantities							
Hours - Preharvest:							
Man labor	2.00	1.30	1.53	1.20	.89	1.57	1.32
Small tractor	.76	.45	.39	.12	.41	1.47	1.04
Large tractor	1.24	.85	.95	1.04	.52	-	.20
Hours - Harvest:							
Man labor	2.24	1.05	2.18	.98	2.04	.97	.75
Small tractor	.62	.23	1.00	.59	1.00	.53	.29
Large tractor	-	-	-	-	-	-	-
Bushels:							
Seed	2.38	3.00	2.26	3.00	2.00	2.50	2.50
Yield	83	66	68	59	50	45	39
Preharvest Costs							
Man labor	$2.00	$1.30	$1.53	$1.19	$ .89	$1.57	$1.32
Small tractor	.57	.42	.16	.09	.19	.95	.84
Large tractor	1.89	1.06	.94	1.05	.73	-	.24
Other machinery	1.12	.94	.50	.46	.82	.70	.72
Summerfallow	-	-	1.06	3.07	1.91	-	-
Seed	2.97	2.55	3.41	3.00	1.80	2.25	2.25
Spray material	.14	-	-	-	-	-	-
Manure	.25	-	3.50	-	-	1.18	.60
Fertilizer	-	-	-	-	-	-	1.72
Total	$8.94	$6.27	$11.10	$8.86	$6.34	$6.65	$7.69
Harvest Costs							
Man labor	$2.24	$1.05	$2.18	$ .98	$2.03	$ .96	$ .75
Small tractor	.46	.21	.45	.43	.58	.35	.29
Large tractor	-	-	-	-	-	-	-
Other machinery	2.60	3.85	1.61	3.23	2.13	1.38	.69
Custom work	-	3.21	1.57	-	-	2.00	-
Truck	1.83	.50	.10	.57	.56	.06	.36
Miscellaneous	-	-	-	-	-	-	-
Total	$7.13	$8.82	$5.91	$5.21	$5.30	$4.75	$2.09
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost	$26.07	$25.09	$27.01	$24.07	$21.64	$21.40	$19.78
By-Products	-	2.79	2.61	-	-	-	-
Net Costs	$26.07	$22.30	$24.40	$24.07	$21.64	$21.40	$19.78
Returns							
Value of Crop	$62.32	$42.90	$61.51	$42.92	$44.00	$29.25	$25.53
Net Return	36.25	20.60	37.11	18.85	22.36	7.85	5.75
Price	$ .75	$ .65	$ .90	$ .73	$ .88	$ .65	$ .65
Cost per Bushel	$ .31	$ .34	$ .36	$ .41	$ .43	$ .48	$ .50

Table 5. COSTS AND RETURNS PER ACRE OF PRODUCING OATS (cont'd.)
Red River Valley - 1951

Farm Number	19	23	8	18	9	6	10
Acres Oats	28	73	30	25	143	60	20
Quantities							
Hours - Preharvest:							
Man labor	.82	1.18	.67	1.36	1.02	2.05	1.00
Small tractor	.82	1.09	.17	-	.15	2.01	.95
Large tractor	-	-	.37	1.36	.92	-	-
Hours - Harvest:							
Man labor	1.71	3.64	.93	.96	.45	.87	.85
Small tractor	1.00	.86	.53	-	.15	.55	.25
Large tractor	-	-	.33	.36	-	-	-
Bushels:							
Seed	2.00	2.74	3.00	2.00	2.32	2.08	2.50
Yield	46	53	42	40	34	37	30
Preharvest Costs							
Man labor	$ .82	$1.18	$ .67	$1.36	$1.02	$2.05	$1.00
Small tractor	.67	.66	.10	-	.21	2.01	.86
Large tractor	-	-	.33	1.59	1.15	-	-
Other machinery	.70	.58	.60	.58	1.20	.76	1.46
Summerfallow	-	3.70	2.80	3.43	3.58	-	-
Seed	1.50	2.32	3.00	1.80	2.16	2.08	2.38
Spray material	-	-	-	-	-	-	.15
Manure	5.20	2.00	-	1.43	.34	1.12	.43
Fertilizer	-	-	1.77	1.15	.05	3.90	-
Total	$8.89	$10.44	$9.27	$11.34	$9.71	$11.92	$6.28
Harvest Costs							
Man labor	$1.71	$3.64	$ .93	$ .96	$ .45	$ .87	$ .85
Small tractor	.81	2.11 1/	.32	-	.20	.55	.23
Large tractor	-	-	.30	.42	-	-	-
Other machinery	2.17	1.00	1.63	.87	2.62	1.67	-
Custom work	-	-	-	-	-	-	3.50
Truck	.09	-	.33	1.12	.09	.24	.05
Miscellaneous	-	.90	-	-	.01	-	-
Total	$4.78	$7.69	$3.51	$3.37	$3.37	$3.33	$4.63
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost	$23.67	$28.13	$22.78	$24.71	$23.08	$25.25	$20.91
By-Products	-	-	-	-	1.11	-	-
Net Costs	$23.67	$28.13	$22.78	$24.71	$22.97	$25.25	$20.91
Returns							
Value of Crop	$29.71	$36.83	$27.08	$32.00	$22.27	$26.76	$21.90
Net Return	6.04	8.70	4.30	7.29	-.70	1.51	.99
Price	$ .64	$ .70	$ .65	$ .80	$ .65	$ .73	$ .73
Cost per Bushel	$ .51	$ .53	$ .55	$ .62	$ .67	$ .69	$ .70

1/ Includes a cost of $1.64 per acre for horse work.

Table 5. COSTS AND RETURNS PER ACRE OF PRODUCING OATS (cont'd.)
Red River Valley - 1951

26	22	3	21	7	11	12	13	Ave.
40	12	72	42	40	33	25	42	42.3
2.40	1.08	1.53	2.33	.82	2.06	2.16	.55	1.39
1.12	.50	1.25	.97	-	1.61	2.16	.36	.81
1.28	.58	.26	1.00	.80	-	-	.12	.52
1.25	.67	1.64	.76	.57	2.09	1.08	.52	1.28
.64	.25	.87	.19	.28	.30	.96	.14	.51
-	-	.06	-	.10	-	-	-	.04
3.00	2.50	2.50	2.00	3.00	3.50	3.16	2.00	2.54
40	25	25	33	20	24	24	7	40
$2.40	$1.08	$1.53	$2.33	$ .83	$2.06	$2.16	$ .55	$1.40
.84	.27	.76	.66	-	1.04	2.16	.26	.62
1.08	.49	.37	1.01	1.37	-	-	.09	.61
.15	1.00	.40	.66	.73	.52	1.59	1.07	.78
3.21	-	-	3.36	2.69	4.65	3.82	-	1.70
2.70	2.75	2.12	2.00	2.55	3.04	2.43	1.60	2.39
-	-	-	.14	-	.14	.12	-	.03
.64	.24	-	.97	1.08	-	1.02	-	.91
2.94	-	-	1.70	-	2.34	-	1.31	.77
$13.96	$5.83	$5.18	$12.83	$9.25	$13.79	$13.30	$4.88	$9.21
$1.25	$ .67	$1.64	$ .76	$ .57	$2.09	$1.08	$ .52	$1.28
.47	.13	.53	.13	.25	.20	.96	.10	.44 2/
-	-	.08	-	.17	-	-	-	.04
$1.65	$3.15	$2.58	$2.52	$1.44	$2.46	$3.36	$2.23	$2.04
-	-	-	-	-	-	-	-	.47
1.80	.02	.05	.07	.40	.15	.16	.17	.40
-	-	-	-	-	-	-	-	.04
$5.17	$3.97	$4.88	$3.48	$2.83	$4.90	$5.57	$3.02	$4.71
10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
$29.13	$19.79	$20.06	$26.31	$22.08	$28.69	$28.86	$17.90	$23.92
-	-	-	-	-	-	-	-	.30
$29.13	$19.79	$20.06	$26.31	$22.08	$28.69	$28.86	$17.90	$23.62
$25.20	$20.00	$22.49	$24.08	$12.60	$17.70	$14.88	$5.42	$29.42
-3.93	.21	2.43	-2.23	-9.48	-10.99	-13.98	-12.48	5.80
$ .63	$ .80	$ .90	$ .73	$ .63	$ .73	$ .62	$ .65	$ .72
$ .73	$ .79	$ .80	$ .80	$1.10	$1.18	$1.20	$2.15	$ .72

2/ Includes an average cost per acre of $.07 for horse work. See footnote 1/.

Table 6. COSTS AND RETURNS PER ACRE FOR BARLEY
Red River Valley - 1951

Farm Number	25	6	23	24	4	19	3
Acres Barley	36	110	14	20	22	27	61
Quantities							
Hours - Preharvest:							
Man labor	.56	1.81	.79	1.60	1.73	1.96	1.39
Small tractor	.25	1.76	.86	1.50	.36	1.96	1.10
Large tractor	.25	-	-	-	1.36	-	.31
Hours - Harvest:							
Man labor	1.64	2.85	4.57	.70	2.00	1.48	2.33
Small tractor	.89	.78	1.00	.25	.46	.89	1.29
Large tractor	-	-	-	-	-	-	-
Bushels:							
Seed	2.55	1.00	1.50	1.75	1.00	1.75	1.16
Yield	61	50	54	38	48	46	37
Preharvest Costs							
Man labor	$ .56	$1.81	$ .79	$1.60	$1.72	$1.96	$1.39
Small tractor	.19	1.76	.51	.97	.16	1.59	.67
Large tractor	.25	-	-	-	.12	-	.44
Other machinery	1.38	.76	.58	.70	.50	.70	.40
Summerfallow	3.07	.65	3.63	-	6.49	-	3.66
Seed	4.45	2.00	2.40	2.89	1.76	2.63	1.75
Spray material	-	-	-	-	-	-	-
Manure	-	1.12	2.00	1.18	3.50	7.70	-
Fertilizer	2.50	-	-	-	-	-	.32
Miscellaneous	-	-	-	-	-	-	-
Total	$12.40	$8.10	$9.91	$7.34	$14.25	$14.58	$8.63
Harvest Costs							
Man labor	$1.64	$2.85	$4.57	$ .70	$2.00	$1.48	$2.32
Small tractor	.65	.78	2.43 1/	.16	.20	.72	.79
Large tractor	-	-	-	-	-	-	-
Other machinery	3.23	1.67	1.00	-	1.61	2.17	2.58
Custom work	-	-	-	3.00	-	-	-
Truck	.31	.32	-	.09	.14	.06	.25
Miscellaneous	-	-	.90	-	-	-	-
Total	$5.83	$5.62	$8.90	$3.95	$3.95	$4.43	$5.94
Land Charges	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Costs 2/	$28.23	$23.82	$28.81	$21.29	$28.20	$29.01	$24.57
Returns							
Value of crop	$76.28	$55.82	$62.67	$44.62	$59.72	$57.86	$43.80
Net Return	48.05	32.00	33.86	23.33	31.52	28.85	19.23
Price	$1.26	$1.12	$1.17	$1.19	$1.25	$1.25	$1.18
Cost per Bushel	$0.47	$0.48	$0.54	$0.57	$0.59	$0.63	$0.66

1/ Includes a cost of $1.83 per acre for horse work.
2/ No by-products. Total costs and net costs are therefore the same.

Table 6. COSTS AND RETURNS PER ACRE FOR BARLEY (cont'd.)
Red River Valley - 1951

1	10	21	18	22	13	17	5	14	7
55	47	76	323	100	175	145	54	217	185
1.15	1.25	2.77	1.05	.93	.84	1.28	1.11	.79	.83
.33	1.13	.51	-	.40	.31	.41	.22	.30	.02
.82	-	1.76	1.05	.50	.52	.77	.91	.37	.75
.47	.79	1.04	.60	1.72	.78	.90	1.54	.97	.65
.16	.26	.20	-	.70	.20	.31	1.14	.39	.35
-	-	-	.34	-	-	.06	-	.27	.18
1.82	2.00	1.97	1.75	1.75	1.33	1.50	1.48	1.50	1.78
29	32	37	29	38	29	26	24	22	24
$1.14	$1.25	$2.77	$1.04	$ .93	$ .84	$1.28	$1.11	$ .79	$ .83
.21	1.03	.35	-	.21	.23	.34	.10	.22	.02
1.18	-	1.78	1.24	.42	.42	.85	1.27	.22	.75
.90	1.46	.66	.58	1.00	1.07	.72	.82	.56	.73
-	-	-	.28	7.51	3.22	.70	-	2.48	2.48
3.00	3.20	3.25	2.62	2.80	2.10	2.62	2.37	2.25	2.62
-	.15	.10	.18	.20	-	-	-	-	.08
-	.43	.97	1.43	.24	-	.60	-	-	1.08
-	-	1.52	1.18	-	.17	.42	-	.41	-
-	-	-	-	-	-	-	-	-	-
$6.43	$7.52	$11.40	$8.53	$13.31	$8.03	$7.53	$5.67	$6.93	$9.12
$ .47	$ .79	$1.04	$.60	$1.72	$ .78	$.90	$1.53	$ .97	$.65
.10	.23	.13	-	.37	.14	.25	.53	.29	.32
-	-	-	.40	-	-	.06	-	.15	.30
3.07	-	2.52	.87	3.15	2.23	.69	2.13	.67	1.44
-	3.50	-	-	-	-	-	-	-	-
.02	.05	.10	.59	.13	.57	.23	.28	.85	.70
-	-	-	-	-	-	-	-	-	-
$3.66	$4.57	$3.79	$2.46	$5.37	$3.72	$2.13	$4.47	$2.93	$3.41
10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
$20.09	$22.09	$25.19	$20.99	$28.68	$21.75	$19.66	$20.14	$19.86	$22.53
$36.65	$37.33	$42.85	$42.63	$33.37	$36.43	$30.14	$29.63	$25.85	$29.12
16.56	15.24	17.66	21.64	4.69	14.68	10.48	9.49	5.99	6.59
$1.26	$1.17	$1.17	$1.45	$ .88	$1.25	$1.18	$1.23	$1.20	$1.20
$0.69	$0.69	$0.69	$0.71	$0.75	$0.75	$0.77	$0.84	$0.92	$0.93

Table 6. COSTS AND RETURNS PER ACRE FOR BARLEY (cont'd.)
Red River Valley - 1951

Farm Number	9	11	8	12	26	Ave.
Acres Barley	88	34	165	15	96	94
Quantities						
Hours - Preharvest:						
Man labor	1.10	1.88	1.12	2.07	2.49	1.39
Small tractor	.16	1.79	.17	2.00	.66	.74
Large tractor	.94	-	.90	-	1.57	.58
Hours - Harvest:						
Man labor	.58	2.03	.81	1.67	1.27	1.43
Small tractor	.18	.29	.62	1.13	.67	.55
Large tractor	-	-	1.00	-	-	.08
Bushels:						
Seed	1.32	2.03	2.00	2.04	2.00	1.69
Yield	23	30	27	27	20	34
Preharvest Costs						
Man labor	$1.10	$1.88	$1.12	$2.07	$2.49	$1.39
Small tractor	.22	1.17	.10	2.00	.50	.57
Large tractor	1.19	-	.81	-	1.34	.58
Other machinery	1.20	.52	.60	1.59	1.47	.86
Summerfallow	3.40	4.10	3.93	5.72	4.88	2.55
Seed	2.06	3.25	3.60	3.72	3.70	2.77
Spray material	-	.02	.07	.19	.02	.05
Manure	-	-	-	1.02	.64	1.00
Fertilizer	.08	2.34	1.67	-	1.26	.54
Miscellaneous	-	.29	-	-	-	.01
Total	$9.25	$13.57	$11.90	$16.31	$16.30	$10.32
Harvest Costs						
Man labor	$ .58	$2.03	$ .81	$1.67	$1.27	$1.43
Small tractor	.24	.19	.38	1.13	.50	.48 3/
Large tractor	-	-	.90	-	-	.08
Other machinery	2.62	2.46	1.63	3.37	1.65	1.85
Custom work	.23	-	-	-	-	.31
Truck	.13	.15	.24	.04	.11	.24
Miscellaneous	.04	-	-	-	-	.04
Total	$3.84	$4.83	$3.96	$6.21	$3.53	$4.43
Land Charges	10.00	10.00	10.00	10.00	10.00	10.00
Total Costs 2/	$23.09	$28.40	$25.86	$32.52	$29.83	$24.75
Returns						
Value of crop	$34.87	$36.18	$28.02	$31.73	$23.14	$40.84
Net Return	11.78	7.78	2.16	.79	-6.69	16.09
Price	$1.44	$1.20	$1.05	$1.19	$1.17	$1.20
Cost per Bushel	$0.93	$0.94	$0.97	$1.22	$1.51	$0.78

2/ No by-products. Therefore total costs and net costs are the same.
3/ Includes an average cost per acre of $.08 for horse work. See footnote 1/.

Table 7. COSTS AND RETURNS PER ACRE FOR SOYBEANS
Red River Valley - 1951

Farm Number	10	3	24	5	19	23	Ave.
Acres Soybeans	30	66	13	52	23	19	30.5
Quantities							
Hours - Preharvest:							
Man labor	1.57	3.33	4.15	4.00	3.56	2.68	3.22
Small tractor	1.57	1.91	4.08	2.76	3.56	2.11	2.67
Large tractor	-	1.41	-	1.23	-	-	.44
Hours - Harvest:							
Man labor	1.00	1.62	.15	1.94	1.04	.32	1.01
Small tractor	1.00	1.11	-	1.01	.52	.32	.66
Large tractor	-	.08	-	-	-	-	.01
Truck - Miles:	-	2.35	1.38	7.37	.26	5.26	2.77
Bushels - Seed:	1.17	.89	1.00	1.44	1.00	.89	1.07
Bushels - Yield:	25	24	18	13	10	9	16
Preharvest Costs							
Man labor	$1.57	$3.33	$4.15	$4.00	$3.56	$2.68	$3.22
Small tractor	1.43	1.17	2.65	1.27	2.89	1.27	1.78
Large tractor	-	1.97	-	1.73	-	-	.62
Other machinery	1.46	.40	.70	.82	.70	.58	.78
Summerfallow	-	1.02	-	-	-	4.87	.98
Seed	4.07	2.86	3.00	5.41	3.00	2.91	3.54
Manure	1.00	-	1.18	-	4.73	2.00	1.48
Fertilizer	2.96	-	-	.29	-	2.54	.96
Total	$12.49	$10.75	$11.68	$13.52	$14.88	$16.85	$13.36
Harvest Costs							
Man labor	$1.00	$1.62	$ .15	$1.94	$1.04	$ .32	$1.01
Small tractor	.91	.66	-	.47	.42	.19	.44
Large tractor	-	.11	-	-	-	-	.02
Other machinery	.98	2.58	-	2.13	2.17	-	1.31
Custom work	-	-	3.00	-	-	2.73	.96
Truck	.10	.24	.14	.27	.03	.53	.22
Total	$2.99	$5.21	$3.29	$4.81	$3.66	$3.77	$3.96
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost 1/	$25.48	$25.96	$24.97	$28.33	$28.54	$30.62	$27.32
Returns							
Value of crop	$65.24	$61.05	$45.47	$35.29	$27.13	$24.74	$43.15
Net Return	39.76	35.09	20.50	6.96	-1.41	-5.88	15.83
Price	$2.61	$2.60	$2.57	$2.62	$2.60	$2.61	$2.60
Cost per Bushel	$1.02	$1.11	$1.41	$2.10	$2.74	$3.23	$1.94

1/ No by-products. Therefore total costs and net costs are the same.

Table 8. COSTS AND RETURNS PER ACRE FOR FLAX
Red River Valley - 1951

Farm Number	10	22	17	24	20	25	18	14
Acres Flax	60	9	72	18	79	96	165	35
Quantities								
Hours - Preharvest								
Man labor	1.70	2.00	1.46	1.78	1.83	1.16	.79	2.71
Small tractor	1.70	.22	.71	1.78	.34	-	-	.40
Large tractor	-	1.55	.47	-	1.33	1.09	.79	1.99
Hours - Harvest:								
Man labor	.42	2.44	.76	2.28	.84	1.88	.39	.63
Small tractor	.33	.78	.21	1.22	.29	.59	-	.17
Large tractor	-	-	.28	-	-	.77	-	.34
Bushels:								
Seed	.58	.56	.66	.75	.71	.77	.67	.57
Yield	.16	.13	.11	.13	.12	.12	9	9
Preharvest Costs								
Man labor	$1.70	$2.00	$1.46	$1.77	$1.83	$1.15	$ .79	$2.71
Small tractor	1.55	.12	.57	1.17	.18	-	-	.29
Large tractor	-	.13	.52	-	1.26	1.10	.93	1.18
Other machinery	1.46	1.00	.72	.70	.76	.46	.58	.56
Summerfallow	-	-	-	-	1.94	3.87	1.14	2.51
Seed	3.50	1.94	3.96	3.00	3.58	3.47	3.14	3.68
Spray material	-	-	-	-	-	-	-	-
Manure	.43	.24	.60	1.18	-	-	1.43	-
Fertilizer	-	-	-	-	2.00	1.20	.58	-
Miscellaneous	-	-	-	-	-	-	-	-
Total	$8.64	$5.43	$7.83	$7.81	$11.55	$11.25	$8.59	$10.93
Harvest Costs								
Man labor	$ .41	$2.45	$ .76	$2.28	$ .83	$1.88	$ .39	$ .63
Small tractor	.30	.41	.17	.80	.15	.44	-	.13
Large tractor	-	-	.31	-	-	.78	.39	.20
Other machinery	.98	3.15	.69	1.38	3.68	3.23	.87	.67
Custom work	3.50	-	-	-	-	-	-	-
Truck	.02	.02	-	.13	.39	.04	.31	.11
Total	$5.22	$6.03	$1.93	$4.59	$5.05	$6.37	$1.96	$1.74
Land Charges	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Costs 1/	$23.85	$21.46	$19.76	$22.40	$26.60	$27.62	$20.54	$22.67
Returns								
Value of crop	$63.31	$49.73	$41.64	$43.47	$42.50	$52.21	$38.18	$35.86
Net Return	39.46	28.27	21.88	21.07	15.90	24.59	17.64	13.19
Price	$4.00	$3.73	$3.75	$3.48	$3.50	$4.25	$4.20	$3.85
Cost per Bushel	$1.51	$1.61	$1.78	$1.79	$2.19	$2.25	$2.26	$2.43

1/ No by-products. Therefore total costs and net costs are the same.

Table 8. COSTS AND RETURNS PER ACRE FOR FLAX (cont'd.)
Red River Valley - 1951

7	19	8	23	21	5	2	3	Ave.
70	28	45	6	59	42	62	31	55
.91	1.93	1.36	2.00	3.59	1.81	2.48	1.42	1.81
.27	1.82	.22	2.00	1.21	.74	1.21	.52	.82
.59	-	1.00	-	1.07	1.05	1.21	.90	.82
.93	2.96	1.02	3.00	.50	.40	.69	2.06	1.32
.32	1.86	.89	1.25	-	.40	.35	1.48	.63
.11	-	-	-	-	-	.18	-	.11
.74	.70	.53	.83	.51	.62	.42	.62	.64
9	11	8	9	8	8	11	7	10
$ .91	$1.93	$1.35	$2.00	$3.59	$1.81	$2.48	$1.42	$1.81
.24	1.47	.13	1.20	.83	.34	.91	.31	.58
1.00	-	.90	-	1.08	1.47	1.85	1.26	.79
.73	.70	.60	.58	.66	.82	1.12	.40	.74
4.56	-	2.80	-	-	2.84	6.63	-	1.64
2.60	3.01	3.47	5.61	2.79	3.09	2.93	2.67	3.28
-	-	-	-	.06	-	.37	-	.03
1.08	4.73	-	2.00	.97	-	.97	-	.85
-	1.39	-	-	-	.61	-	1.86	.64
-	-	-	-	-	-	3.00	-	.19
$11.12	$13.23	$9.25	$11.39	$9.98	$10.98	$20.26	$7.92	$10.55
$ .93	$2.96	$1.02	$3.00	$ .50	$ .40	$ .69	$2.06	$1.32
.30	1.51	.53	.75	-	.19	.27	.90	.43
.19	-	-	-	-	-	.23	-	.13
1.44	2.17	1.63	1.00	2.52	2.13	2.60	2.58	1.92
-	-	-	-	-	-	.03	-	.22
.20	.13	.09	-	-	.16	.19	.20	.12
$3.06	$6.77	$3.27	$4.75	$3.02	$2.91	$3.98	$5.74	$4.14
10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
$24.18	$30.00	$22.52	$26.14	$23.00	$23.89	$34.24	$23.66	$24.69
$37.24	$36.60	$32.00	$33.17	$31.51	$32.39	$58.62	$24.67	$40.82
13.06	6.60	9.48	7.03	8.51	8.50	24.38	1.01	16.13
$4.00	$3.42	$4.00	$3.62	$3.94	$4.05	$5.32	$3.40	$3.91
$2.60	$2.80	$2.82	$2.85	$2.88	$2.99	$3.11	$3.26	$2.47

Table 9. COSTS AND RETURNS PER ACRE FOR SUGAR BEETS
Red River Valley - 1951

Farm Number	15	25	20	2	13	Ave.
Acres Sugar Beets	154	265	185	162	72	167.6
Quantities						
Hours - Preharvest:						
Man labor	1.84	2.90	3.68	3.30	3.90	3.12
Small tractor	1.39	2.30	2.64	2.96	3.52	2.56
Large tractor	.31	.25	.61	.33	.14	.33
Pounds- Seed:	9.09	9.43	7.57	6.00	5.00	7.42
Hours - Harvest:						
Man labor	8.20	5.47	11.13	13.97	14.78	10.71
Small tractor	3.96	1.12	4.18	1.70	3.75	2.94
Large tractor	-	-	-	1.75	-	.35
Miles - Truck:	21.49	8.97	5.00	15.90	41.64	18.60
Tons - Yield: 1/	12.40	13.43	11.64	10.75	12.45	12.13
Preharvest Costs						
Man labor	$1.84	$2.90	$3.68	$3.30	$3.90	$3.12
Small tractor	1.28	1.70	1.43	2.22	2.54	1.83
Large tractor	.38	.25	.58	.42	.11	.35
Other machinery	.94	.46	.76	1.12	1.07	.87
Custom work	17.19	18.66	14.80	17.00	18.12	17.15
Summerfallow	5.30	.80	8.42	8.11	7.07	5.94
Seed	4.32	4.29	3.52	2.81	23.74	7.74
Spray material	.55	-	.33	-	-	.18
Manure	-	-	-	.25	-	.05
Fertilizer	4.00	5.94	4.26	6.23	1.82	4.45
Miscellaneous	-	-	-	-	-	-
Total	$35.80	$35.00	$37.78	$41.46	$58.37	$41.68
Harvest Costs 1/						
Man labor	$8.20	$5.47	$11.13	$13.97	$14.78	$10.71
Small tractor	3.65	.83	2.26	1.27	2.70	2.14
Large tractor	-	-	-	2.23	-	.45
Other machinery	7.65	9.64	6.52	4.70	7.00	7.10
Custom work	-	4.10	.73	-	-	.97
Truck	4.30	1.79	.97	3.18	8.33	3.71
Custom hauling	-	1.72	5.22	-	6.20	2.63
Total	$23.80	$23.55	$26.83	$25.35	$39.01	$27.71
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost 2/	$69.60	$68.55	$74.61	$76.81	$107.38	$79.39
Returns 1/						
Value of crop	$161.22	$184.66	$151.29	$139.80	$161.86	$159.77
Net Return 1/	91.62	116.11	76.68	62.99	54.48	80.38
Price	$13.00	$13.75	$13.00	$13.00	$13.00	$13.15
Cost per ton 1/	$5.61	$6.03	$7.27	$7.14	$8.62	$6.93

1/ A part of the crop was not harvested on two of these farms because of unusually bad weather conditions. Yield, harvest costs, and returns have been estimated for these farms on the basis of the harvested acreage. Consequently the yields and returns listed for these two farms are higher than those actually received.

2/ No by-products. Therefore total costs and net costs are the same.

Table 10. COSTS AND RETURNS PER ACRE FOR EAR CORN
Red River Valley - 1951

Farm Number	1	24	3	10	23	19	22	Ave.
Acres Ear Corn	35	26	48	10	20	42	23	29
Quantities								
Hours - Preharvest:								
Man labor	1.70	3.96	3.50	1.50	8.40	3.74	4.13	3.85
Small tractor	-	3.96	2.87	1.50	6.00	3.74	2.17	2.89
Large tractor	1.70	-	.60	-	-	-	-	.33
Hours - Harvest:								
Man labor	.97	1.31	2.44	2.00	1.50	.10	3.74	1.72
Small tractor	-	.62	1.67	2.20	1.50	.05	1.57	1.09
Large tractor	.46	-	-	-	-	-	-	.07
Bushels:								
Seed	.13	.14	.15	.15	.14	.14	.13	.14
Yield	33	40	32	30	30	26	20	30
Preharvest Costs								
Man labor	$1.70	$3.96	$3.50	$1.50	$4.20	$3.73	$4.13	$3.24
Small tractor	-	2.57	1.75	1.37	1.80	3.03	1.15	1.67
Large tractor	2.45	-	.85	-	-	-	2.07	.76
Other machinery	.90	.39	.40	1.46	.58	.70	1.00	.78
Summerfallow	-	-	-	-	2.06	-	-	.29
Seed	1.48	1.42	1.77	1.50	1.43	1.71	1.55	1.55
Spray material	-	-	-	-	-	-	.12	.02
Manure	-	2.55	-	.90	4.00	7.48	2.00	2.42
Fertilizer	-	-	-	2.65	.23	3.19	-	.87
Total	$6.53	$10.89	$8.27	$9.38	$14.30	$19.84	$12.02	$11.60
Harvest Costs								
Man labor	$ .97	$1.30	$2.43	$2.00	$1.50	$ .10	$3.74	$1.72
Small tractor	-	.40	1.02	2.00	.90	.06	.83	.74
Large tractor	.66	-	-	-	-	-	-	.10
Other machinery	2.30	2.60	3.41	7.00	5.77	1.90	5.00	4.00
Custom work	-	3.50	-	-	-	2.88	-	.91
Total	$3.93	$7.80	$6.86	$11.00	$8.17	$4.94	$9.57	$7.47
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost 1/	$20.46	$28.69	$25.13	$30.38	$32.47	$34.78	$31.59	$29.07
Returns								
Value of crop	$32.86	$32.31	$33.64	$30.00	$30.00	$19.60	$19.57	$28.28
Net Return	12.40	3.62	8.51	-.38	-2.47	-15.18	-12.02	-.79
Price	$1.00	$ .80	$1.04	$1.00	$1.00	$ .75	$1.00	$ .94
Cost per Bushel	$ .62	$ .71	$ .78	$1.01	$1.08	$1.33	$1.61	$1.02

1/ No by-products. Therefore total costs and net costs are the same.

Table 11. COSTS AND RETURNS PER ACRE FOR SILAGE CORN
Red River Valley - 1951

Farm Number	6	24	22	26	7	1	19
Acres Silage Corn	13	21	7	10	14	25	15
Quantities							
Hours - Preharvest:							
Man labor	2.46	3.95	4.13	5.60	3.36	1.70	3.73
Small tractor	2.38	3.95	2.17	4.00	2.36	-	3.73
Large tractor	-	-	2.46	1.60	.86	1.70	-
Bushels - Seed:	.21	.14	.14	.33	.21	.13	.14
Hours - Harvest:							
Man labor	-	3.10	10.40	8.00	7.28	4.20	5.33
Small tractor	-	-	8.14	1.00	1.00	3.60	1.33
Large tractor	-	-	-	1.00	1.00	-	-
Tons - Yield:	12	9	10	12	6	5	5
Preharvest Costs							
Man labor	$2.46	$3.95	$4.13	$5.60	$3.36	$1.70	$3.73
Small tractor	2.39	2.57	1.15	3.00	2.13	-	3.03
Large tractor	-	-	2.07	1.37	1.46	2.45	-
Other machinery	.76	.70	1.00	1.47	.73	.90	.70
Summerfallow	2.87	-	-	.53	-	-	-
Seed	1.27	1.42	1.43	1.81	2.14	1.48	1.71
Spray material	-	-	.13	-	-	-	-
Manure	1.12	2.55	2.00	12.00	1.08	-	7.48
Fertilizer	-	-	-	3.00	-	-	-
Total	$10.87	$11.19	$11.91	$28.78	$10.90	$6.53	$16.65
Harvest Costs							
Man labor	-	$3.10	$ 10.43	$8.00	$7.28	$4.20	$5.33
Small tractor	-	4.18	4.31	.75	.90	3.60	1.08
Large tractor	-	-	-	.85	1.71	-	-
Other machinery	-	2.60	5.00	3.30	3.00	2.30	1.90
Custom work	8.15	2.38	-	8.62	-	-	-
Truck	-	-	-	3.00	-	-	.67
Miscellaneous	-	-	-	.58	-	.90	-
Total	$8.15	$12.26	$19.74	$25.10	$12.89	$11.00	$8.98
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost 1/	$29.02	$33.45	$41.65	$63.88	$33.79	$27.53	$35.63
Returns							
Value of crop	$60.00	$54.28	$50.00	$60.00	$38.57	$24.60	$30.80
Net Return	30.98	20.83	8.35	-3.88	4.78	-2.93	-4.83
Price	$5.00	$6.00	$5.00	$5.00	$6.00	$5.00	$6.00
Cost per Ton	$2.42	$3.70	$4.16	$5.32	$5.26	$5.60	$6.94

1/ No by-products. Therefore total costs and net costs are the same.

Table 11. COSTS AND RETURNS PER ACRE FOR SILAGE CORN (cont'd.)
Red River Valley - 1951

Farm Number	10	21	17	23	11	4	Ave.
Acres Silage Corn	10	41	17	10	13	23	16.85
Quantities							
Hours - Preharvest:							
Man labor	1.50	6.51	3.53	4.20	4.08	4.30	3.77
Small tractor	1.50	3.68	1.72	3.00	3.46	2.43	2.64
Large tractor	-	1.85	.82	-	-	1.00	.79
Bushels - Seed:	.15	.12	.23	.13	.20	.26	.18
Hours - Harvest:							
Man labor	5.55	3.90	3.24	4.70	2.31	3.66	4.74
Small tractor	6.00	1.95	.59	3.70	.46	.70	2.19
Large tractor	-	-	.59	-	-	1.04	.28
Tons - Yield:	5	5	4	4	3	3	6
Preharvest Costs							
Man labor	$1.50	$ 6.51	$3.53	$4.20	$4.08	$4.30	$3.78
Small tractor	1.36	2.51	1.72	1.80	2.25	1.04	1.92
Large tractor	-	1.87	.91	-	-	.81	.84
Other machinery	1.46	.66	.72	.58	.52	.50	.82
Summerfallow	-	-	2.92	2.06	-	1.91	.79
Seed	1.50	1.07	1.64	1.43	1.42	1.76	1.54
Spray material	-	-	-	-	-	-	.01
Manure	.90	5.85	.60	4.00	-	9.00	3.58
Fertilizer	2.65	2.88	2.06	.23	-	-	.83
Total	$9.37	$21.35	$14.10	$14.30	$8.27	$ 19.32	$14.11
Harvest Costs							
Man labor	$5.50	$3.90	$3.23	$4.70	$2.31	$3.66	$4.74
Small tractor	5.46	1.33	.48	2.22	.30	.30	1.91
Large tractor	-	-	.65	-	-	.88	.34
Other machinery	7.00	2.00	1.95	5.77	2.61	1.50	2.99
Custom work	-	-	-	-	-	-	1.47
Truck	-	.73	2.59	-	.92	-	.61
Miscellaneous	-	-	-	-	-	-	.11
Total	$17.96	$7.96	$8.90	$12.69	$6.14	$6.34	$12.17
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost 1/	$37.33	$39.31	$33.00	$36.99	$24.41	$35.66	$36.28
Returns							
Value of crop	$25.00	$38.05	$26.76	$25.20	$ 7.69	$14.13	$ 35.01
Net Return	-12.33	-1.26	-6.24	-11.79	-16.72	-21.53	-1.27
Price	$5.00	$8.00	$7.00	$6.00	$3.33	$5.00	$5.57
Cost per Ton	$7.47	$8.27	$8.63	$8.81	$9.07	$12.62	$6.79

1/ No by-products. Therefore total costs and net costs are the same.

Table 12. COSTS AND RETURNS PER ACRE FOR ALFALFA HAY
Red River Valley - 1951

Farm Number	1	24	23	13	6	25	4	22
Acres Alfalfa Hay	38	17	21	30	35	76	143	6
Quantities								
Hours - Harvest:								
Man labor	5.92	7.18	5.19	1.00	4.89	2.67	1.19	8.66
Small tractor	4.05	-	3.38	1.00	2.66	1.09	.98	11.17
Large tractor	.74	-	-	-	-	.12	-	-
Tons - Yield:	3.42	2.59	1.71	1.67	1.86	1.29	.78	1.33
Preharvest Costs								
Seed	$1.33	$1.94	$1.47	$1.60	$2.74	$1.39	$1.00	$ .22
Spray material	-	-	-	-	-	-	-	-
Manure	-	1.18	2.00	-	1.12	-	2.60	.24
Fertilizer	-	-	-	-	-	-	-	-
Total	$1.33	$3.12	$3.47	$1.60	$3.86	$1.39	$3.60	$ .46
Harvest Costs								
Man labor	$15.92	$7.18	$5.19	$1.00	$4.88	$2.67	$1.19	$8.66
Small tractor	2.55	-	2.03	.72	2.66	.81	.42	5.92
Large tractor	1.06	-	-	-	-	.12	-	-
Other machinery	3.42	2.59	-	5.83	1.34	5.35	.48	2.33
Custom work	-	-	.89	5.79	7.52	-	.55	-
Twine or wire	2.24	-	-	-	-	1.68	-	-
Truck	-	-	-	-	-	.05	-	-
Miscellaneous	-	4.42	-	-	-	-	-	-
Total	$15.19	$14.19	$8.11	$13.34	$16.40	$10.67	$2.64	$16.91
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost 1/	$26.52	$27.31	$21.58	$24.94	$30.26	$22.06	$16.24	$27.37
Returns								
Value of crop	$62.41	$31.06	$25.71	$33.33	$27.86	$19.33	$16.07	$ 20.00
Net Return	35.89	3.75	4.13	8.39	-2.40	-2.73	-.17	-7.37
Price	$18.25	$12.00	$15.00	$20.00	$15.00	$15.00	$18.00	$15.00
Cost per Ton	$7.75	$10.55	$12.59	$14.96	$16.29	$17.11	$18.21	$20.53

1/ No by-products. Therefore total costs and net costs are the same.

Table 12. COSTS AND RETURNS PER ACRE FOR ALFALFA HAY (cont'd.)
Red River Valley - 1951

Farm Number	17	9	5	26	7	15	Ave.
Acres Alfalfa Hay	40	23	50	24	25	18	39
Quantities							
Hours - Harvest:							
Man labor	1.27	3.35	.72	12.29	2.48	4.45	4.38
Small tractor	1.01	1.70	.84	3.54	.76	2.50	2.48
Large tractor	-	-	-	1.33	-	-	.16
Tons - Yield:	.75	.87	.64	1.79	.66	.85	1.44
Preharvest Costs							
Seed	$1.15	$1.00	$1.33	$2.15	$ .65	$1.87	$1.42
Spray material	-	-	.90	-	-	-	.06
Manure	.60	-	-	.64	1.08	-	.68
Fertilizer	-	-	-	3.60	-	-	.26
Total	$1.75	$1.00	$2.23	$6.39	$1.73	$1.87	$2.42
Harvest Costs							
Man labor	$1.27	$3.35	$ .72	$12.29	$2.48	$4.45	$4.38
Small tractor	.83	2.29	.34	2.66	.68	2.30	1.73
Large tractor	.30	-	-	1.13	-	-	.19
Other machinery	1.88	4.00	.48	7.50	6.00	3.32	3.18
Custom work	-	-	2.56	3.59	-	6.53	1.96
Twine or wire	-	.95	-	.24	-	-	.36
Truck	-	-	-	8.00	.52	-	.61
Miscellaneous	-	-	-	-	-	-	.31
Total	$4.28	$10.59	$4.10	$35.41	$9.68	$16.60	$12.72
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost 1/	$16.03	$21.59	$16.33	$51.80	$21.41	$28.47	$25.14
Returns							
Value of crop	$11.25	$13.04	$8.52	$32.91	$10.80	$8.93	$22.79
Net Return	-4.78	-8.55	-7.81	-18.89	-10.61	-19.54	-2.35
Price	$15.00	$15.00	$13.31	$18.20	$15.00	$10.52	$15.38
Cost per Ton	$21.38	$24.83	$25.53	$28.91	$29.75	$33.55	$17.46

1/ No by-products. Therefore total costs and net costs are the same.

Table 13. COSTS AND RETURNS PER ACRE FOR ALFALFA HAY AND SEED
Red River Valley - 1951

Farm Number	21	3	19	20	12	2	Ave.
Acres Alf. Hay & Seed	63	37	30	43	9	30	35
Quantities							
Hours - Harvest:							
Man labor	1.25	3.54	2.57	1.30	2.11	3.10	2.31
Small tractor	.19	1.68	2.30	.49	1.33	1.17	1.19
Large tractor	-	.38	-	.39	-	-	.13
Tons - Hay Yield:	.40	1.22	1.37	.93	.77	.57	.88
Preharvest Costs							
Seed	$ .98	$2.01	$1.67	$3.55	$5.01	$2.60	$2.64
Spray material	-	-	.75	2.00	-	-	.46
Manure	.97	-	-	-	1.02	.25	.37
Fertilizer	1.17	-	-	-	2.22	-	.57
Total	$3.12	$2.01	$2.42	$5.55	$8.25	$2.85	$4.04
Harvest Costs							
Man labor	$1.25	$3.54	$2.56	$1.30	$2.11	$3.10	$2.31
Small tractor	.13	1.02	1.86	.26	1.33	.87	.91
Large tractor	-	.52	-	.39	-	-	.15
Other machinery	1.20	.55	2.46	3.00	3.50	1.70	2.08
Custom work	-	3.78	6.57	-	-	-	1.72
Truck	-	.12	-	-	1.57	1.00	.45
Miscellaneous	1.03	1.74	1.33	1.16	1.49	2.60	1.56
Total	$3.61	$11.27	$14.78	$6.11	$10.00	$9.28	$9.18
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total Cost 1/	$16.73	$23.28	$27.20	$21.66	$28.25	$22.13	$23.22
Returns							
Value of seed	$14.28	$7.62	$3.85	$11.63	$11.11	$5.33	$8.97
Value of hay	7.94	14.60	22.32	8.37	11.67	5.67	11.75
Total	$22.22	$22.22	$26.17	$20.00	$22.78	$11.00	$20.73
Net Return	$5.49	$1.06	$-1.03	$-1.66	$-5.47	$-11.13	$-2.49
Price of Seed	$ .50	$ .47	$ .42	$ .50	$ .50	$ .40	$ .47
Price of Hay	$20.00	$12.00	$16.34	$ 9.00	$15.00	$10.00	$13.72

1/ No by-products. Therefore total costs and net costs are the same.

Table 14. COSTS PER ACRE FOR SUMMERFALLOW
Red River Valley - 1951

Farm Number	4	9	15	21	7	11	8	13
Acres								
Total	35	105	95	40	198	37	96	70
Black	35	27	95	20	198	37	20	35
Green Manure 1/	-	45	-	20	-	-	76	35
Other 2/	-	33	-	-	-	-	-	-
Hours								
Man labor	1.31	1.37	1.09	1.07	1.05	2.10	1.68	1.20
Small tractor	-	.13	-	-	-	2.03	-	.03
Large tractor	1.31	1.26	-	.95	.99	-	1.53	1.17
Costs								
Man labor	$1.31	$1.37	$1.09	$1.07	$1.05	$2.10	$1.68	$1.20
Small tractor	-	.13	-	-	-	1.32	-	.02
Large tractor	1.10	1.58	1.34	.96	1.69	-	1.37	.95
Other machinery	.50	1.70	.94	.66	.73	.52	.60	1.07
Seed	-	1.12	-	.76	-	-	.33	.91
Manure & Fert.	-	-	-	-	-	-	-	-
Land charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total	$12.91	$15.90	$13.37	$13.45	$13.47	$13.94	$13.98	$14.15
By-products 3/	-	2.58	-	-	-	-	-	-
Net Costs	$12.91	$13.32	$13.37	$13.45	$13.47	$13.94	$ 13.98	$ 14.15

Table 14. COSTS PER ACRE FOR SUMMERFALLOW (cont'd.)
Red River Valley - 1951

Farm Number	6	17	25	23	1	22	20	26
Acres								
Total	20	112	256	22	59	91	187	63
Black	20	-	-	-	26	33	25	35
Green Manure 1/	-	80	190	22	-	40	162	28
Others 2/	-	32	66	-	33	18	-	-
Hours								
Man labor	1.90	2.62	2.06	2.18	1.88	2.26	2.15	2.08
Small tractor	1.60	.45	3.12	2.18	.04	-	1.95	.60
Large tractor	-	1.91	1.82	-	1.51	2.18	-	1.59
Costs								
Man labor	$1.90	$2.62	$2.06	$2.18	$1.88	$2.26	$2.15	$2.08
Small tractor	1.20	.37	.02	1.31	1.23	-	1.85	.45
Large tractor	-	2.10	1.84	-	2.17	1.83	-	1.35
Other machinery	.76	.72	.46	.58	.90	1.00	.76	1.47
Seed	-	.34	.97	1.36	1.87	.88	1.21	.67
Manure & Fert.	.50	-	-	-	-	-	-	-
Land charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total	$14.36	$16.15	$15.35	$15.43	$17.05	$15.97	$15.97	$16.02
By-products 3/	-	.80	-	-	1.36	-	-	-
Net Costs	$14.36	$15.35	$15.35	$15.43	$15.69	$15.97	$15.97	$16.02

1/ Seventy-five per cent of the green manure was sweet clover; the rest was made up of oats, peas, beans, buckwheat, and alfalfa.

2/ Two-thirds of other fallow was alfalfa which was pastured or used for hay before fallowing; the balance was made up of poor stands of grain which were worked over.

3/ By-products are hay and pasture taken from the land subsequently fallowed.

Table 14. COSTS PER ACRE FOR SUMMERFALLOW (cont'd.)
Red River Valley - 1951

Farm Number	18	14	12	5	3	2	Ave.
Acres							
Total	232	87	43	23	7	83	89
Black	232	-	32	-	7	-	40
Green Manure 1/	-	87	-	-	-	83	39
Other 2/	-	-	11	23	-	-	10
Hours							
Man labor	2.03	2.32	2.80	2.00	5.14	3.53	2.09
Small tractor	-	.49	2.80	-	-	1.82	.79
Large tractor	2.03	1.67	-	2.17	4.86	1.72	1.30
Costs							
Man labor	$ 2.03	$ 2.32	$ 2.80	$ 2.00	$ 5.14	$ 3.53	$ 2.09
Small tractor	-	.36	2.82	-	-	1.36	.52
Large tractor	2.37	.98	-	3.04	6.80	2.63	1.55
Other machinery	.58	.56	1.59	.82	.40	1.12	.88
Seed	-	3.33	.46	4.00	-	2.58	.95
Manure & Fert.	2.15	-	1.39	-	-	7.36	.51
Land Charge	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Total	$17.13	$17.55	$19.08	$19.86	$22.34	$28.58	$16.50
By-products 3/	-	-	-	-	-	-	.22
Net Costs	$17.13	$17.55	$19.08	$ 19.86	$22.34	$28.58	$16.28

1/ See footnote 1/ on preceding page.
2/ See footnote 2/ on preceding page.
3/ See footnote 3/ on preceding page.

COMPARATIVE RETURNS FROM CROPS

Many factors must be considered in planning a crop rotation. The most important single factor is the selection of those crops which are the most profitable. In a cash grain area, such as the Red River Valley, the best measure of profitability is the net returns per acre. The average yields, values produced, costs and net returns per acre for the crops presented in the preceding tables are shown in Table 15. These data are for the year 1951 only, and consequently may be influenced by unusual weather conditions in 1950 and 1951. They do, however, give an approximate measure of the relative profitabilities of the different crops.

Table 15. SUMMARY OF CROP COSTS AND RETURNS PER ACRE
Red River Valley - 1951

Crop	Yield	Value of crop	Net cost	Net return	Hours of labor	Return per hour
Sugar beets	11.3 tons	$159.77	$79.39	$80.38	13.8	$6.82
Wheat	25 bu.	56.72	27.56	29.16	2.4	13.15
Flax	10 "	40.82	24.69	16.13	3.1	6.20
Barley	34 "	40.84	24.75	16.09	2.8	6.75
Soybeans	16 "	43.15	27.32	15.83	4.2	4.77
Oats	40 "	29.42	23.62	5.80	2.7	3.15
Ear corn	30 "	28.28	29.07	-.79	5.6	.86
Corn silage	6 tons	35.01	36.28	-1.27	7.8	.84
Alfalfa hay	1.4 tons	22.79	25.14	-2.35	4.4	.47
Alfalfa hay and seed		20.73	23.22	-2.49	2.3	none

Sugar beets gave the highest net returns per acre in 1951. Sugar beets are not available as an alternative crop to all farmers, however. The market is limited to the capacity of the processing plants in the area. The present acreage fills that capacity.

The net returns from wheat in 1951 were higher than from the other small grain crops. Wheat yields, however, were above average in 1951. At 1951 market prices, the returns from corn and alfalfa were not sufficient to cover the costs shown here.

A more useful comparison can be obtained if average prices and yields for a period of time are used. Such a comparison is presented in Table 16. Data are shown for Kittson county, the northernmost county in the area, and for Wilkin county, at the southern end. Estimates for the other counties can be made from the data for these counties. The yields are ten year averages for 1942-51, as reported by the State - Federal Crop and Livestock Reporting Service. The prices used are the average market prices for the three crop years, 1949-51. The costs per acre were obtained from the data in the preceding tables. The costs have been changed slightly to adjust them to the average yields, and to eliminate the effect of unusual circumstances on a few farms. These net returns, then, reflect the approximate average returns that could be expected in the near future if conditions remain approximately as they have been during the last few years. Each farmer, when applying these ideas to his farm, must adjust the yields, prices, and costs to his farm, and to the circumstances which he believes will prevail in the future.

Table 16. COMPARATIVE NET RETURNS PER ACRE
Red River Valley

Crop	Yield 1942-51 average	Price 1949-51	Crop value	Cost	Net return
			Kittson County		
Wheat	18 bu.	$ 2.08	$37.44	$28.00	$ 9.44
Flax	8.5 bu.	3.54	30.09	24.00	6.09
Barley	24 bu.*	1.23	29.52	26.00	3.52
Oats	36 bu.*	.71	25.56	24.00	1.56
Alfalfa hay	1.4 tons	20.00	28.00	25.00	3.00
			Wilkin County		
Wheat	16 bu.	$ 2.08	$33.28	$25.00	$ 8.28
Flax	9.1 bu.	3.54	32.21	24.00	8.21
Barley	23 bu.*	1.23	28.29	24.00	4.29
Oats	37 bu.*	.71	26.27	23.00	3.27
Soybeans	11.2 bu.	2.45	27.44	27.00	.44
Ear corn	27 bu.	1.34	36.18	29.00	7.18
Alfalfa hay	1.5 tons	20.00	30.00	25.00	5.00

* Adjusted to 48 pounds per bushel for barley and 32 pounds for oats.

Wheat has been the most profitable crop for the average farmer in the Red River Valley. This, however, might change. Reserve stocks of wheat are accumulating. This might cause future wheat prices to be lower relative to other small grain prices than in the past three years. Flax has also been a profitable crop. Barley and oats have been the least profitable of the small grain crops. There is a rather wide range in the profitabilities of these crops in Kittson county. The range is much smaller in Wilkin county.

Soybeans are being grown in the southern counties of the Red River Valley. The profits have been quite low. As the farmers gain experience and as new varieties are developed these profits may rise. The average profits from corn in Wilkin county have been favorable when compared with the average profits of other crops. Its profitability would be much less in counties farther north. Since the yield of marketable corn will differ greatly from year to year, it is a more risky crop than the small grains. Corn and soybeans, being grown as row crops, permit cultivation during the early summer and help to provide control for some weeds. They also help to distribute the labor load more uniformly during the summer. These values must be considered in addition to the costs and returns shown in Table 16.

Alfalfa usually is not grown as a cash crop in this area. It would, however, compare reasonably well with other crops, especially if the acreage was sufficiently large to give economical use for a baler. Alfalfa, of course, has the additional advantage of improving soil productivity.

Some farmers keep livestock and use part or all of their land for feed production. They will want to select crops which produce large amounts of feed per acre at a low cost per pound. Such data for the principal feed crops are presented in Table 17. Corn silage and alfalfa produce the greatest quantity of feed per acre. The total quantity of nutrients per acre is largest from corn silage, but the higher protein content of alfalfa makes it a more desirable feed crop. The cost per 100 pounds of nutrients is less for these crops than for ear corn or the small grains. Since labor is scarce and expensive on most farms, the farmer is interested in the amount of time required to produce the feed nutrients. This, however, is quite similar for all crops.

Table 17. COST OF PRODUCING FEED NUTRIENTS
Red River Valley - 1951

Crop	Yield - 1942-51 Ave. Bu. or tons	T.D.N.* lbs.	Cost per acre	Man hours per acre	Cost per 100 lbs. T.D.N.*	Man hours per 100 lbs. T.D.N.*
			Kittson County			
Wheat	18	880	$28.00	2.4	$3.18	.27
Barley	24	890	26.00	2.8	2.92	.31
Oats	36	800	24.00	2.7	3.00	.34
Corn silage	5.5	1850	36.00	7.8	1.95	.42
Alfalfa hay	1.4	1400	25.00	4.4	1.79	.31
			Wilkin County			
Wheat	16	790	$25.00	2.4	$3.16	.30
Barley	23	850	24.00	2.8	2.82	.33
Oats	37	820	23.00	2.7	2.80	.33
Ear corn	27	1230	29.00	5.6	2.36	.46
Corn silage	6.5	2080	36.00	7.8	1.73	.38
Alfalfa hay	1.5	1500	25.00	4.4	1.67	.29

* Total digestible nutrients

Low cost per bushel or ton as well as a good selection of crops are necessary for profitable crop production. High yields per acre, low costs per acre, or both could give low costs per unit of production. The relative importance of these two factors is shown in Table 18 for six crops. The costs for each of the six crops, as given in Tables 4, 5, 6, 8, 11, and 12 have been divided into three groups—the third of the farmers with the lowest cost per bushel or per ton, the third with about average costs, and the third with the highest costs.

Table 18. FACTORS RELATED TO COST PER UNIT FOR CROPS
Red River Valley - 1951

Cost per unit	Crop					
	Wheat	Barley	Oats	Flax	Alfalfa hay	Corn Silage
			Cost per bushel or ton			
Low third	$ .84	$ .55	$ .39	$ 1.75	$11.61	$ 3.89
Middle third	1.10	.74	.62	2.46	20.53	6.68
High third	1.55	1.04	1.02	2.91	28.56	9.29
			Yield per Acre			
Low third	30	48	59	13	2.25	10.8
Middle third	24	30	40	10	1.06	5.2
High third	19	25	23	9	.94	3.5
			Preharvest cost per acre			
Low third	$10.85	$10.74	$ 7.98	$ 8.25	$ 2.68	$15.69
Middle third	12.20	8.55	10.23	10.73	1.15	12.96
High third	14.46	11.91	9.29	12.11	3.16	14.00
			Harvest cost per acre			
Low third	$ 4.74	$ 5.52	$ 5.60	$ 4.56	$13.45	$16.31
Middle third	4.27	3.77	4.48	3.86	10.61	11.76
High third	5.11	4.10	4.09	4.08	13.69	8.52
			Net cost per acre*			
Low third	$25.22	$26.42	$22.81	$22.81	$26.12	$42.00
Middle third	26.42	22.32	24.69	24.59	21.76	34.72
High third	29.45	26.01	23.38	26.19	26.85	32.52

* Includes land charge and credit for by-products in addition to preharvest and harvest costs.

For each of the six crops, the group with the lowest costs per unit of production had the highest yield, and the group with the highest costs had the lowest yields. The net cost per acre, however, does not seem to be consistently related to cost per unit of output. In other words, although low costs per acre contribute to high profits in crop production, high yields are more important. Unfortunately, it is impossible to determine from these records the reasons why some farmers had higher yields than others. Better land is undoubtedly one factor; good cropping practices in the past, good seedbed preparation, and good seeds are others. A progressive farmer must study crop practices in his area to find those which increase his yields without an offsetting increase in costs.

POWER AND MACHINERY COSTS

Power and machinery costs are important in crop production, as shown in Table 19. For the small grain crops, for example, these items accounted for about twenty per cent of the total costs and almost forty per cent of the costs other than land rent.

Table 19. ELEMENTS OF CROP PRODUCTION COSTS
Red River Valley - 1951

Elements of cost	Wheat	Barley	Oats	Flax	Sugar beets	Soy-beans	Alfal-fa hay	Alfal-fa hay & seed	Ear Corn	Corn sil-age
					Cost per Acre					
Man labor *	$2.96	$3.15	$2.89	$3.34	$14.60	$4.36	$4.38	$2.31	$5.00	$8.62
Tractor	2.15	1.94	1.84	2.13	5.48	2.98	1.92	1.06	3.31	5.10
Other machinery	3.42	3.32	3.38	2.86	11.98	2.36	3.79	2.53	4.80	4.46
Custom work	.52	.15	.31	.22	20.75	.96	1.96	1.72	.91	1.47
Seed	3.63	2.77	2.39	3.28	7.74	3.54	1.42	2.64	1.52	1.54
Manure & fert.	1.64	1.62	1.74	1.60	4.68	2.47	.94	.94	3.30	4.43
Miscellaneous	.97	.25	.33	.10	.54	.06	.73	2.02	.04	.17
Land charge	12.45	11.55	11.04	11.00	14.14	10.59	10.00	10.00	10.16	10.49
Total	$27.74	$24.75	$23.92	$24.53	$79.91	$27.32	$25.14	$23.22	$29.07	$36.28

* The costs of summerfallow have been prorated to man labor, tractor, other machinery, manure and fertilizer, miscellaneous, and land charge according to the distribution of costs in Table 19.

The present value of the machinery averaged $22 per acre on these farms, as shown in Table 20. This is the value depreciated by a straightline method from original cost to present age. The original cost was $33 per acre. The investment per acre was slightly lower on the largest farms than on the smallest farms.

Table 20. INVESTMENTS IN MACHINERY AND AMOUNT OF POWER
Red River Valley - 1951

Item	Average of: 9 farms of 1/4 to 1/2 sections	11 farms of 3/4 to 1 section	6 farms over 1 section	All 26 farms
Acres in farm	269	518	1,059	565
Acres in crops and summerfallow	240	456	999	507
Investment in machinery per acre*				
Cost when purchased	$ 33	$ 37	$ 26	$ 33
Present value	$ 22	$ 24	$ 18	$ 22
Tractor power available				
Draw bar horsepower per 100 acres	16	12	10	13

* Omitting beet and potato machinery.

Estimates of the costs of operating tractors are given in Table 21. In calculating these costs and the costs for machinery, fuel was charged on the basis on the farmer's estimate of the average amount of fuel used per hour during the year and the price he paid for it. Depreciation was calculated by dividing the original investment in the tractor by the farmer's estimate of the tractor's life. Interest was calculated at 5% on one-half of the initial cost. Grease and oil was charged at 4 cents per hour of use. Annual repairs, storage and miscellaneous costs were charged at 10 cents per hour for the small tractors and 8 cents per hour for the large tractors (which were used more hours each year). Cost per hour was obtained by dividing the total of all annual costs by the approximate number of hours which each tractor was used annually. Twenty-five per cent was added to the number of hours reported on crop use to get an approximate figure for the total number of hours which the tractor was used on all work during the year.

Machinery costs were calculated on a per acre basis, except in the case of hay, which was calculated on a per ton basis. Costs were calculated separately for the machinery that is used for the different purposes; tillage and seeding machinery were calculated together to get one figure for both - and the total annual cost divided by the total number of cultivated acres on the farm; all grain harvesting equipment (not including trucks) was calculated together and the total annual cost divided by the number of acres of small grains and soybeans on which it was used; the same method was used with beet equipment (dividing by the acreage of beets on the farm) and corn equipment (dividing by the number of acres of corn); with hay machinery the total annual cost was divided by the approximate total number of tons of hay harvested with the equipment.

In arriving at depreciation costs, the original investment (by the present owner) of each machine was divided by the farmer's estimate of its life. Interest, repairs, and storage were calculated at 8% of initial cost.

Table 21. COSTS OF OPERATING TRACTORS 1/
Red River Valley - 1951

Farm No.	Type of tractor 3/	Fuel; gals. per hour	Price of fuel	Orig. cost	Est. life	Depreciation	Interest	Repair and main.	Oil and grease	Annual cost	Hours use per year 2/	Cost per hour
Tractors under 13 drawbar horsepower 3/												
1	gw	1.0	$.19	$471	15	$31	$12	$45	$18	$192	450	$.43
22	gw	1.0	.20	600	15	40	15	60	24	259	600	.43
23	gw	1.3	.20	600	20	30	15	60	24	279	600	.46
24	gw	1.0	.20	800	10	80	20	80	32	372	800	.46
25	gw	1.5	.20	600	20	30	15	70	28	355	700	.51
16	gw	1.0	.18	1015	10	101	25	60	24	320	600	.53
19	gw	1.3	.20	630	15	42	16	35	14	195	350	.56
7	gw	1.5	.20	875	20	44	22	40	16	242	400	.60
21	gw	1.5	.19	700	10	70	18	40	16	258	400	.65
14	gw	2.0	.20	900	25	36	22	40	16	274	400	.75
20	gw	1.0	.19	700	6	117	18	30	12	234	300	.78
25	gw	2.0	.20	900	30	30	22	20	8	160	200	.80
20	gw	1.0	.19	950	6	158	24	25	10	265	250	1.06
Ave.		1.1	$.19	$749	16	$62	$19	$47	$19	$262	465	$.62
Tractors of 13.0 to 16.9 drawbar horsepower												
3	gw	1.1	$.20	$400	15	$27	$10	$25	$10	$122	250	$.49
19	gw	1.5	.20	800	15	53	20	45	18	271	450	.60
18	gw	1.5	.20	750	20	38	19	30	12	189	300	.63
22	gw	1.5	.20	2100	15	140	52	90	36	588	900	.65
15	gw	1.6	.20	890	12	74	22	55	22	353	550	.65
9	gw	1.5	.20	1250 4/	20	62	31	45	18	291	450	.65
12	gw	1.5	.20	750	15	50	19	25	10	179	250	.72
15	gw	1.8	.20	1500	12	125	38	70	28	519	700	.75
17	gw	1.0	.20	1000	18	56	25	20	8	149	200	.75
24	gw	2.0	.20	1195	15	80	30	50	20	380	500	.76
3	gw	2.5	.20	900	20	45	22	40	16	323	400	.81
21	gw	2.0	.19	1100	10	110	28	45	18	372	450	.83
20	gw	2.0	.19	950	6	158	24	50	20	442	500	.88
6	gw	1.7	.20	1275	12	106	32	35	14	307	350	.88
14	gw	2.5	.20	1700	10	170	42	60	24	596	600	1.00
2	gw	1.5	.20	1811	10	181	45	25	10	338	250	1.35
Ave.		1.7	$.20	$1148	14	$92	$29	$44	$18	$339	444	$.78

(Continued on next page)

1/ Horsepower figures used are 75 per cent of maximum calculated horsepower as reported in the Nebraska Tractor Tests.
2/ Twenty-five per cent was added to the hours reported to get the approximate total hours used.
3/ Type of tractor: gw = gas, wheel; gt = gas, track-laying; dw = diesel, wheel; dt = diesel, track-laying.
4/ This is a half share.

Table 21. COSTS OF OPERATING TRACTORS[1] (Cont'd.)
Red River Valley - 1951

Farm No.	Type[3] of Tractor	Fuel; gal. per hour	Price of fuel	Orig. cost	Est. life	Depreciation	Interest	Repair and main.	Oil and grease	Annual cost	Hours use per year[2]	Cost per hour
				Tractors of 17.0 to 23.9 drawbar horsepower								
8	gw	2.0	$.18	$1000	15	$67	$25	$50	$20	$338	500	$.68
11	gw	1.6	.20	1875	10	188	47	40	16	291	400	.73
12	gw	1.5	.20	1790	15	120	45	50	20	363	500	.73
11	gw	1.6	.20	1200	15	80	30	40	16	294	400	.74
6	gw	1.7	.19	1025	15	68	31	35	14	262	350	.75
26	gw	1.5	.20	1965	15	131	49	55	22	422	550	.77
12	gw	1.5	.20	1790	15	120	45	50	20	385	500	.77
13	gw	2.0	.20	2000	15	133	50	75	30	588	750	.78
5	gw	3.0	.19	1262	20	63	32	50	20	450	500	.90
17	gw	1.0	.20	1875	15	125	47	30	12	274	300	.91
10	gw	2.5	.20	2020	15	135	50	50	20	505	500	1.00
21	gw	3.0	.19	2707	10	270	68	60	24	764	600	1.27
Ave.		1.9	$.19	$1709	14	$125	$43	$49	$20	$411	488	$.84
				Tractors of 24.0 to 24.9 drawbar horsepower								
14	dt	1.8	$.15	$1200	15	$80	$30	$48	$24	$354	600	$.59
4	gw	3.0	.19	400	15	27	10	20	10	209	250	.84
26	gw	2.3	.19	2200	12	183	55	64	32	676	800	.85
20	dw	2.0	.16	3350	15	223	84	60	30	634	750	.85
18	dw	2.0	.16	2000	10	200	50	48	24	514	600	.86
25	dw	2.0	.14	1650	10	165	41	36	18	387	450	.86
25	dt	2.0	.14	3170	10	317	79	64	32	718	800	.90
21	gw	2.5	.20	2175	15	145	54	40	20	509	500	1.01
16	gw	3.0	.19	1400	14	100	35	24	12	342	300	1.14
18	gw	3.0	.18	1350	10	135	34	24	12	367	300	1.22
7	dt	1.8	.17	4470	20	224	112	32	16	503	400	1.25
15	gw	3.5	.19	1706	6	284	43	56	28	877	700	1.25
9	gt	3.0	.20	2532	10	253	63	48	24	757	600	1.26
18	gw	3.0	.18	1450	10	145	36	24	12	379	300	1.26
2	gw	3.0	.20	1972	12	164	49	32	16	507	400	1.27
3	gw	2.8	.20	2395	15	160	60	24	12	419	300	1.40
1	gw	3.5	.20	2500	10	250	62	40	20	722	500	1.44
2	dt	2.0	.16	3930	10	393	98	36	18	689	450	1.53
Ave.		2.6	$.18	$2213	12	$192	$55	$40	$20	$531	500	$1.10

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Table 21. COSTS OF OPERATING TRACTORS 1/ (cont'd.)
Red River Valley - 1951

Farm No.	Type 3/ of tractor	Fuel; gals. per hour	Price of fuel	Orig. cost	Est. life	Depreciation	Interest	Repair and main.	Oil and grease	Annual cost	Hours use per year 2/	Cost per hour
						Tractors of 25.0 to 34.9 drawbar horsepower						
13	dt	2.0	$.16	$4388	15	$147	$55	$44	$22	$448	550	$.81
22	gw	2.0	.18	1700	10	170	42	48	24	504	600	.84
8	dw	1.8	.16	4075	25	163	102	40	20	450	500	.90
20	gt	1.5	.20	1152	15	77	29	16	8	189	200	.95
17	gw	4.0	.20	1200	20	60	30	40	20	550	500	1.10
16	dw	3.0	.16	3600	10	360	84	64	32	934	800	1.17
5	gw	2.0	.20	2543	12	212	64	28	14	491	350	1.40
17	gt	4.0	.20	3100	15	207	78	24	12	561	300	1.87
Ave.		2.5	$.18	$2720	15	$174	$60	$38	$19	$516	475	$1.13
						Tractors of 40.0 or more drawbar horsepower						
18	dt	4.0	$.16	$5600	10	$560	$140	$96	$48	$1612	1200	$1.34
7	dt	3.5	.17	7800	20	390	195	32	16	871	400	2.17
Ave.		3.8		$6700	15	$475	$168	$64	$32	$1241	800	$1.76

Table 22. COSTS PER ACRE FOR TILLAGE AND SEEDING MACHINERY
Red River Valley - 1951

Farm Number	Original Investment	Annual Depreciation	Interest, Repairs, & Misc.	Total Cost
	Farms of 138 to 219 cultivated acres			
11	$3.48	$ .24	$ .28	$ .52
23	4.37	.23	.35	.58
24	5.96	.23	.47	.70
12	9.36	.83	.76	1.59
Ave.	$5.79	$.38	$.46	$.85
	Farms of 269 to 379 cultivated acres			
4	$3.21	$ .25	$ .25	$ .50
19	5.43	.27	.43	.70
6	5.16	.35	.41	.76
5	6.20	.33	.49	.82
1	5.74	.44	.46	.90
22	7.10	.43	.57	1.00
10	9.92	.67	.79	1.46
26	10.19	.66	.81	1.47
Ave.	$6.62	$.42	$.53	$.95
	Farms of 442 to 644 cultivated acres			
3	$2.52	$ .20	$ .20	$ .40
14	3.97	.24	.32	.56
8	4.50	.24	.36	.60
21	4.42	.31	.35	.66
15	6.14	.45	.49	.94
13	8.05	.43	.64	1.07
2	6.31	.62	.50	1.12
9	6.63	.67	.53	1.20
Ave.	$ 5.32	$ .40	$ .42	$ .82
	Farms of 690 to 1350 cultivated acres			
25	$2.70	$ .25	$ .21	$ .46
18	3.56	.30	.28	.58
16	4.27	.30	.34	.64
17	5.14	.31	.41	.72
7	5.14	.32	.41	.73
20	5.51	.32	.44	.76
Ave.	$ 4.39	$ .30	$ .35	$ .65

Table 23. COSTS PER ACRE FOR GRAIN HARVESTING MACHINERY
(not including tractor cost with tractor drawn combines)
Red River Valley - 1951

Farm Number	Gals.1/ Fuel	Original Investment	Annual Depreciation	Interest, Repairs, & Misc.	Cost of Fuel	Total Cost
		Farms with 79 to 166 acres of small grain and beans				
23	-	$4.03	$ .27	$ .32	-	$ .59 2/
10	-	6.29	.48	.50	-	.98 3/
24	1.33	8.71	.42	.69	$ .27	1.38
4	.55	9.91	.71	.79	.11	1.61 4/
11	.51	13.02	1.31	1.05	.10	2.46
12	1.27	17.30	1.73	1.39	.25	3.37
Ave.	.61	$ 9.88	$.82	$ .79	$ .12	$1.73
		Farms with 196 to 300 acres of small grain and beans				
26	1.00	$8.36	$ .79	$ .67	$ .19	$1.65
6	.80	8.92	.80	.71	.16	1.67
5	1.75	7.56	1.18	.60	.35	2.13
19	1.10	13.88	.85	1.10	.22	2.17
2	.80	15.00	1.22	1.20	.16	2.60
1	.65	16.76	1.60	1.34	.13	3.07 4/
22	1.40	21.95	1.09	1.76	.30	3.15 4/
25	1.00	15.09	1.83	1.21	.19	3.23
20	1.40	18.84	1.89	1.51	.28	3.68 4/
Ave.	1.10	$14.04	$1.25	$1.12	$.22	$2.59
		Farms with 335 to 431 acres of small grain and beans				
14	.77	$3.22	$ .26	$ .26	$ .16	$ .68
3	1.00	5.71	.92	.46	.20	1.58
8	1.00	7.97	.79	.64	.20	1.63 4/
13	.90	13.95	.93	1.12	.18	2.23
9	.50	14.52	1.45	1.16	.10	2.71
15	.88	15.52	2.44	1.24	.17	3.85 4/
Ave.	.84	$10.15	$ 1.13	$ .81	$.17	$ 2.11
		Farms with 526 to 1161 acres of small grain and beans				
17	.66	$5.07	$ .15	$ .41	$ .13	$ .69
18	.50	4.76	.39	.38	.10	.87
7	.80	8.80	.57	.71	.16	1.44
16	.90	10.85	1.05	.87	.18	2.10 4/
21	1.17	12.30	1.30	.98	.24	2.52 4/
Ave.	.81	$ 8.36	$ .69	$.67	$ .16	$1.53

1/ This does not include fuel used in tractor.
2/ Threshing machine used.
3/ All this farm's combining was hired, except for beans.
4/ Self-propelled combines.

Table 24. COSTS PER TON FOR HAY MACHINERY
Red River Valley - 1951

Farm Number	Original Investment	Annual Depreciation	Interest, Repairs, & Misc.	Total Cost
	Machinery that harvested 7 to 18 tons			
2	$16.18	$ 1.59	$1.29	$2.88
12	24.30	2.57	2.00	4.57
7	32.83	2.50	2.61	6.11*
14	51.60	2.50	4.12	6.62
Ave.	$31.20	$2.29	$2.50	$5.04
	Machinery that harvested 25 to 35 tons			
5	$ 6.09	$ .25	$ .50	$ .75
15	11.14	.83	.88	1.71
22	13.33	.67	1.06	1.73
17	17.50	1.13	1.40	2.53
21	17.80	1.16	1.44	2.60
9	7.53	2.60	2.00	4.60
Ave.	$12.23	$ 1.11	$1.21	$2.32
	Machinery that harvested 41 to 60 tons			
3	$ 3.00	$ .20	$ .25	$ .45
6	3.52	.35	.28	.63
24	8.30	.34	.66	1.00
16	7.70	.52	.62	1.14
23	7.68	.60	.61	1.21
19	12.44	.78	1.00	1.78
20	16.30	1.14	1.30	2.94*
13	25.88	1.30	2.08	3.38
26	13.84	.92	1.11	4.03*
Ave.	$10.96	$ .68	$ .88	$1.84
	Machinery that harvested 95 to 130 tons			
4	$4.37	$ .26	$ .35	$ .61
1	3.73	.24	.30	1.04*
25	11.36	1.15	.91	4.16*
Ave.	$6.49	$ .55	$ .52	$1.94

* A calculated cost for interest and depreciation per ton for chopping or baling equipment is included in these figures.

Table 25. COST PER ACRE FOR CORN MACHINERY
Red River Valley - 1951

Farm Number	Original Invest-ment	Annual Deprec-iation	Interest, Repairs, & Misc.	Total Cost
7	$10.83	$ .70	$ .87	$1.57
19	14.04	.75	1.12	1.87
17	19.70	.94	1.00	1.94
21	14.41	1.12	1.15	2.27
1	15.83	1.05	1.27	2.32
24	21.59	.87	1.72	2.59
11	17.31	1.23	1.38	2.61
26	18.96	1.78	1.52	3.30
3	21.04	1.73	1.69	3.42
22	37.90	1.90	3.04	4.94
23	33.90	3.00	2.67	5.67
10	72.12	5.40	5.75	11.15
Ave.	$24.80	$1.71	$1.93	$3.64

Table 26. COST PER ACRE FOR SUGAR BEET MACHINERY
Red River Valley - 1951

Farm Number	Original Invest-ment	Annual Deprec-iation	Interest, Repairs, & Misc.	Total Cost
16	$24.06	$2.26	$1.92	$4.18
2	20.26	3.06	1.62	4.68
20	36.94	3.57	2.96	6.53
13	43.70	3.65	3.50	7.15
15	43.70	4.13	3.51	7.64
25	46.88	5.90	3.75	9.65
Ave.	$35.92	$3.76	$2.88	$6.64

Table 27. AVERAGE RATES OF PERFORMANCE WITH FIELD MACHINES
Red River Valley - 1951

Machine		Number	Acres per Hour		
Kind	Size	of farms	Average	Low	High
Plow	3 & 4 furrows	22	1.4	1.2	1.7
	5 & 7 furrows	4	2.55	2.5	2.6
Disc	10'	2	3.4	2.5	4.4
	12' to 16'	12	5.2	3.1	10.8
	18' to 21'	5	6.1	4.0	9.4
Field Cult-ivator	7½' & 8'	3	3.1	2.8	3.4
	10' to 12'	14	4.3	3.1	6.5
	14' to 15'	9	4.4	3.4	5.3
	29'	2	8.6	8.0	9.1
Graham Hoeme	10' to 17½'	4	3.9	3.5	4.4
One-way Disc	6' & 8'	3	2.5	1.9	3.3
	15'	2	5.3	4.8	5.8
Harrow	15' to 20'	5	6.2	5.0	8.2
	21' to 29'	10	9.4	6.3	17.2
	30' to 53'	9	13.4	10.3	20.6
Corn Cultivator	2 row	8	2.2	1.8	2.9
	4 row	3	2.6	1.4	4.3
Beet Cultivator	6 row	6	2.8	2.1	3.8
Grain Drill	10'	5	3.0	2.8	3.3
	12'	10	4.6	2.7	5.6
	14'	7	5.4	4.4	6.7
Swather	10'	5	3.0	2.5	3.8
	12'	13	4.6	3.3	6.5
	15' & 16'	5	7.2	6.2	8.7
Combine	6'	7	1.5	1.1	2.0
	12'	11	2.9	1.3	6.0
	14'	2	2.8	2.4	3.2
	16'	4	3.0	1.9	3.8
Mower	5' & 6'	4	2.3	1.7	3.0
	7'	15	2.9	1.6	5.5
Rake	Dump	6	3.2	1.8	4.6
	Side Delivery	7	3.1	2.0	4.3
Corn Planter	2 row	8	2.2	1.7	2.8
Beet Drill	6 row	5	2.3	1.6	2.9

One of the important things to consider in selecting a crop rotation is the combination of those crops which gives the most uniform distribution of labor throughout the crop year. Some crops, such as wheat and oats, compete directly with each other for labor. Planting and harvesting of these crops is done at about the same time of the year. Such crops as alfalfa and soybeans, however, require labor at the time of year when little is needed for the small grains. Consequently a crop rotation which includes alfalfa or soybeans together with the small grains will help to distribute the labor requirements more uniformly throughout the season. This might aid in holding labor costs down.

The records obtained in this study provide some information on the seasonal labor needs of crops grown in the Red River Valley. A summary is given in Table 28. The table indicates the average number of hours spent each week for 100 acres of each crop. These data can be converted to any acreage of a specific crop that an individual farmer may have in order to determine the approximate number of hours required each week for that acreage.

Since the data in Table 28 are based on only one year, the seasonal labor distribution should be used with care. Variations from year to year are wide, and must be taken into account. These data, however, are helpful in showing the broad differences between the seasonal labor requirements of the various crops.

Table 28. WEEKLY LABOR DISTRIBUTION FOR CROPS AND SUMMERFALLOW AND PERCENTAGE DISTRIBUTION OF FALL WORK
Red River Valley - 1951

Crop	Hours per 100 Acres 1/										Per cent 3/ Fall Work
	Wheat	Oats	Barley	Flax	Alf-2/ alfa	Ear Corn	Silage Corn	Sugar Beets	Soy-beans	Fal-low	
Fall work 3/	42	60	47	53	-	61	61	-	55	-	-
Week Ending											
April 21	1	2	-	5	-	-	-	-	-	-	-
April 28	16	5	3	10	-	3	3	3	-	-	-
May 5	18	20	21	11	-	57	57	26	12	1	-
May 12	20	29	20	16	-	46	46	41	48	4	-
May 19	14	17	22	11	-	14	14	21	36	4	-
May 26	7	6	15	16	-	15	15	30	15*	5	-
June 2	3	-	9	7	-	35	35	30	15	7	-
June 9	1	-	1	10	6	22	22	22	24	26	-
June 16	1	-	1	26	52	19	19	33	24	21	-
June 23	-	-	-	5	51	30	30	34	24	23	-
June 30	-	-	-	-	38	24	24	20	14	15	-
July 7	-	-	-	-	33	24	24	12	24	16	-
July 14	1	-	-	-	44	5	5	17	13	21	-
July 21	1	-	-	-	39	1	1	14	18	16	-
July 28	-	11	3	-	23	-	-	4	-	9	-
Aug. 4	5	35	26	-	21	-	-	5	-	9	1
Aug. 11	9	31	14	-	18	-	-	-	-	7	4
Aug. 18	17	39	22	3	-	-	-	-	-	5	5
Aug. 25	22	5	27	7	7	-	-	-	-	2	8
Sept. 1	3	4	7	1	2	-	-	-	-	3	5
Sept. 8	4	3	15	16	15	-	-	-	-	2	3
Sept. 15	24	-	8	28	5	-	40	67	-	5	6
Sept. 22	17	-	6	5	-	2	189	171	-	1	8
Sept. 29	1	-	1	5	10	8	31	94	-	1	9
Oct. 6	2	-	3	8	-	-	82	154	-	3	11
Oct. 13	10	-	4	34	12	-	43	226	10	1	15
Oct. 20	4	-	5	20	-	45	65	171	52	1	18
Oct. 27	1	-	-	2	-	43	24	82	19	1	6
Nov. 3	-	-	1	3	-	38	-	38	12	-	1
Nov. 10	-	-	-	-	-	36	-	41	8	-	-
Nov. 17	-	-	-	-	-	-	-	27	-	-	-
Total	244	267	281	302	376	528	830	383	423	209	100%

1/ Based on the labor records of those farms on which each crop was grown. The data represent average number of hours per 100 acres for each group of farms.

2/ The weekly number of hours per 100 acres of alfalfa listed here approximate the amount of labor used in harvesting 70 acres for hay only and 30 acres for both hay and seed.

3/ Fall work is field work such as plowing, discing, and cultivating done in the fall and charged to the succeeding year's crop.

* Includes 10 hours for 16 acres of spring plowing.