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

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A Preliminary Report
of

COST OF CROP PRODUCTION

From
Data Secured in 1931
on the

FARM ACCOUNTING ROUTE

In

ROCK & NOBLES COUNTIES, MINNESOTA

By

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SOURCE OF DATA

Method of Study

The Divisions of Agricultural Economics and of Animal Husbandry of the University of Minnesota are cooperating with the Bureau of Agricultural Economics of the United States Department of Agriculture in a three year accounting study of twenty-four farms in Rock and Nobles Counties in Southwestern Minnesota. This study was started March 1, 1929. The farms were selected in cooperation with the county agricultural agents in the respective counties, Mr. C. G. Gaylord in Rock County and Mr. C. J. Gilbert in Nobles County. Farms on which some type of beef production was a major enterprise were chosen. The farmers cooperating in this work keep complete record of cash receipts and cash expenditures, a daily record of the labor used on each crop and each class of livestock, a record of the farm produce used in the house, and other detailed information regarding their farm business. These records are checked at least twice a month by the route man and supplemented with inventories, livestock feed records, reports of crop yields and practices, and other significant facts about the farm operations. The data collected is sent to the central office at University Farm, St. Paul, where a detailed set of records for each farm is kept. From these records the costs presented in this report have been computed. This preliminary report deals with the costsand returns in 1931 for the principal crops grown on these farms, and also a partial analysis of the data secured in the 1929 and 1930 crop seasons. The averages for 1929 and 1930 are included for comparison. The financial returns from these farms, the cost and income from livestock production and other significant facts will be presented in later reports.

Description of Area

Rock and Nobles Counties are located in the southwestern corner of

Minnesota. The soil in Rock County and the western edge of Nobles County is a wind-blown loess. This is one of the most fertile soil types in the state. The balance of Nobles County is covered with a glacial till, the prevailing soil type of the southern and central part of the state. This, too, is a productive type well supplied with lime.

Both counties are level to gently rolling with practically all of the land tillable. There are some sections, especially in southern Nobles County, that need drainage to insure regular cropping. In Rock County there are limited areas of rock outcrop and also limited areas where the surface soil is shallow and underlain by a gravelly subsoil. These latter soils are inclined to be droughty in a dry season. The annual rainfall averages between 26 and 28 inches and the average growing season is from 130 to 140 days. According to the 1930 census, the average size of farms in Rock County was 220 and in Nobles County 208 acres. Farms between 100 and 174 acres in size are the most common in these counties, with those between 260 and 499 acres the second in number. In 1930 the average value of farm land per acre, including buildings, was $103 in Nobles County and $107 in Rock County. Only eight counties in the state reported a higher value per acre and seven of these are located close to Minneapolis and St. Paul. The average value of all farm land in the state was $69 per acre. According to the 1930 census 67% of all farm land in Nobles County and 70% of the land in Rock County was operated by tenants. Both cash and share leases are employed. Beef cattle and hogs are the principal classes of livestock raised. Corn, oats, and barley are the principal grain crops. They are raised primarily for feed altho there is a considerable surplus available for sale on many farms. The landlord's share of the crop is usually sold off the farm. Alfalfa and wild hay are the principal roughages grown.

Description of the farms studied

The average size of the farms studied in 1931 was 346 acres, in 1929, 323, and in 1930, 360 acres. This is approximately 62%, 51%, and 68% larger respectively than the average size of the farms in these two counties as reported in the 1930 census.

Corn, oats, barley, flax, alfalfa hay, and wild hay were the principal crops grown on the cooperating farms. Most of the feed raised on these farms, with the exception of the landlord's share of the crop, is fed on the farm. Only two of the farms studied in 1931 were owned entirely by the operator. Eleven farms were partly owned and partly rented by the operator. Only 34% of the land operated was owned by the operator. Both share and cash rental leases were employed.

Weather

The weather in 1931 was very unfavorable to crop production in these counties. The lack of precipitation throughout the season and the high temperatures, particularly at the time crops were maturing resulted in very low yields. 1930 was likewise unfavorable in respect to the amount of moisture altho oats and flax escaped with less damage than corn and barley. The average yields of the important crops grown on the farms studied and the 10 year average yield for Rock and

Nobles counties are presented in table 1.

TABLE 1

Crop Yields in Rock and Nobles Counties

	Average	Route Average		
	1921-30*	1929	1930	1931
Corn, bu.	32.4	38.0	31.9	23.8
Oats, bu.	36.2	50.7	53.7	32.1
Barley, bu	30.2	33.0	29.0	21.9
Flax, bu	10.8	11.2	13.0	6.0
Alfalfa, ton	-	2.0	1.6	1.1
Corn silage, ton	-	7.3	5.1	6.2
Corn fodder, ton	-	3.3	1.9	1.6
Wild hay, ton	1.0	1.1	1.2	.6

*Calculated from reports of the State Department of Agriculture. No data given for alfalfa, corn silage, and corn fodder.

The yields clearly reflect the unfavorableness of the 1931 crop season. With such low yields and present prices, it is only the very exceptional farmer that can raise these crops with any profit in Rock and Nobles Counties.

Price Relationships

Not only were yields low in 1931 but prices for corn, oats, barley, and flax were also far below the nine year averages. It is interesting to note that the price of roughages and barley showed no decline from 1930. Although most of the feed grains are fed to livestock instead of being sold, livestock prices were also so low as to prevent materially increasing the income through livestock feeding. The December 1 price for Rock and Nobles Counties for each of the three-years and the nine-year average are presented in Table 2.

TABLE 2

December 1 Farm Price - Rock and Nobles Counties

	County Average 1922-30*	Route Farms 1929	1930	1931
Corn, bu.	$ .60	$.56	$.48	$.41
Oats, bu.	.34	.36	.24	.22
Barley, bu.	.52	.49	.38	.38
Flax, bu.	2.16	2.83	1.48	1.23
Alfalfa, ton	-	15.00	14.00	14.00
Wild hay, ton	8.39	9.00	7.00	8.00

*Compiled from publications of the State Department of Agriculture.

The data clearly indicate the unfavorableness of prices during the three year study.

Crop rotation and cropping practices.

With the high percentage of tenancy the 2 year rotation of corn and small grain has persisted. Either landlords have not seen any benefit to be derived from a rotation which tends to conserve soil fertility, or satisfactory lease arrangements permitting the adoption of a more diversified cropping program have not been worked out. Approximately 45 per cent of the crop acreage on these farms was in corn, 36 per cent in oats or barley, 5 per cent in wild hay, and 6 per cent in flax, a total of 92 per cent. This leaves a possible maximum of 8 per cent in legume crops. The proportion of the acreage in legume crops was actually much less than this. These proportions agree closely with the figures for all farms contained in the 1930 census. According to the census 43 per cent of the crop land in these two counties was in corn, 40 per cent in small grain and 5 per cent in wild hay.

COSTS AND RETURNS FOR CROPS

Method of calculation of costs.

Comparative costs and returns for the eight principal crops grown on the farms studied are presented in this report. The physical quantities of man labor and horse and tractor work used per acre for each of the crops are also presented for 1931. Averages for 1929 and 1930 are included for comparison. The man labor rate of 30 cents per hour in 1929 and 1930, and of 25 cents in 1931 is based on wages paid to hired men. It includes an allowance for board. Horse work was charged at 12 cents per hour in 1929, 10½ cents in 1930, and 8½ cents in 1931. Two-plow tractors were charged at 75 cents per hour in 1929 and 1930, and at 65 cents in 1931; three-plow tractors were charged at $1.00 per hour in 1929 and 1930 and 85 cents in 1931. The seed charge for hay is based on the cost of seeding divided by the expected life of the stand. Manure is charged at 75 cents per ton plus the cost of hauling and spreading. Fifty per cent of this is charged against the crop to

which the manure is applied and the balance is prorated to the other crops in the rotation on an acre basis. Machinery is charged at a flat rate which includes an allowance for interest, depreciation, repairs, and other costs. The land charge is based upon the prevailing cash rental rates paid by the cooperators. The local market price on December 1 was used in computing the returns from the various crops. The value of crops, such as silage, which have no regular market price is computed by comparing their feed value with other crops, for which a local price is available. All costs, except those for flax, are figured at the farm. Marketing charges for flax, when it was hauled direct to market at threshing time, have been included. The costs do not include any labor for hauling hay from the stack nor fodder from the shock since hauling practices and size of loads vary so much. The credits include stubble or stalk pasture, and corn picked up behind the binder.

The physical expenditures and monetary costs are expressed on an acre basis. The cost per bushel or ton is also given. In the tables showing cost and return the farms are arranged in order of cost per bushel or ton, with the lowest cost appearing first. In the tables showing the labor expenditures, the farm with the lowest expenditure of man labor is first and the other farms follow in order with the farm with the highest expenditure coming last. The returns have been computed on the basis of the return per acre and return per hour of man labor used in producing the crop. The net return is the gain or loss left after subtracting from the value of the crop the items of cost that are presented. The return for labor is the amount left to pay for the labor after all charges except labor have been met.

The costs presented are relative rather than absolute costs. Since many of the cost items such as the farmers own labor and the use of his own land, machinery, and equipment do not represent actual "out-of-pocket" cash expense, it is necessary to estimate their value. Uniform cash and rental rates are used for each crop, since the varied rental systems and rates on the different farms, including cash rented, share rented, and owned land, would tend to obscure these comparisons. All crops have been credited at uniform prices, except as they vary in quality. Some farmers undoubtedly received different prices and also have labor and machinery costs differing from those used. The reader, in interpreting these figures, must make such adjustments in the returns as are necessary to fit the varying conditions.

Variations in returns.

The cost and returns for each farm producing each of the important crops is presented in the tables following page 11. The costs and returns for any crop show a wide range between farms, indicating that different practices and methods are followed on different farms. The variation in production costs is indicated in Table 3. Each cooperator, by comparing his expenditures with those of the other cooperators, should be able to find any weaknesses in his cropping plans or methods and by correcting them, increase his income.

TABLE 3

Variation in Production Costs - Rock and Nobles Counties - 1931

Crop	Unit	Cost per Unit			Dec. 1 price
		Average	High	Low	
Corn	bu.	$ .61	$ .99	$.39	$ .41
Oats	bu.	.39	.71	.24	.22
Barley	bu.	.56	1.39	.36	.38
Flax	bu.	2.40	12.50	1.57	1.23
Alfalfa	ton	10.74	18.77	5.87	14.00
Wild Hay	ton	12.33	35.05	7.10	8.00
Corn fodder	ton	10.50	20.40	5.00	6.00
Corn silage	ton	3.51	5.16	2.46	4.25

Factors affecting returns from crop production.

The study of these three years of crop records has revealed some important factors influencing the returns from crop production. Among these are crop selection, crop yields, and the factors influencing costs.

Yields

One of the most important factors affecting the returns from any crop is the yield. Costs are also important but do not vary as much as yields and hence have less influence on returns. The relationship between yield and cost and return per acre is indicated by the data for oats presented in Table 4.

TABLE 4

Relation between Yield and Cost and Return per Acre of Oats - 1931

Yield	No. of farms	Ave. Yield	Total cost	Cost per bu.	Net return
Under 26 bu.	6	21¾	$12.18	$.56	- $7.39
26 and under 36	9	32	11.82	.37	- 4.78
36 " " 46	4	38¾	13.12	.34	- 4.59
46 and over	3	48¾	13.75	.28	- 3.02

As the yield per acre increased the cost per bushel decreased and the loss per acre decreased. Of course yield per acre cannot be increased indefinitely without eventually involving an expense which is greater than the value of the increase in yield. However, few, if any of the farms studied have reached this point.

Factors influencing yields.

Since yield per acre has such an important bearing on cost and returns, further study was made in order to determine some of the important factors affecting yields. These are, variety, time of seeding, and rate of seeding.

In studying the varieties which gave the highest yield, it was found that Gopher oats outyielded the other varieties by a considerable margin. The lowest yields were secured from common seed, - that is, oats which had been grown so many years that the seed represented no distinct variety. Velvet barley gave the highest yields over the 3 year period. Here again, common non-descript seed gave a much lower yield. There were ten varieties of corn grown on the farms. It would seem that the yields of corn could be increased by use of one of the varieties best adapted to this area.

The records on these farms demonstrate that one is not always able to judge the relative yielding ability of two varieties merely by their appearance in the field. Just one illustration to emphasize this point. A field of Green Russian oats and a field of Gopher oats were grown side by side on the same farm. The Green Russian field had much larger shocks and more of them and looked as though it would yield much more than the field of Gopher oats. However, when the two fields were threshed, the Gopher oats yielded 13 bushels more to the acre than the Green Russian. The point of this is that in comparing any two varieties of any crop it is absolutely necessary to measure the area and carefully weigh the yield. The difference in yield between varieties is enough to justify considerable attention to securing good seed of high yielding varieties.

Time of seeding

Time of seeding is also important in securing good yields. The records obtained on these farms indicate that the farmers who seeded early were the ones who received the higher yields. Space will not permit the presentation of tables for all crops. It is not possible to set any definite seeding dates because seasons vary from year to year. In any season, generally speaking, the early seeding and high yields have gone together.

Rate of seeding

The records indicate a wide range in the amount of seed planted per acre. The variations, the average for the three years, and the amount which the records would indicate as desirable are presented in Table 5. If the seed is good clean seed, there is nothing to be gained by planting more than the maximum indicated as desirable.

TABLE 5

Amount of Seed Planted per Acre
Rock and Nobles Counties, 1929-31

	Husked Corn	Oats	Barley	Flax
	lbs.	bu.	bu.	lbs.
Least seed	4.6	2.1	1.5	21
Most seed	17.4	7.0	4.1	75
Average	8.0	3.7	2.2	41
Desirable	7 - 9	3 - 3.5	2 - 2.2	36 - 44

Crop rotation and livestock

The records indicate that the farms with the most legumes and livestock are the ones with highest yields. Alfalfa, clover, and sweet clover deserve a larger place in the cropping plan of these farms than they have been occupying. The small acreage in legumes is at least in part, a result of the high percentage of tenancy.

Reducing costs

Labor is one of the biggest factors in the cost of raising crops, and hence any saving in labor will be reflected in lower costs. There are two ways of reducing labor costs, namely, by eliminating unnecessary crop operations and by performing the necessary operations more efficiently. The crop operations are fairly well standardized and therefore saving must generally come through increased efficiency in the individual operations. By studying the tables of labor expenditures, each cooperator should be able to check on his efficiency. Having tools in good working condition and carefully planning the work in advance are of great help in making the labor more efficient.

PLANNING THE CROPPING PROGRAM

Every farmer must plan a cropping program for his farm. This program should be based essentially on expected conditions over a period of years. Any adjustments to temporary market conditions should usually be of a minor nature, rather than a total reorganization of the whole cropping system. In planning a cropping program it is well to consider the purpose of raising crops, whether they are to be for sale or feed. Having decided whether the crops are to be for sale or feed, it is then necessary to select the crops best adapted to this purpose.

Selection of feed crops

If the crops are to be fed, the selection should be based on the amount and quality of digestible nutrients produced per acre. The records secured in this study furnish the basis for such a selection. The production per acre and the relative cost per hundred pounds of digestible nutrients for Rock and Nobles Counties, based on 10 year average yields and average route costs are presented in Table 6.

TABLE 6

Production per Acre and Relative Cost per Hundred Pounds of Digestible Nutrients - Rock and Nobles Counties

Crop	10 yr. Aver. Yield	Digestible Nutrients Protein	Other	Total	Cost per 100 lbs. of Total Nutrients
Grains	bu.	lbs.	lbs.	lbs.	
Corn	32.4	129	1353	1482	$1.11
Barley	30.2	131	1020	1151	1.17
Oats	36.2	112	703	815	1.71
Roughages	tons				
Alfalfa	2.0	424	1616	2040	.71
Corn fodder	2.4	178	2131	2309	.78
Wild hay	1.0	60	904	964	.84
Silage	6.4	154	1996	2150	1.09

The above data clearly shows that the lowest cost feed grain crop is corn. It produces more nutrients per acre and at a lower cost than either oats or barley. Barley is next to corn. Oats produces decidedly less nutrients per acre than the other two crops and has the further disadvantage of a much higher cost.

Alfalfa, on the basis of the above data, is the cheapest source of roughage. Alfalfa has an additional advantage in that it is high in protein, the element most likely to be lacking in the ration and most expensive to buy. Its cheapness and its high protein content make alfalfa by far the most desirable roughage. Although corn fodder produces more feed per acre than alfalfa, it has the disadvantage of a higher cost and a decidedly lower protein content. Wild hay has the disadvantages of both a low yield of food nutrients and a higher cost. However, wild hay is usually not grown on land suitable for other crops and hence the cutting of wild hay is a matter of securing some feed from what would otherwise be waste land. Silage has two disadvantages, namely, high cost and low protein content. The fact that silage is used as extensively as it is indicates that feeders have felt that it has a value greater than that indicated by its nutrient content.

Selection of cash crops

The profitableness of raising cash crops depends to a large extent upon the prices received. At this time it is impossible to predict, with any assurance, what the prices of the crops will be in the future. It is possible, however, to indicate the relative profitableness of these crops in the past years. The comparative returns from the various grain crops computed upon the basis of 10 year average yields and nine year average prices for Rock and Nobles Counties are presented in Table 7.

TABLE 7

Comparative Returns per Acre of Crops
Rock and Nobles Counties

	Corn	Oats	Barley	Flax
Cost per acre	$16.49	$13.92	$13.46	$16.14
Yield, 10 year average	32.4	36.2	30.2	10.8
Cost per bushel	$ .51	$ .38	$ .45	$ 1.49
Dec. 1 price, 9 year average	.60	.34	.52	2.16
Net return per acre	2.95	-1.61	2.24	7.19

During the past years corn and flax have been the most profitable crops, with barley next. Oats was the least profitable. One would expect corn to continue to be one of the highest profit crops and oats to be one of the lowest profit crops. Whether this will be true remains to be seen .

Adopting good practices

Regardless of price conditions, the adoption of good practices will result in greater returns. The selection of the more profitable crops, the selection of the highest yielding varieties, timely planting, and efficient labor utilization are always advisable.

It is hoped that each cooperator will go over the data presented in this report and that by so doing he will be able to determine changes that can be made which will increase the profitableness of his farm business.

Comparative Cost and Return per Acre of Principal Crops
Rock and Nobles Counties, 1929-1931

	Husked Corn				Oats				Barley				Flax			
	1929	1930	1931	Ave.	1929	1930	1931	Ave.	1929	1930	1931	Ave.	1929	1930	1931	Ave.
No. of farms	24	24	23	24	22	22	23	22	16	15	15	15	8	13	14	12
Ave. acres per farm	96	97	96	96	64	63	57	61	30	31	32	31	29	27	28	28
Man hours	13.7	12.7	11.9	12.8	6.8	6.7	5.1	6.2	7.1	6.6	5.7	6.5	8.2	8.0	7.3	7.8
Horse hours	40.9	35.2	34.3	36.8	15.3	14.9	11.5	13.9	15.4	14.6	11.9	14.0	23.0	18.7	18.2	20.0
Tractor hours	.5	.9	.8	.7	.2	.2	.2	.2	.1	.2	.3	.2	.1	.6	.4	.4
Costs:																
Man labor	$ 4.11	$3.81	$2.98	$3.64	$2.04	$2.01	$1.27	$1.77	$2.12	$2.00	$1.43	$1.85	$2.46	$2.40	$1.83	$2.23
Horse & tractor work	5.44	4.46	3.48	4.46	2.08	1.78	1.10	1.65	1.92	1.53	1.22	1.56	2.70	2.45	1.88	2.34
Seed	.42	.42	.37	.40	1.58	1.21	1.31	1.37	1.47	1.06	1.04	1.19	2.21	2.57	1.75	2.18
Twine	-	-	-	-	.34	.40	.27	.34	.34	.34	.29	.32	.22	.26	.17	.22
Threshing	.37	.47	.30	.38	1.21	1.11	.64	.99	1.03	.80	.60	.81	1.64	1.65	.71	1.33
Manure & Fertilizer	1.75	1.90	1.39	1.68	.89	.76	.91	.85	.94	.73	.65	.78	.77	.72	1.11	.87
Machine charge	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.96	.95	.99	.94	.98	.97
Operating cost	13.04	12.01	9.47	11.51	9.09	8.22	6.45	7.92	8.77	7.41	6.19	7.46	10.99	10.99	8.43	10.14
Land charge	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Total costs	19.04	18.01	15.47	17.51	15.09	14.22	12.45	13.92	14.77	13.41	12.19	13.46	16.99	16.99	14.43	16.14
Credit	1.00	1.00	1.05	1.02	-	-	-	-	-	-	-	-	-	-	-	-
Net cost	18.04	17.01	14.42	16.49	15.09	14.22	12.45	13.92	14.77	13.41	12.19	13.46	16.99	16.99	14.43	16.14
Yield, bu.	38.0	31.9	23.8	31.2	50.7	53.7	32.1	45.5	33.0	29.0	21.9	28.0	11.2	13.0	6.0	10.1
Cost per unit	$ .47	.53	$ .61	$. 53	$.30	$.26	$.39	$.31	$ .45	$.46	$.56	$.48	$ 1.52	$ 1.31	$2.40	$1.60
December 1 price	.56	.48	.41	.48	.36	.24	.22	.27	.49	.38	.38	.42	2.83	1.48	1.23	1.85
Crop value	21.27	15.31	9.76	14.98	18.25	12.89	7.06	12.28	16.17	11.02	8.32	11.76	31.70	19.24	7.38	18.68
Net return	3.23	-1.70	-4.66	-1.51	3.16	-1.33	-5.39	-1.64	1.40	- 2.39	-3.87	-1.70	14.71	2.25	-7.05	2.54
Return for land	9.23	4.30	1.34	4.49	9.16	4.67	.61	4.36	7.40	3.61	2.13	4.30	20.71	8.25	-1.05	8.54
Return per man hour	.54	.17	none	.17	.76	.10	none	.02	.50	none	none	.02	2.09	.58	none	.61

Comparative Cost and Return per acre of Principal Crops (Contd.)
Rock and Noblos Counties, 1929-1931.

	Alfalfa				Wild Hay				Corn Fodder				Corn Silage			
	1929	1930	1931	Ave.	1929	1930	1931	Ave.	1929	1930	1931	Ave.	1929	1930	1931	Ave.
No. of farms	17	17	17	17	15	14	14	14	12	15	18	15	8	6	7	7
Ave. acres per farm	13	14	15	14	22	25	20	22	8	13	16	12	16	21	25	21
Man hours	11.5	9.5	6.8	9.3	5.4	5.2	3.9	4.8	14.5	13.3	12.1	13.3	21.0	17.5	17.8	18.8
Horse hours	17.5	15.7	11.5	14.9	9.2	8.8	6.6	8.2	33.2	30.9	31.0	31.7	49.6	43.8	43.4	45.7
Tractor hours	-	-	-	-	-	-	-	-	.4	.9	.7	.7	.7	.8	.8	.8
Costs:																
Man labor	$ 3.45	$2.85	$1.69	$2.66	$1.62	$1.55	$.99	$1.39	$4.35	$3.99	$3.02	$3.79	$6.30	$5.25	$4.45	$5.34
Horse & tractor work	2.10	1.70	.99	1.60	1.17	.94	.56	.89	4.01	3.89	3.11	3.67	6.52	5.24	4.30	5.35
Seed	1.00	1.00	1.00	1.00	-	-	-	-	1.01	.63	.57	.74	.69	.60	.55	.61
Twine	-	-	-	-	-	-	-	-	.63	.50	.34	.49	.51	.40	.33	.41
Threshing	-	-	-	-	-	-	-	-	-	-	-	-	2.52	1.95	2.46	2.31
Manure & Fertilizer	1.52	1.01	.89	1.14	-	-	-	-	1.58	1.69	2.17	1.81	2.15	1.72	2.15	2.01
Machine charge	1.62	1.53	1.24	1.46	.89	.85	.85	.86	1.65	1.65	1.65	1.65	1.56	1.53	1.55	1.55
Operating costs	9.69	8.09	5.81	7.86	3.68	3.34	2.40	3.14	13.23	12.35	10.86	12.15	20.25	16.69	15.79	17.58
Land charge	6.00	6.00	6.00	6.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Total costs	15.69	14.09	11.81	13.86	8.68	8.34	7.40	8.14	19.23	18.35	16.86	18.15	26.25	22.69	21.79	23.58
Credit	-	-	-	-	-	-	-	-	-	.09	.05	.05	.14	.54	-	.23
Net cost	15.69	14.09	11.81	13.86	8.68	8.34	7.40	8.14	19.23	18.26	16.81	18.10	26.11	22.15	21.79	23.35
Yield, roughage Tons	2.0	1.6	1.1	1.6	1.1	1.2	.6	1.0	3.3	1.9	1.6	2.3	7.3	5.1	6.2	6.2
Cost per unit	$7.85	$8.80	$10.74	$8.66	$7.89	$6.95	$12.33	$8.14	$5.83	$9.61	$10.50	$7.87	$3.58	$4.34	$3.51	$3.77
December 1 price	15.00	14.00	14.00	14.33	9.00	7.00	8.00	8.00	-	-	-	-	-	-	-	-
Crop value	30.00	22.40	15.40	22.93	9.90	8.40	4.80	8.00	-	-	-	-	-	-	-	-
Net return	14.31	8.31	3.59	9.07	1.22	.06	-2.60	- .14	-	-	-	-	-	-	-	-
Return for land	20.31	14.31	9.59	15.07	6.22	5.06	2.40	4.86	-	-	-	-	-	-	-	-
Return per man hour	1.55	1.17	.78	1.26	.53	.31	none	.26	-	-	-	-	-	-	-	-

Comparative Cost and Return per Acre for Husked Corn - 1931

Farm No.	HOURS: To Harvest Man	Horse	Tractor	Harvest Man	Horse	Total Man	Horse	Tractor	COSTS: Man labor	Horse & tractor	Seed	Husker	Manure	Mach.	Land	TOTAL COSTS	Credit	Net cost	Yield (bu.)	Cost per bu.	Gain*
502	5.6	13.7	1.2	6.4	12.7	12.0	26.4	1.2	$3.01	$3.28	$.36	-	$.96	$.95	$6.00	$14.56	$1.00	$13.56	34.8	.39	$.71
602	6.1	15.7	1.7	6.0	12.0	12.1	27.7	1.7	3.02	3.83	.39	-	1.51	.95	6.00	15.70	1.00	14.70	34.1	.43	-.72
104	8.1	31.7	.6	6.5	12.6	14.6	44.3	.6	3.66	4.26	.52	-	2.03	.95	6.00	17.42	1.00	16.42	37.9	.43	-.88
401	6.2	21.0	.9	4.7	9.3	10.9	30.3	.9	2.71	3.34	.41	-	1.61	.95	6.00	15.02	1.00	14.02	31.8	.44	-.98
211	5.7	17.8	1.2	2.5	11.3	8.2	29.1	1.2	2.04	3.51	.36	.70	1.08	.95	6.00	14.64	1.00	13.64	26.7	.51	-2.69
402	4.8	26.2	-	4.0	6.3	8.8	32.5	-	2.21	2.75	.40	.70	.65	.95	6.00	13.66	1.00	12.66	24.7	.51	-2.53
501	9.3	21.8	1.7	5.3	10.1	14.6	31.9	1.7	3.66	3.84	.34	-	1.66	.95	6.00	16.45	1.00	15.45	29.4	.53	-3.44
319	6.3	17.5	1.8	2.3	2.0a	8.6	19.5	2.6	2.14	3.36	.32	.64	.89	.95	6.00	14.30	1.00	13.30	24.0	.55	-3.46
102	8.3	28.9	-	4.1	8.3	12.4	37.2	-	3.10	3.16	.43	-	1.30	.95	6.00	14.94	1.00	13.94	24.0	.58	-4.10
113	6.5	25.9	-	6.1	11.8	12.6	37.7	-	3.16	3.20	.39	-	1.34	.95	6.00	15.04	1.00	14.04	23.7	.59	-4.32
116	8.9	34.1	-	3.5	13.5	12.4	47.6	-	3.11	4.04	.32	.64	1.07	.95	6.00	16.13	1.00	15.13	25.3	.60	-4.76
301	5.8	23.3	-	4.1	12.4	9.9	35.7	-	2.46	3.04	.31	.68	.99	.95	6.00	14.43	1.00	13.43	21.6	.62	-4.57
123	6.7	28.8	-	4.2	8.2	10.9	37.0	-	2.71	3.15	.29	-	.57	.95	6.00	13.88	*2.46	11.42	17.8	.64	-4.12
207	7.8	32.2	-	2.3	3.4b	10.1	35.6	.6	2.52	3.39	.49	.67	1.15	.95	6.00	15.17	1.00	14.17	21.9	.65	-5.19
201	7.3	24.4	-	6.7	10.4	14.0	34.8	-	3.48	2.96	.27	-	.55	.95	6.00	14.21	1.00	13.21	20.4	.65	-4.85
115	6.6	9.7	1.7	2.5	3.2c	9.1	12.9	2.7	2.27	2.82	.28	.67	.91	.95	6.00	13.90	1.00	12.90	18.5	.70	-5.32
202	8.0	17.6	2.1	5.2	8.0	13.2	25.6	2.1	3.30	3.57	.37	-	1.94	.95	6.00	16.13	1.00	15.13	21.0	.72	-6.52
218	7.7	18.8	2.0	5.6	11.2	13.3	30.0	2.0	3.34	3.84	.27	-	.73	.95	6.00	15.13	1.00	14.13	18.4	.77	-6.59
302	5.0	23.6	-	3.1	5.3	8.1	28.9	-	2.03	2.46	.40	.18	1.86	.95	6.00	13.88	1.00	12.88	16.5	.78	-6.12
419	8.7	29.3	.8	3.9	15.0	12.6	44.3	.8	3.15	4.41	.35	.70	2.92	.95	6.00	18.48	1.00	17.48	20.8	.84	-8.95
318	11.6	34.1	[illegible]	3.8	14.1	15.4	48.2	-	3.87	4.10	.37	.65	1.16	.95	6.00	17.10	1.00	16.10	18.8	.86	-8.39
312	7.7	30.1	-	3.9	12.3	11.6	42.4	-	2.91	3.61	.50	.70	2.08	.95	6.00	16.75	1.00	15.75	17.7	.89	-8.49
105	11.8	37.4	-	6.8	12.0	18.6	49.4	-	4.66	4.20	.47	-	2.90	.95	6.00	19.18	1.00	18.18	18.4	.99	-10.64
Average 1931	7.4	24.5	.7	4.5	9.8d	11.9	34.3	.8	2.98	3.48	.37	.30	1.39	.95	6.00	15.48	1.06	14.42	23.8	.61	-4.66
1930	7.7	25.0	.8	5.0	10.2d	12.7	35.2	.9	3.81	4.46	.42	.47	1.90	.95	6.00	18.01	1.00	17.01	31.9	.53	-1.70
1929	8.[illegible]	28.0	.4	5.7	12.9d	13.7	40.9	.5	4.11	5.44	.42	.37	1.75	.95	6.00	19.04	1.00	18.04	38.0	.47	3.23

*Crop valued at 41 cents per bu. in 1931, 48 cents in 1930, and 56 cents in 1929. A minus (-) indicates a loss.

a Also used tractor .8 hour. b. Also used tractor .6 hour. c. Also used tractor 1. hour.

d. Tractor used an average of .1 hour each year.

** Expenses include $.21 insurance expense and credits include $1.46 insurance received for hail damage. Average expense for 193[illegible] includes 1 cent/insurance expense and 6 cents credit for insurance received.

The average return per man hour was nothing in 1931, 17 cents in 1930 and 54 cents in 1929.

Hours of Man Labor and Horse and Tractor Work Used Per Acre of Husked Corn

1931

Farm No.	Yield	PLOWING Man	PLOWING Horse	PLOWING Tractor	DISKING Man	DISKING Horse	DISKING Tractor	DISKING Times over	SPRINGTOOTH HARROWING Man	SPRINGTOOTH HARROWING Horse	SPRINGTOOTH HARROWING Tractor	SPRINGTOOTH HARROWING Times over	SPIKETOOTH HARROWING Man	SPIKETOOTH HARROWING Horse	SPIKETOOTH HARROWING Tractor	SPIKETOOTH HARROWING Times over	PLANTING Man	PLANTING Horse
308	16.5	1.56	11.09	-	.31	1.25	-	.6	-	-	-	-	.21	.81	-	1.0	.56	1.11
311	26.7	.95	-	.95	.43	3.04	-	1.8	.23	-	.23	0.2	.18	.86	.03	1.3	.78	1.57
319	24.0	2.19	4.61	1.42	.03	.07	-	0.1	.41	.26	.36	0.7	.22	.67	.03	1.0	.73	1.46
402	24.6	1.41	11.29	-	-	-	-	-	.54	4.36	-	1.0	-	-	-	-	.59	1.19
115	18.5	1.14	-	1.12	.36	-	.36	2.4	-	-	-	-	.12	-	.12	0.6	.60	1.18
301	21.6	1.81	8.57	-	.18	.72	-	0.7	.17	.79	-	0.3	.24	.98	-	1.2	.56	1.12
207	22.0	2.90	14.45	-	.45	1.71	-	1.0	-	-	-	-	.23	.93	-	1.0	.89	1.77
401	31.8	1.48	4.31	.75	.20	.30	.14	0.7	.25	1.53	-	0.4	.28	1.16	-	1.6	.66	1.33
123	17.8	2.14	11.92	-	-	-	-	-	.37	1.88	-	0.7	.36	1.70	-	1.3	.70	1.39
312	17.6	2.21	10.86	-	.55	2.74	-	1.5	-	-	-	-	.16	.82	-	0.6	.71	1.42
502	34.8	1.04	-	1.02	.42	.98	.20	1.1	-	-	-	0.9*	.25	1.02	-	1.1	.62	1.23
302	34.1	1.31	-	1.31	.43	-	.43	2.0	-	-	-	-	.44	1.76	-	1.9	.70	1.40
102	24.0	3.59	13.35	-	.49	1.95	-	1.0	-	-	-	-	.36	1.45	-	2.00	.73	1.46
116	25.3	2.20	10.84	-	1.00	3.98	-	2.0	-	-	-	-	.26	1.01	-	1.0	.63	1.24
419	20.8	1.77	6.03	.76	.46	2.29	-	1.0	-	-	-	-	.26	1.45	-	1.5	.72	1.44
113	23.7	1.89	10.90	-	.57	3.29	-	1.2	-	-	-	-	.19	.86	-	1.0	.64	1.28
202	21.0	2.05	1.70	1.68	.39	1.60	-	0.7	.53	.40	.39	1.3	.11	.16	.07	.4	.67	1.34
218	18.4	1.82	-	1.82	.46	2.09	.04	1.3	.12	-	.12	0.2	.45	2.21	-	1.9	.87	1.60
201	20.4	2.41	9.73	-	.43	1.72	-	1.6	-	-	-	-	.28	1.12	-	1.2	.66	1.32
501	29.4	2.37	5.70	.90	-	-	-	-	.78	-	.78	1.5	.27	.89	.05	1.0	.60	1.19
104	37.9	1.42	7.71	.58	.08	.39	-	0.3	.66	3.97	-	0.7	.11	.82	-	1.3	.56	1.13
318	18.8	3.90	15.54	-	.91	3.43	-	2.5	-	-	-	-	.49	1.95	-	2.3	.90	1.79
105	18.4	2.48	12.03	-	.85	3.48	-	1.0	.14	.70	-	0.5	.96	3.87	-	1.5	.95	1.89
Average																		
1931	23.8	2.00	7.42	.54	.39	1.52	.05	1.1	.18	.60	.08	0.4	.28	1.15	.01	1.2	.70	1.38
1930	31.9	1.87	6.45	.58	.43	1.85	.04	1.0	.29	.89	.11	.6	.29	1.21	.01	1.1	.74	1.46
1929	38.0	1.98	8.83	.32	.47	1.89	.04	1.3	.20	.94	.03	.4	.70ø	2.96	.02	3.1	.70	1.39

* Springtooth harrowing and disking done at the same time. Hours included with disking.

ø Includes both harrowing before and after planting.

Hours of Man Labor and Horse and Tractor Work Used Per Acre of Husked Corn (Cont'd.)

Farm No.	Spike-tooth Harrowing Man	Horse	Times over	Cultivating Man	Horse	Times over	Hand Husking Man	Horse	% of Acreage	Machine Husking Man	Horse	Tractor	% of Acreage	Total * Man	Horse	Tractor
302	.28	1.02	1.8	2.08	8.30	3.0	2.06	3.76	74	1.05	1.57	-	26	8.11	28.91	-
211	.38	1.73	2.0	2.72	10.63	4.0	-	-	-	2.50	11.32	-	100	8.17	29.15	1.21
319	.22	.99	1.0	2.47	9.47	3.2	.24	.44	8	2.06	1.59	.80	92	8.57	19.56	2.61
402	.28	1.65	1.0	1.95	7.66	3.0	.34	.69	7	3.71	5.62	-	93	8.82	32.46	-
115	.11	.11ø	.8	4.26	8.52	3.6	.22	.25	5	2.28	2.93	.94	95	9.09	12.88	2.65
301	.22	.88	1.0	2.30	9.15	3.0	.25	.49	3	3.84	11.91	-	97	9.85	35.73	-
207	.42	1.69	1.0	2.95	11.65	4.0	.57	1.14	5	1.68	2.26	.56	95	10.09	35.60	.56
401	.35	1.39	2.0	2.94	11.00	4.0	4.68	9.31	100	-	-	-	-	10.84	36.33	.89
123	.39	2.19	2.0	2.72	9.73	3.0	4.17	8.17	100	-	-	-	-	10.85	36.98	-
312	.56	2.94	2.0	3.52	11.39	3.9	-	-	-	3.93	12.26	-	100	11.64	42.43	-
502	.17	.69	1.0	3.13	9.82	4.0	6.39	12.65	100	-	-	-	-	12.02	26.39	1.22
602	.43	1.70	2.0	2.82	10.88	4.0	5.97	11.99	100	-	-	-	-	12.09	27.73	1.74
102	.34	1.38	2.1	2.76	9.31	3.0	4.12	8.26	100	-	-	-	-	12.40	37.16	-
116	.40	1.63	2.0	4.39	15.40	4.0	.21	.34	8	3.34	13.17	-	92	12.43	47.61	-
419	.44	2.48	2.0	4.28	14.46	4.2	-	-	-	3.92	15.02	-	100	12.60	44.34	.76
113	.22	.86	1.0	3.00	8.50	3.4	6.08	11.88	100	-	-	-	-	12.63	37.73	-
202	.31	1.26	1.7	3.98	11.20	3.8	5.14	7.96	100	-	-	-	-	13.20	25.65	2.14
218	.24	1.18	1.2	3.78	11.68	3.1	5.61	11.21	100	-	-	-	-	13.35	29.97	1.98
201	.20	.73	1.8	3.32	9.83	3.5	6.67	10.34	100	-	-	-	-	13.97	34.79	-
501	.60	2.39	1.6	4.66	11.64	4.0	5.28	10.08	100	-	-	-	-	14.64	31.92	1.73
104	.31	2.37	2.0	4.94	15.30	4.3	6.57	12.63	100	-	-	-	-	14.65	44.32	.58
318	.29	1.14	1.8	5.13	10.27	4.0	3.86	14.09	100	-	-	-	-	15.48	48.21	-
105	.59	2.27	1.5	5.54	12.71	4.1	6.84	11.97	100	-	-	-	-	18.66	49.41	-
Average 1931	.34	1.50	1.6	3.46	10.80	3.7	3.27	6.43	.61	1.23	3.38	.10	.39	11.92	34.32	.79
1930	.36	1.57	1.6	3.67	11.54	3.7	3.56	7.12	.61	1.47	3.03	.11	.39	12.69	35.17	.85
1929	#	#	#	3.87	11.83	3.6	2.98	5.42	.43	2.72	7.53	.14	.57	13.67	40.91	.54

*A small amount of miscellaneous labor is included in the totals for farms 301, 419, 113, 202, 501, 105, and each of the annual averages.

øTractor hours, horses not used for this operation.

#Combined with harrowing before planting.

Comparative Cost and Return per Acre of Oats
Rock and Nobles Counties - 1931

Farm No.	Hours of Work									COSTS										
	Before Harvesting			Harvesting			Total Hours			Man labor	Horse & tractor	Seed	Twine	Thresh	Manure	Mach-inery	Land	Total Costs	Yield (bu.)	Cost per Bu.	Gain **
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor											
201	.9	2.4	.3	3.6	6.6	--	4.5	9.0	.3	$1.13	$1.03	$1.05	$.31	$.78	$1.01	$.95	$6.00	$12.26	51	$.24	$1.04
402	1.0	6.3	-	3.4	6.5	-	4.4	12.8	-	1.10	1.09	1.27	.22	.81	.77	.95	6.00	12.21	46½	.26	-1.98
902	1.0	2.5	.4	3.7	4.3	.4	4.7	6.8	.8	1.18	1.29	1.07	.19	.61	--	.95	6.00	11.29	34	.33	- 3.81
311	1.5	6.0	-	3.2	5.3	-	4.7	11.3	-	1.19	.97	1.18	.33	.61	.40	.95	6.00	11.63	35⅜	.33	- 3.76
312	1.7	7.6	-	4.4	8.4	-	6.1	16.0	-	1.53	1.36	1.31	.32	.67	1.06	.95	6.00	13.20	39⅝	.33	- 4.45
319	1.2	3.9	.2	4.1	7.1	-	5.3	11.0	.2	1.32	1.07	1.36	.26	.77	.45	.95	6.00	12.18	36½	.33	- 4.15
201	1.2	4.5	-	3.1	6.7	-	4.3	11.2	-	1.07	.95	1.18	.20	.55	.20	.95	6.00	11.10	33	.34	- 3.84
302	1.2	6.7	-	3.3	6.2	-	4.5	12.9	-	1.12	1.09	1.03	.19	.89	1.91	.95	6.00	13.18	39	.34	- 4.60
104	1.3	6.7	.1	6.7	11.3	.3	8.0	18.0	.4	2.01	1.86	1.41	.35	.98	3.22	.95	6.00	16.78	49	.34	- 6.00
113	1.2	5.2	-	2.8	5.2	-	4.0	10.4	-	1.01	.88	1.16	.26	.51	.84	.95	6.00	11.61	34¼	.34	- 4.08
207	2.0	7.9	-	3.8	7.1	-	5.8	15.0	-	1.47	1.28	2.11	.20	.74	1.15	.95	6.00	13.90	39½	.35	- 5.21
501	1.6	5.0	.1	3.4	3.4	.4	5.0	8.4	.5	1.27	1.04	1.20	.28	.66	.55	.95	6.00	11.95	33½	.36	- 4.58
202	1.2	3.2	.4	3.3	5.5	-	4.5	8.7	.4	1.13	1.01	1.38	.21	.56	.80	.95	6.00	12.04	33¼	.36	- 4.72
502	1.1	3.1	.3	3.2	5.6	-	4.3	8.7	.3	1.07	1.03	1.23	.36	.71	.32	.95	6.00	11.67	28½	.41	- 5.40
102	1.8	5.4	.2	2.8	5.6	-	4.6	11.0	.2	1.15	1.08	1.19	.21	.58	.48	.95	6.00	11.64	28¼	.41	- 5.42
419	1.2	5.4	-	3.5	5.9	-	4.7	11.3	-	1.17	.96	1.07	.34	.75	1.27	.95	6.00	12.51	25⅜	.49	- 6.84
105	2.0	7.1	-	4.4	6.5	-	6.4	13.6	-	1.60	1.16	1.42	.21	.62	1.50	.95	6.00	13.46	26⅛	.51	- 7.63
301	1.6	5.5	-	3.9	7.3	-	5.5	12.8	-	1.36	1.08	1.45	.26	.50	.38	.95	6.00	11.98	21⅝	.55	- 7.19
116	1.8	6.3	-	3.5	6.1	-	5.3	12.4	-	1.33	1.05	1.58	.24	.60	1.68	.95	6.00	13.43	24¼	.55	- 8.09
115	.7	.6	.4	4.0	5.7	-	4.7	6.3	.4	1.16	.81	1.58	.26	.42	.40	.95	6.00	11.58	20⅝	.56	- 7.01
123	1.5	6.9	-	4.1	6.7	-	5.6	13.6	-	1.41	1.16	1.28	.39	.39	.40	.95	6.00	11.98	20¼	.59	- 7.52
218	1.5	5.2	.2	3.2	6.3	-	4.7	11.5	.2	1.17	1.10	1.31	.30	.46	.31	.95	6.00	11.60	17⅜	.65	- 7.69
318	1.6	5.4	-	3.7	6.5	-	5.3	11.9	-	1.32	1.01	1.40	.26	.54	1.85	.95	6.00	13.33	18¾	.71	-9.20
Average																					
1931	1.4	5.2	.1	3.7	6.3	.1	5.1	11.5	.2	1.27	1.10	1.31	.27	.64	.91	.95	6.00	12.45	32.1	.39	-5.39
1930	1.6	6.3	.1	5.1	8.6	.1	6.7	14.9	.2	2.01	1.78	1.21	.40	1.11	.76	.95	6.00	14.22	55.5	.27	-1.38
1929	1.7	6.7	.1	5.1	8.6	.1	6.8	15.3	.2	2.04	2.08	1.58	.34	1.21	.89	.95	6.00	15.09	50.7	.30	3.16

*Crop value per bu. Dec. 1, 1931 - 22cents; 1930 - 24 cents; 1929 - 36 cents.
**A minus (-) indicatesa loss.
The average return per man hour on oats in 1931 was nothing, in 1930 it was 10 cents, and in 1929 it was 74 cents.

Man Labor and Horse and Tractor Work Used per Acre of Oats - 1931

Farm no.	Yield bu.	Disking				Seeding		Harrowing			Cutting		Shocking	Threshing		Hauling to bin		Total		
		Man hr.	Horse hr.	Tractor hr.	Times over	Man hr.	Horse hr.	Man hr.	Horse hr.	Times over	Man hr.	Horse hr.	man hr.	Man hr.	Horse hr.	Man hr.	Horse hr.	Man hr.	Horse hr.	Tractor hr.
113	34.2	.67	3.58	-	1.00	.19	.38	.28	1.01	1.00	.57	2.15	.58	1.44	2.43	.27	.64	4.06*	10.30*	-
201	32.9	.85	3.40	-	2.00	.13	.25	.21	.83	1.00	.67	2.66	.61	1.14	1.51	.65	2.50	4.26	11.15	-
502	28.6	.34	-	.34	2.00	.50	2.01	.27	1.09	1.00	.57	2.29	.79	1.48	2.62	.34	.68	4.29	8.69	.34
402	46.6	.57	4.55	-	2.00	.16	.31	.24	1.46	1.75	.59	2.37	.63	2.02	3.43	.18	.74	4.39	12.86	-
302	39.0	.73	5.05		2.00	.16	.31	.33	1.31	2.00	.65	2.62	.66	1.54	3.09	.43	.45	4.50	12.83	-
401	51.1	.31	.09	.29	2.00	.42	1.69	.16	.66	1.00	.54	2.16	.76	2.01	3.55	.34	.93	4.53	9.08	.29
202	33.2	.99	2.58	.28	2.00	.27	.28+	.08	.32	1.00	.64	2.50	.87	1.60	2.66	.17	.34	4.53	8.68	.41
102	28.3	.78	2.47	.17	1.88	.37	.73	.22	.71	.89	.84	3.10	.77	1.02	2.05	.21	.42	4.60**	11.01**	.17
115	20.8	.34	.18	.30	2.00	.19	.38	.12	.12‡	1.36	.71	2.36	1.27	1.54	2.77	.47	.63	4.64	6.32	.42
419	25.6	.44	2.21	-	1.00	.58	2.21	.20	1.01	1.18	.58	2.42	.89	1.74	2.89	.24	.54	4.67	11.28	-
218	17.8	.83	3.18	.20	2.00	.47	.94	.21	1.05	1.00	.75	2.99	.60	1.53	2.42	.30	.91	4.69	11.49	.20
602	34.1	.44	-	.44	2.00	.42	1.66	.20	.81	1.00	.76	.35‡	.78	1.70	3.41	.43	.85	4.73	6.73	.79
211	35.8	.81	3.08	-	2.00	.54	2.18	.15	.76	1.00	.59	2.34	.97	1.24	2.53	.45	.45	4.75	11.34	-
501	33.1	.99	3.43	.04	2.00	.23	.36	.30	1.21	1.00	.86	.42‡	.79	1.52	2.73	.31	.62	5.04§	8.35	.50§
319	36.4	.86	3.55	.06	2.00	.19	.38	.15	.15‡	1.00	.63	2.51	1.13	1.72	3.35	.53	1.01	5.21	10.80	.21
318	18.6	.98	3.91	-	2.00	.26	.19	.33	1.30	1.00	.79	3.17	.87	1.68	2.56	.39	.79	5.30	11.92	-
116	24.1	1.11	4.49	-	2.07	.54	1.07	.18	.71	1.03	.63	2.50	1.07	1.43	2.86	.36	.72	5.32	12.35	-
301	21.7	.92	3.59	-	2.00	.25	.40	.11	.43	1.00	.80	3.22	.82	1.84	3.19	.43	.86	5.44#	12.77#	-
123	20.2	.82	4.12	-	2.00	.50	2.01	.20	.81	1.00	.70	2.61	1.02	2.08	3.42	.34	.68	5.66	13.65	-
207	39.5	1.22	4.86	-	3.17	.56	2.05	.28	.99	1.00	.94	3.77	.78	1.87	2.94	.20	.40	5.85	15.01	-
312	39.8	.85	4.27	-	2.00	.58	2.13	.31	1.24	1.00	.71	2.40	.65	2.55	4.64	.46	1.39	6.11	16.07	-
105	26.4	1.27	4.95	-	2.00	.30	.48	.46	1.62	1.00	.70	2.83	1.32	1.52	2.58	.79	1.07	6.37	13.53	-
104	49.0	.80	4.32	.08	2.00	.44	1.76	.07	.59	1.00	.32	.31‡	.74	4.71	9.42	.95	1.89	8.03	17.98	.39
Aver.																				
1931	32.0	.78	3.12	.10	1.96	.36	1.05	.22	.87	1.10	.68	2.30a	.84	1.78	3.18	.40	.85	5.09	11.49	.16
1930	53.4	.84	3.58	.05	1.85	.44	1.34	.27	1.15	.76	.71	2.56a	1.19	2.48	4.50	.71	1.55b	6.74	14.88	.16
1929	49.6	.85	3.60	.10	1.95	.46	1.38	.25	1.02	1.14	.79	2.66a	1.19	2.50	4.58	.63	1.32	6.80	15.27	.15

*Includes .06 man and .20 horse hours springtooth harrowing.
‡Tractor also used .13 hours seeding.
**Includes .39 man and 1.53 horse hours plowing.
‡Tractor hours. Horses not used for this operation
§Includes .04 man and .04 tractor hours plowing.
#Includes .27 mand and 1.08 tractor hours cultipacking.
a. Tractor used an average of .05, .04, and .05 hours cutting in 1931, 1930, and 1929, respectively.
b. Tractor used .02 hours in addition.

Comparative Cost and Return per Acre of Barley - 1931

Farm no.	Before Harvesting			Harvesting			Total Hours			Costs								Total Costs	Yield bu.	Cost per bu.	Gain*
	Man hr.	Horse hr.	Tract. hr.	Man hr.	Horse hr.	Tract. hr.	Man	Horse	Tract.	Man Labor	Horse and Tract.	Seed	Twine	Thresh.	Manure	Machinery	Land				
602	1.2	2.8	.6	5.0	6.5	.4	6.2	9.3	1.0	$1.55	$1.62	$.67	$.33	$.91	$.91	$.95	$6.00	$12.94	35¾	$.37	$.65
211	1.6	6.1	-	5.4	8.3	-	7.0	14.4	-	1.75	1.23	1.02	.34	.72	.40	.95	6.00	12.41	32½	.38	-.06
113	1.0	4.6	-	4.7	7.4	-	5.7	12.0	-	1.43	1.02	1.05	.22	.70	.77	.95	6.00	12.14	28½	.43	-1.31
401	.7	1.8	.2	3.9	6.5	-	4.6	8.3	.2	1.15	.91	1.14	.32	.68	1.12	.95	6.00	12.27	27¼	.45	-1.91
116	2.1	7.0	-	5.3	9.0	-	7.4	16.0	-	1.85	1.36	1.34	.36	.91	.72	1.07	6.00	13.61	27¾	.49	-3.06
218	1.9	7.2	.1	4.8	9.6	-	6.7	16.8	.1	1.67	1.46	1.13	.27	.78	.32	.95	6.00	12.58	24¾	.51	-3.17
419	1.1	5.2	-	5.4	8.6	-	6.5	13.8	-	1.64	1.18	1.20	.37	.97	1.27	.95	6.00	13.58	24¾	.55	-4.17
102	1.1	2.6	.3	3.0	6.2	-	4.1	8.8	.3	1.02	1.00	.77	.29	.57	.81	.95	6.00	11.41	20½	.56	-3.62
501	2.3	1.8	1.7	5.5	6.4	.5	7.8	8.2	2.2	1.96	2.12	1.13	.29	.48	.55	.95	6.00	13.48	23	.59	-4.74
502	1.3	4.0	.3	3.8	7.0	-	5.1	11.0	.3	1.27	1.18	.97	.34	.49	.32	.95	6.00	11.52	19½	.59	-4.11
201	1.6	5.7	-	3.6	7.2	-	5.2	12.9	-	1.30	1.10	1.10	.23	.49	.27	.95	6.00	11.44	17	.67	-4.98
319	1.6	5.4	.2	4.0	7.1	-	5.6	12.5	.2	1.39	1.17	1.12	.27	.46	.41	.95	6.00	11.77	17	.69	-5.31
123	1.7	7.5	-	3.9	6.6	-	5.6	14.1	-	1.41	1.20	1.20	.29	.32	.40	.95	6.00	11.77	13½	.87	-6.64
301	1.2	4.6	-	2.5	4.9	-	3.7	9.5	-	.93	.81	.92	.19	.24	.38	.95	6.00	10.42	8¼	1.26	-7.28
207	1.7	6.8	-	2.8	4.5	-	4.5	11.3	-	1.12	.96	.89	.18	.25	1.15	.95	6.00	11.50	8¼	1.39	-8.36
Aver.																					
1931	1.5	4.9	.2	4.2	7.0	.1	5.7	11.9	.3	1.43	1.22	1.04	.29	.60	.65	.96	6.00	12.19	21.9	.56	-3.87
1930	1.7	6.2	.2	4.9	8.4	-	6.6	14.6	.2	2.00	1.53	1.06	.34	.80	.73	.95	6.00	13.41	29.0	.46	-2.39
1929	1.7	6.4	.1	5.4	9.0	-	7.1	15.4	.1	2.12	1.92	1.47	.34	1.03	.94	.95	6.00	14.77	33.0	.45	1.40

*A minus (-) indicates a loss.

The return per hour of man labor was nothing in 1931 and 1930 and 50 cents in 1929.

Hours of Man Labor and Horse and Tractor Work
Used per Acre of Barley - 1931

Farm		DISKING				SEEDING		HARROWING			CUTTING	SHOCK-ING	THRESHING		HAULING TO BIN		TOTAL HOURS		
No.	Yield bu.	Man hr.	Horse hr.	Tractor hr.	Times over	Man hr.	Horse hr.	Man hr.	Horse hr.	Times over	Man hr.	Horse hr.	Man hr.	Horse hr.	Man hr.	Horse hr.	Man hr.	Horse hr.	Tractor hr.
301	8.1	.90	3.62	-	2.0	.14	.27	.17	.68	1.0	.79	3.15	.75	.62	1.03	.36	.72	3.75	9.47	-
102	20.6	.79	1.99	.29	2.0	.31	.62	Drag behind disk		2.0	.79	3.15	.67	1.39	2.78	.15	.31	4.10	8.85	.29
207	8.3	.90	3.60	-	2.0	.51	2.03	.30	1.19	1.0	.51	2.03	.76	1.38	2.25	.12	.25	4.48	11.35	-
401	27.3	.24	-	.24	2.0	.29	1.17	.15	.59	1.0	.53	2.13	1.17	1.82	3.23	.40	1.21	4.60	8.33	.24
502	19.4	.58	.93	.29	2.0	.45	1.79	.30	1.22	1.0	.68	2.73	.72	1.93	3.44	.43	.87	5.09	10.98	.29
201	17.0	.80	3.20	-	2.0	.29	.58	.30	1.21	1.0	.57	2.27	.68	1.72	2.30	.61	2.45	5.16*	12.77*	-
319	16.9	1.11	4.82	-	2.0	.29	.58	.17	.17+	1.0	.61	2.42	1.02	1.74	3.49	.63	1.28	5.57	12.59	.17
123	13.5	.83	4.12	-	2.0	.65	2.59	.20	.81	1.0	.78	2.86	1.29	1.56	3.12	.31	.62	5.62	14.12	-
113	28.4	.64	3.47	-	2.0	.10	.18	.24	.96	1.0	.67	2.58	1.23	2.37	3.83	.48	.96	5.73	11.98	-
602	35.1	.38	.10	.32	1.8	.37	1.73	.24	.96	.8	.81	.03#	1.29	2.49	4.90	.39	1.57	6.22#	9.29#	.98#
419	24.7	.43	2.15	-	1.0	.54	1.96	.18	1.08	1.0	.62	2.48	1.03	3.10	4.87	.64	1.29	6.54	13.83	-
218	24.8	1.09	4.81	.06	2.0	.51	1.03	.27	1.31	1.0	1.16	4.65	.98	2.20	3.61	.45	1.35	6.66	16.76	.06
211	37.5	.93	3.36	-	2.0	.51	1.89	.16	.82	1.0	.62	2.46	1.48	2.67	5.22	.65	.65	7.02	14.40	-
116	27.8	1.32	5.07	-	2.7	.53	1.06	.29	.89	1.3	.81	3.22	1.54	2.30	4.59	.61	1.22	7.40	16.05	-
501	22.9	.42	1.34	.08	1.0	.22	.45	-	-	-	1.01	.50	1.00	2.78	5.02	.70	1.40	7.81a	8.21a	2.17
Average																				
1931	22.2	.77	2.84	.10	1.9	.38	1.20	.20	.78b	1.0	.73	2.41b	1.04	2.00	3.58	.46	1.08	5.71	11.94	.28b
1930	29.0	.75	2.82	.11	1.6	.43	1.39	.31	1.22	1.3	.71	2.55	1.22	2.44	4.59	.57	1.29	6.66	14.60	.21
1929	33.0	.98	3.87	.06	2.0	.43	1.25	.28	1.15	1.4	.84	3.32	1.37	3.14	5.66	c	c	7.07	15.37	.06

* Includes .19 man and .76 horse hours plowing.
\+ Tractor hours instead of horse hours.
\# Also used .25 man and .25 tractor hours plowing and .41 tractor hours cutting grain.
a Also used 1.51 man and 1.42 tractor hours plowing, and .17 man and .17 tractor hours spring-tooth harrowing.
c Hauling labor is included with threshing hours.
b Tractor used .01 hour dragging and .06 hour cutting.

Comparative Cost and Return per Acre of Flax
Rock and Nobles Counties - 1931

Farm No.	HOURS									COSTS									Cost		
	Before Harvesting			Harvesting			Total Hours			Man Horse & Labor	Trac.	Seed	Twine	Thresh	Manure	Mach.	Land	Total costs	Yield per (bu.)	bu.	Gain*
	Man	Horse	Tractor	Man	Horse	Trac.	Man	Horse	Trac.												
211	1.9	7.6	-	5.3	9.2	-	7.2	16.8	-	$1.81	$1.52	$1.25	$.38	$ .84	$.40	$.95	$6.00	$13.15	8.4	$1.57	-$2.82
501	1.6	5.2	.1	4.8	6.4	.4	6.4	11.6	.5	1.60	1.31	1.45	-	.64	.56	.95	6.00	12.51	7.9	1.58	- 2.79
202	2.0	6.6	.3	5.0	6.3	.7	7.0	12.9	1.0	1.75	1.82	1.29	-	.90	.77	.95	6.00	13.48	8.5	1.58	- 3.02
402	1.6	9.5	-	5.2	9.7	-	6.8	19.2	-	1.69	1.70	2.05	.33	1.40	.36	.95	6.00	14.48	8.3	1.75	- 4.27
312	2.6	12.4	-	4.9	9.4	-	7.5	21.8	-	1.89	1.85	1.79	.23	.94	.92	.95	6.00	14.57	8.3	1.77	- 4.36
401	1.3	3.6	.4	4.2	8.3	-	5.5	11.9	.4	1.38	1.38	1.52	-	1.01	1.01	.99	6.00	13.29	7.3	1.83	- 4.31
113	1.6	7.2	-	4.5	10.1	-	6.1	17.3	-	1.54	1.48	1.48	-	.82	3.71	.96	6.00	15.99	8.3	1.94	- 5.78
104	1.7	9.3	.1	4.6	4.2	.5	6.3	13.4	.6	1.56	1.63	1.19	.21	.66	1.09	.95	6.00	13.29	6.6	2.03	- 5.17
502	1.7	5.8	.3	2.7	4.8	-	4.4	10.6	.3	1.11	1.12	2.03	.22	.60	.32	.93	6.00	12.33	4.4	2.78	- 6.92
302	1.5	6.2	-	4.7	8.7	-	6.2	14.9	-	1.55	1.33	1.72	.24	.77	4.79	.95	6.00	17.35	5.2	3.31	-10.95
319	2.3	8.6	-	6.1	3.9	.7	8.4	12.5	.7	2.10	2.16	2.12	.23	.38	.41	.95	6.00	14.35	3.7	3.85	- 9.80
218	4.3	11.2	1.7	5.8	10.6	-	10.1	21.8	1.7	2.52	3.08	2.34	.33	.43	.30	.95	6.00	15.95	3.5	4.52	-11.64
116	1.7	5.9	-	3.5	7.6	-	5.2	13.5	-	1.30	1.15	1.38	-	.30	.59	.97	6.00	11.69	2.2	5.40	- 8.98
301	10.1	46.8	-	5.2	10.4	-	15.3	57.2	-	3.83	4.86	2.85	.16	.21	.38	1.26	6.00	19.55	1.6	12.50	-17.58
Average																					
1931	2.6	10.4	.2	4.7	7.8	.2	7.3	18.2	.4	1.83	1.88	1.75	.17	.71	1.11	.98	6.00	14.43	6.0	2.40	- 7.05
1930	2.7	10.0	.6	5.3	8.7	-	8.0	18.7	.6	2.40	2.45	2.57	.26	1.65	.72	.94	6.00	16.99	13.0	1.31	2.25
1929	2.8	12.8	.1	5.4	10.2	-	8.2	23.0	.1	2.46	2.70	2.21	.22	1.64	.77	.99	6.00	16.99	11.2	1.52	14.71

*Crop value per bu. Dec. 1, 1931 - $1.25; 1930 - $1.48; 1929- $2.83. A minus (-) indicates a loss.
The average return per hour of man labor was nothing in 1931, 58 cents in 1930, and $2.09 in 1929.
The preparation and seeding of flax that blew out is charged against the acreage harvested. On Farm 301 only a small proportion of the acreage seeded was harvested. As a result the hours and expenses per harvested acre are abnormally high.

Hours of Man Labor and Horse and Tractor Work
Used per Acre of Flax - 1931

Farm No.	Yield bu.	Disking Man	Disking Horse	Disking Tract.	Times over	Harrowing Man	Harrowing Horse	Times over	Seeding Man	Seeding Horse	Cutting Man	Cutting Horse	Shocking Man	THRESHING Man	THRESHING Horse	Marketing Man	Marketing Horse	TOTAL Man	TOTAL Horse	TOTAL Tractor
502	4.4	.57	1.28	.25	1.5	.52	2.12	2.4	.60	2.39	.48	1.89	.71	1.34	2.57	.21	.37	4.43	10.62	.25
116	2.2	.94	3.77	-	2.1	.32	1.29	2.1	.41	.82	.65	2.59	-	2.80	4.83	.09	.17	5.21	13.47	-
401	7.3	.43	-	.43	2.2	.31	1.25	1.1	.58	2.31	.58	2.31	-	3.41	5.63	.22	.43	5.53	11.93	.43
501	7.9	.28	.87	.06	1.0	.60	2.42	3.0	.32	1.28	.87	.44*	-	3.34	5.82	.59	.57	6.41ø	11.57ø	.50
113	8.3	.73	3.86	-	1.0	.52	1.99	3.0	.37	1.31	.92	3.56	-	3.00	5.35	.61	1.22	6.15	17.29	-
302	5.2	.82	3.25	-	2.0	.43	1.72	2.0	.30	1.18	.75	2.96	.59	2.88	5.77	.44	-	6.21	14.88	-
104	6.6	.80	4.32	.08	2.0	.23	1.87	3.0	.48	1.92	.92	.46*1.41		2.04	4.07	.19	-	6.27#	13.36#	.54
402	8.3	.71	5.45	-	1.0	.34	1.89	2.0	.54	2.17	.72	2.87	.51	3.67	6.85	.28	-	6.77	19.23	-
202	8.5	.91	2.36	.32	2.0	.45	1.81	2.0	.63	2.40	1.22	.69*	-	3.38	5.87	.39	.43	6.98	12.87	1.01
211	8.4	.81	3.19	-	2.0	.56	2.22	2.0	.57	2.22	1.10	4.39	1.02	2.78	4.78	.39	-	7.23	16.80	-
312	8.2	1.10	5.47	-	2.0	.19	.99	1.0	.54	2.15	.70	2.82	.79	3.07	5.89	.34	.68	7.52±	21.78±	-
319	3.7	1.06	4.54	-	2.0	.73	3.09	2.0	.48	.97	1.35	.68*1.16		3.05	3.89	.58	-	8.41	12.49	.68
218	3.5	1.39	6.96	-	3.0	.63	3.15	3.0	.54	1.07	1.51	6.05	1.30	2.62	4.57	.38	-	10.10a	21.80	1.73a
301	1.8	1.17	4.69	-	1.9	.62	2.48	1.9	1.08	4.30	.98	3.91	.72	3.52	6.52	-	-	15.33b	57.20b	-
Average																				
1931	6.0	.87	3.65	.09	1.9	.46	2.02	2.2	.53	1.89	.91	2.38c	.58	2.92	5.17	.34	.28	7.32d	18.22d	.36d
1930	13.5	1.07	4.40	.10	2.3	.51	2.53	2.1	.50	1.75	1.02	2.84c	.80	2.98	5.32	.52	.54	8.01e	18.71e	.56e
1929	11.0	.93	4.29	.08	2.2	.42	1.98	2.6	.45	1.66	.89	3.57	.78	3.22	5.86	.55	.75	8.24f	22.96f	.08

ø Includes .41 man and .61 horse hours raking stalks.
* Tractor hours; horses were not used for this operation.
\# Includes .20 man and 1.18 horse hours spring-tooth harrowing.
± Includes .79 man and 3.78 horse hours plowing.
a Includes 1.57 man and 1.57 tractor hours plowing, and .16 man and .16 tractor hours springtooth harrowing.
b Includes 6.36 man and 31.78 horse hours plowing, and .88 man and 3.52 horse hours cultipacking. Hours high because most of flax blew out and all the labor of preparing the land and seeding this acreage blown out is charged against the harvested acre acre.
c Tractor used .18 hours in 1931 and .21 hours in 1930 for cutting.
d Includes .62 man, 2.54 horse and .11 tractor hours plowing, and .09 man and .29 horse hours packing and raking stalks.
e Includes .53 man, 1.24 horse and .25 tractor hours plowing, and .02 man and .09 horse hours rolling and packing.
f Includes .93 man and 4.62 horse hours plowing, and .07 man and .23 horse hours rolling and packing.

Comparative Cost and Return per Acre of Alfalfa
1931

Farm No.	1st Cutting Man hr.	1st Cutting Horse hr.	2d Cutting Man hr.	2d Cutting Horse hr.	Total Man hr.	Total Horse hr.	Man labor	Horse work	Seed	Manure	Machinery	Land	Total Cost	Yield tons	Cost per ton	Crop value	Gain	Return per hr.
218	6.3	12.5	5.8	11.2	12.1	23.7	$3.01	$2.02	$8.00	$ .31	$1.75	$6.00	$14.09	2.4	$5.87	$33.60	$19.51	$1.86
402	4.1	4.4	.8	1.4	4.9	5.8	1.22	.49	1.00	.36	1.27	6.00	10.34	1.4	7.39	19.60	9.26	2.14
319	4.5	7.9	2.6	3.5	7.1	11.4	1.78	.97	1.00	.06	1.50	6.00	11.31	1.5	7.54	21.00	9.69	1.61
307	5.6	13.7	1.5	2.0	7.1	15.7	1.77	1.34	1.00	1.15	1.13	6.00	12.39	1.3	9.54	18.20	5.81	1.07
301	6.2	9.9	3.3	5.8	9.5	15.7	2.39	1.33	1.00	.38	1.50	6.00	12.60	1.3	9.70	18.20	5.60	.84
211	4.3	7.0	1.2	1.9	5.5	8.9	1.37	.75	1.00	1.15	1.19	6.00	11.46	1.1	10.42	15.40	3.94	.97
115	6.3	7.4	3.0	4.0	9.3	11.4	2.32	.97	1.00	.40	1.50	6.00	12.19	1.1	11.08	15.40	3.21	.60
302	4.0	5.7	.9	1.3	4.9	7.0	1.22	.59	1.00	1.29	.99	6.00	11.09	1.0	11.09	14.00	2.91	.84
502	4.1	8.2	-	-	4.1	8.2	1.02	.70	1.00	.32	1.08	6.00	10.12	.9	11.25	12.60	2.48	.85
318	5.7	8.9	5.8	10.6	11.5	19.5	2.87	1.66	1.00	.81	1.74	6.00	14.08	1.2	11.74	16.80	2.72	.49
501	3.1	5.1	-	-	3.1	5.1	.78	.43	1.00	.55	.85	6.00	9.61	.8	12.00	11.20	1.59	.76
104	5.1	11.6	-	-	5.1	11.6	1.28	.99	1.00	1.09	.85	6.00	11.21	.9	12.46	12.60	1.39	.52
102	3.7	7.3	-	-	3.7	7.3	.92	.62	1.00	2.48	.85	6.00	11.87	.9	13.19	12.60	.73	.45
401	4.2	7.6	2.8	5.5	7.0	13.1	1.75	1.11	1.00	1.01	1.50	6.00	12.37	.9	13.75	12.60	.23	.28
105	6.3	7.9	-	-	6.3	7.9	1.57	.67	1.00	1.31	.85	6.00	11.40	.7	16.29	9.80	-1.60	none
419	5.5	10.6	3.8	5.3	9.3	15.9	2.34	1.35	1.00	1.28	1.50	6.00	13.47	.8	16.85	11.20	- 2.27	.01
202	4.5	6.2#	.2	.4	4.7	6.6#	1.18	.83	1.00	1.24	1.01	6.00	11.26	.6	18.77	8.40	- 2.86	none
Average																		
1931	4.9	8.4	1.9	3.1	6.8	11.5	1.69	.99	1.00	.89	1.24	6.00	11.81	1.1	10.74	15.40	+ 3.59	.78
1930	5.6	9.5	3.9	6.2	9.5	15.7	2.85	1.70	1.00	1.01	1.53	6.00	14.09	1.6	8.80	22.40	8.31	1.17
1929	4.8	7.5	6.7	10.0	11.5	17.5	3.45	2.10	1.00	1.52	1.62	6.00	15.69	2.0	7.85	30.00	14.31	1.55

Crop value per ton Dec. 1, 1931 - $14.00; 1930 - $14.00; 1929 - $15.00
Tractor used .4 hour spring-tooth harrowing.

Man Labor and Horse Work Used per Acre of Alfalfa Hay - 1931

1st Cutting

Farm No.	Yield tons	CULTIVATING Man	Horse	Tractor	Times over	MOWING Man	Horse	Raking & Cocking Man	Horse	Hauling to Barn Man	Horse	Times over	Stacking Man	Horse	Times over	TOTAL Man	Horse	Tractor
501	.8	-	-	-	-	1.15	2.31	.41	.82	1.57	1.98	1.00	-	-	-	3.13	5.11	-
102	.9	-	-	-	-	1.19	2.38	.57	1.14	1.91	3.83	1.00	-	-	-	3.67	7.35	-
302	1.0	-	-	-	-	.97	1.96	.94	1.88	2.06	1.88	1.00	-	-	-	3.97	5.72	-
502	.9	-	-	-	-	.73	1.46	.73	1.45	2.63	5.26	1.00	-	-	-	4.09	8.17	-
402	1.2	-	-	-	-	.91	1.81	.52	1.04	-	-	-	2.67	1.56	1.00	4.10	4.41	-
401	.6	-	-	-	-	.92	1.83	.57	1.15	-	-	-	2.75	4.59	1.00	4.24	7.57	-
211	1.0	-	-	-	-	1.49	2.99	.68	1.35	2.14	2.62	1.00	-	-	-	4.31	6.96	-
202	.6	.41	-	.41	.2	1.10	2.21	.81	1.58	1.39	1.46	.56	.77	.94	.44	4.48	6.19	.41
319	1.3	-	-	-	-	1.10	2.20	.94	1.89	2.44	3.77	1.00	-	-	-	4.48	7.86	-
115	.9	-	-	-	-	.92	1.84	1.03	1.56	3.00	3.00	1.00	-	-	-	4.95	6.40	-
104	.9	.35	2.07	-	.2	.63	1.26	.50	1.00	3.64	7.28	1.00	-	-	-	5.12	11.61	-
419	.5	.88	4.45	-	1.2	.97	1.94	.79	1.57	2.89	2.62	1.00	-	-	-	5.53	10.58	-
207	1.2	-	-	-	-	1.24	2.48	.41	.81	3.95	10.41	1.00	-	-	-	5.60	13.70	-
318	.6	-	-	-	-	1.33	2.66	2.17	2.90	2.17	3.38	1.00	-	-	-	5.67	8.94	-
301	1.0	-	-	-	-	1.01	2.01	.50	1.01	4.73	6.83	1.00	-	-	-	6.24	9.85	-
218	1.6	-	-	-	-	1.19	2.38	1.24	2.47	3.83	7.67	1.00	-	-	-	6.26	12.52	-
105	.7	-	-	-	-	1.42	2.84	1.68	.83	3.19	4.19	1.00	-	-	-	6.29	7.86	-
Average																		
1931	.9	.10	.38	.02	.1	1.08	2.15	.85	1.43	2.44	3.89	.86	.36	.42	.14	4.83	8.27	.02
1930	1.0	.13	.54	.02	.1	1.16	2.34	.69	1.28	3.02	5.04	.74	.75	.87	.26	5.75	10.07	.02
1929	.9	.15	.42	.06	.2	1.22	2.41	.70	1.39	2.50	3.06	.80	.42	.60	.20	4.99	7.88	.06

Man Labor and Horse Work Used per Acre for Second Cutting of Alfalfa
1931

Farm No.	Yield	Mowing		Raking & Cocking		Hauling to Barn			Stacking			Totals	
		Man	Horse	Man	Horse	Man	Horse	Times over	Man	Horse	Times over	Man	Horse
	ton	hr.	hr.	hr.	hr.	hr.	hr.		hr.	hr.		hr.	hr.
202	.1	.50	1.00	.31	.63	.35	.25	1.0	-	-	-	1.16	1.88
402	.3	.47	.93	.33	.67	-	-	-	.40	.53	1.0	1.20	2.13
211	.2	.88	1.75	.58	1.15	.78	.81	1.0	-	-	-	2.24	3.71
319	.2	1.10	2.20	.20	.24	1.33	1.10	1.0	-	-	-	2.63	3.54
318	.6	.97	1.93	.72	1.45	.97	.97	1.0	-	-	-	2.66	4.35
401	.3	1.15	2.29	.45	.92	1.15	2.29	1.0	-	-	-	2.75	5.50
115	.2	.88	1.78	.53	1.06	1.53	1.17	1.0	-	-	-	2.95	4.00
301	.3	1.31	2.62	.60	1.01	1.41	2.21	1.0	-	-	-	3.32	5.84
207	.2	1.32	2.63	.89	.85	1.19	1.19	1.0	-	-	-	3.40	4.67
218	.6	.94	1.87	.50	1.02	2.07	3.83	1.0	-	-	-	3.51	6.72
419	.3	1.12	2.25	.76	1.07	1.96	2.00	1.0	-	-	-	3.84	5.32
302	.8	1.00	2.00	.75	1.50	-	-	-	2.50	2.50	1.0	4.25	6.00
Average													
1931	.3	.97	1.94	.56	.96	1.06	1.32	.8	.24	.25	.2	2.83	4.47
1930	.6	1.20	2.40	.78	1.12	1.63	2.10	.8	.31	.45	.2	3.92	6.07
1929	.7	1.00	2.01	.70	1.40	2.80	3.74	.8	.54	.50	.2	5.04	7.65

Comparative Cost and Return per Acre of Wild Hay - 1931

Farm No.	Hours		Costs					Yield	Cost	Crop	
	Man	Horse	Man labor	Horse work	Mach-inery	Land	Total cost	(tons)	per ton	Value*	Gain**
318	5.0	7.3	$1.24	$ .62	$.95	$5.00	$7.81	1.1	$ 7.10	$8.80	$ .99
302	3.6	5.2	.91	.44	.85	5.00	7.20	.9	8.00	7.20	-
312	5.4	10.6	1.36	.90	.85	5.00	8.11	1.0	8.11	8.00	-.11
102	4.9	9.1	1.22	.77	.85	5.00	7.84	.8	9.80	6.40	-1.44
116	4.6	7.7	1.14	.65	.85	5.00	7.64	.7	10.91	5.60	-2.04
402	3.8	5.8	.96	.49	.85	5.00	7.30	.6	12.17	4.80	-2.50
218	3.8	7.5	.94	.64	.85	5.00	7.43	.6	12.38	4.80	-2.63
113	2.7	5.0	.69	.42	.85	5.00	6.96	.5	13.92	4.00	-2.96
201	3.9	6.0	.97	.51	.89	5.00	7.37	.5	14.74	4.00	-3.37
115	4.3	6.3	1.08	.53	.85	5.00	7.46	.5	14.92	4.00	-3.46
105	5.3	8.4	1.32	.72	.85	5.00	7.89	.5	15.78	4.00	-3.89
319	2.3	4.2	.58	.35	.85	5.00	6.78	.3	22.60	2.40	-4.38
301	2.7	4.6	.68	.39	.85	5.00	6.92	.3	23.07	2.40	-4.52
202	2.9	5.3	.71	.45	.85	5.00	7.01	.2	35.05	1.60	-5.41
Ave. 1931	3.9	6.6	.99	.56	.85	5.00	7.40	.6	12.33	4.80	-2.60
1930	5.2	8.8	1.55	.94	.85	5.00	8.34	1.2	6.95	8.40	.06
1929	5.4	9.2	1.62	1.17	.89	5.00	8.68	1.1	7.89	9.90	1.22

* Crop value per ton, Dec. 1, 1931 - $8.00; 1930 - $7.00; 1929 - $9.00

** .. minus (-) indicates a loss.

The average return from wild hay per hour of man labor was nothing in 1931; 32¢ in 1930; and 53¢ in 1929

Man Labor and Horse Work Used per Acre of Wild Hay
1931

Farm No.	Yield	Mowing		Raking & Cocking		Hauling to Barn			Stacking			Total	
		Man	Horse	Man	Horse	Man	Horse	Times over	Man	Horse	Times over	Man	Horse
		hr.	hr.	hr.	hr.	hr.	hr.		hr.	hr.		hr.	hr.
319	.3	1.21	2.41	.24	.48	.88	1.29	1.00	-	-	-	2.33	4.18
301	.3	.78	1.56	.30	.60	1.64	2.46	1.00	-	-	-	2.72	4.62
113	.5	.93	1.84	.44	.85	1.37	2.27	1.00	-	-	-	2.74	4.96
202	.2	1.27	2.55	.79	1.58	.79	1.21	1.00	-	-	-	2.85	5.34
302	.9	.91	1.82	.61	1.21	1.31	1.32	.61	.81	.80	.39	3.63	5.15
218	.6	1.26	2.51	1.13	2.26	1.38	2.76	1.00	-	-	-	3.77	7.53
402	.6	1.37	2.75	.62	1.23	-	-	-	1.85	1.80	1.00	3.84	5.78
201*	.5	.61	1.22	.48	.88	2.79	3.90	1.06	-	-	-	3.88	6.00
115	.5	1.52	3.05	.84	1.60	1.98	1.60	1.00	-	-	-	4.34	6.25
116	.7	1.89	3.79	.51	1.01				2.15	2.87	1.00	4.55	7.67
102	.8	1.31	2.61	.80	1.59	2.78	4.89	1.00	-	-	-	4.89	9.09
318**	1.1	1.10	2.20	.68	1.37	3.17	3.76	1.12	-	-	-	4.96	7.33
105	.5	2.69	5.39	.26	.51	2.34	2.50	1.00	-	-	-	5.29	8.40
312	1.0	.87	1.74	.79	1.57	1.82	3.46	.36	1.94	3.82	.64	5.43	10.59
Average													
1931	.6	1.27	2.53	.60	1.20	1.59	2.24	.80	.48	.66	.22	3.94	6.64
1930	1.2	1.25	2.50	.62	1.22	2.12	3.24	.61	1.16	1.81	.39	5.15	8.77
1929	1.1	1.38	2.72	.64	1.28	1.94	2.90	.52	1.45	2.30	.48	5.41	9.20

* 2 cuttings made on 6% of the acreage
** 2 cuttings made on 12% of the acreage

Comparative Cost and Return per Acre of Fodder Corn

1931

Farm No.	HOURS To Harvest Man	Horse	Tractor	Harvesting Man	Horse	TOTAL HOURS Man	Horse	Tractor	COSTS Man labor	Horse & tractor	Seed	Twine	Manure	Mach.	Land	TOTAL COST	Yield tons	Cost per ton	Crop value∅	Gain¥
401	4.0	10.5	.5	7.3	4.5	11.3	15.0	.5	$2.83	$1.66	$.67	$ .48	$1.71	$1.65	$6.00	$15.00	3.0	$5.00	$18.00	$3.00
211	4.9	14.0	11.1	7.4	4.8	12.3	18.8	1.1	3.06	2.54	.80	.55	.47	1.65	6.00	15.07	3.0	5.02	18.00	2.93
202	12.2	29.0	2.7	5.4	5.7	17.6	34.7	2.7	4.38	4.70	.45	.52	1.18	1.65	6.00	18.88	3.2	5.92	19.20	.32
502	3.3	6.3	2.9	2.9	3.5	6.2	9.8	2.9	1.55	2.08	.35	.35	1.06	1.65	6.00	13.04	1.6	8.15	9.60	-3.44
302	5.0	23.6	-	4.0	4.3	27.6	27.6	-	1.94	2.35	.36	.32	2.05	1.65	6.00	14.67	1.6	9.17	9.60	-5.07
123	7.5	30.9	-	3.6	4.3	11.1	35.2	-	2.77	2.99	.35	.29	1.63	1.65	6.00	14.82*	1.5	9.87	9.00	-5.82
207	8.7	27.9	-	3.9	3.8	12.6	31.7	-	3.15	2.70	.46	.28	8.77	1.65	6.00	23.01	2.1	10.95	12.60	-10.41
312	7.2	28.6	-	3.9	6.4	11.1	35.0	-	2.77	2.98	.56	.31	1.49	1.65	6.00	15.76	1.3	12.12	7.80	-7.96
301	5.6	21.8	-	3.8	5.5	9.4	27.3	-	2.35	2.32	.53	.17	.38	1.65	6.00	13.40	1.1	12.18	6.60	-6.80
218	7.0	15.3	2.4	4.7	5.6	11.7	20.9	2.4	2.93	3.34	.30	.26	1.36	1.65	6.00	15.84	1.3	12.18	7.80	-8.04
104	8.0	32.6	.7	2.9	4.6	10.9	37.2	.7	2.73	3.72	.48	.25	2.38	1.65	6.00	17.21	1.3	13.24	7.80	-9.41
132	10.9	37.3	-	3.1	5.8	14.0	43.1	-	3.49	3.66	.84	.39	.20	1.65	6.00	16.23	1.1	14.75	6.60	-9.63
319	6.5	23.1	1.1	7.2	10.9	13.7	34.0	1.1	3.43	3.62	.29	.29	2.61	1.65	6.00	17.89	1.2	14.91	7.20	-10.69
501	9.4	23.2	1.4	4.8	8.7	14.2	31.9	1.4	3.56	3.77	.36	.31	1.83	1.65	6.00	17.48	1.1	15.89	6.60	-10.88
419	8.3	33.7	.3	3.4	4.8	11.7	38.5	.3	2.93	3.49	.34	.25	4.44	1.65	6.00	19.10	1.2	15.92	7.20	-11.90
402	4.8	26.2	-	4.2	6.7	9.0	32.9	-	2.26	2.80	.39	.43	.84	1.65	6.00	14.37	.9	15.97	5.40	- 8.97
116	10.5	33.7	-	5.2	7.4	15.7	41.1	-	3.93	3.50	2.31	.36	2.68	1.65	6.00	20.43	1.1	18.57	6.60	-13.83
105	11.4	36.6	-	5.9	7.9	17.3	44.5	-	4.33	3.79	.45	.26	3.92	1.65	6.00	20.40	1.0	20.40	6.00	-14.40
Average																				
1931	7.5	25.2	.7	4.6	5.8	12.1	31.0	.7	3.02	3.11	.57	.34	2.17	1.65	6.00	16.81#	1.6	10.50	9.60	-7.21
1930	7.7	24.4	.9	5.6	6.5	13.3	30.9	.9	3.99	3.89	.63	.50	1.69	1.65	6.00	18.26**	1.9	9.61	15.20	-3.06
1929	8.0	28.0	.4	6.5	5.2	14.5	33.2	.4	4.35	4.01	1.01	.63	1.58	1.65	6.00	19.23	3.3	5.83	33.00	13.77

∅ Dec. 1 price $6.00 per ton in 1931, $8.00 in 1930, and $10.00 in 1929.

¥A minus (-) indicates a loss.

* Net credit of $.86 deducted for insurance received on hail damage.

\# Credit of $.06 deducted for crop insurance received.

The average return per man hour was nothing in 1931, 6 cents in 1930, and $1.37 in 1929.

**Credit of $.09 deducted for corn picked up behind the binder.

Hours of Man Labor and Horse and Tractor Work Used per Acre of Fodder Corn - 1931

Farm No.	Yield	To Harvest			Cutting		Shock	Total			Twine
		Man	Horse	Tractor	Man	Horse	Man	Man	Horse	Tractor	lb.
502	1.6	3.36	6.28	1.46	1.18	3.48	1.67	6.21	9.76	1.46	3.4
302	1.6	4.96	23.60	-	1.35	3.99	1.46	7.77	27.59	-	3.2
402	0.9	4.84	26.22	-	2.21	6.67	2.00	9.05	32.89	-	4.4
301	1.1	5.65	21.84	-	1.95	5.50	1.80	9.40	27.34	-	1.7
104	1.3	7.99	32.59	.66	1.52	4.56	1.41	10.92	37.15	.66	2.5
123	1.5	7.50	30.92	-	1.42	4.26	2.14	11.06	35.18	-	2.6
312	1.3	7.18	28.61	-	2.14	6.41	1.79	11.11	35.02	-	3.4
401	3.0	3.97	10.52	.45	1.49	4.48	5.85	11.31	15.00	.45	3.8
419	1.2	8.26	33.69	.26	1.60	4.79	1.86	11.72	38.48	.26	1.9
218	1.3	7.03	15.29	2.41	1.95	5.64	2.75	11.73	20.93	2.41	2.3
211	3.0	4.89	13.99	1.11	1.48	4.79	5.88	12.25	18.78	1.11	5.4
207	2.1	8.68	27.92	-	1.26	3.77	2.68	12.62	31.69	-	2.4
319	1.2	6.46	23.15	1.12	3.63	10.89	3.63	13.72	34.04	1.12	2.9
102	1.1	10.85	37.26	-	1.94	5.79	1.16	13.95	43.05	-	3.6
501	0.9	9.41	23.23	1.41	2.18	8.73	2.64	14.23	31.96	1.41	2.9
116	1.1	10.56	33.70	-	1.85	7.41	3.33	15.74	41.11	-	3.3
105	1.0	11.45	36.58	-	2.54	7.94	3.32	17.31	44.52	-	2.8
202	3.2	12.23	29.10	2.69	1.93	5.68	3.46	17.62	34.78	2.69	5.2
Ave. 1931	1.6	7.52	25.20	.64	1.87	5.82	2.71	12.10	31.07	.64	3.2
1930	1.9	7.70	24.45	.90	2.16	6.48	3.46	13.32	30.93	.90	4.8
1929	3.3	7.97	27.96	.40	1.75	5.18	4.75	14.47	33.14	.40	5.2

The labor for the individual operations up to harvest is not shown, since the operations and time required for preparation, seeding and cultivating of corn fodder are essentially the same as for husked corn.

Comparative Cost and Return per Acre of Silage Corn - 1931

Farm	Hours TO HARVEST			Hours HARVEST		Hours TOTAL HOURS			Costs Man labor	Horse & tractor	Seed	Twine	Silo filler	Manure	Mach-inery	Land	Total Cost	Yield tons	Cost per ton	Return Gain+	per hr
No.	Man	Horse	Tractor	Man	Horse	Man	Horse	Tractor													
113	6.9	27.6	-	7.8	13.3*	14.7	40.9	1.2	$3.69	$4.22	$.44	-	$3.47	$1.91	$ .95	$6.00	$20.68	8.4	$2.46	$15.02	$1.27
401	4.0	11.5	.7	10.6	18.7	14.6	30.2	.7	3.65	3.19	.77	.57	1.95	3.52	1.65	6.00	21.30	8.0	2.67	12.70	1.12
102	10.5	36.2	-	10.3	19.2	20.8	55.4	-	5.20	4.71	.70	.34	2.66	1.01	1.65	6.00	22.27	7.0	3.18	7.48	.61
602	5.7	13.6	1.9	11.7	21.6	17.4	35.2	1.9	4.34	4.63	.65	.51	2.96	2.07	1.65	6.00	22.81	5.9	3.87	2.27	.38
202	9.9	30.4	.7	7.5	11.6	17.4	42.0	.7	4.35	4.06	.47	.38	1.88	.40	1.65	6.00	19.19	4.5	4.27	- .06	.25
104	8.0	32.6	.7	12.6	16.1	20.6	48.7	.7	5.14	4.70	.49	.25	1.93	2.38	1.65	6.00	22.54	5.2	4.34	- .44	.23
419	8.9	35.3	.2	10.2	16.3	19.1	51.6	.2	4.78	4.56	.34	.28	2.35	3.76	1.65	6.00	23.72	4.6	5.16	- 4.17	.03
Average																					
1931	7.7	26.7	.8	10.1	16.7#	17.8	43.4	.8	4.45	4.30	.55	.33	2.46	2.15	1.55	6.00	21.79	6.2	3.51	4.56	.51
1930	8.5	28.3	.8	9.0	15.5	17.5	43.8	.8	5.25	5.24	.60	.40	1.95	1.72	1.53	6.00	22.15a	5.1	4.34	.80	.35
1929	7.9	27.8	.5	13.1	21.8#	21.0	49.6	.7	6.30	6.52	.69	.51	2.52	2.15	1.56	6.00	26.11a	7.3	3.58	10.39	.79

+ Value of crop per ton on Dec. 1 was $4.25 in 1931, $4.50 in 1930, and $5.00 in 1929. A minus (-) indicates a loss.
* Also used tractor 1.2 hours.
a Credit of $.54 in 1930 for corn picked up behind binder and of $.14 in 1929.
\# Tractor used an average of .2 hours each in 1931 and 1929.

Hours of Man Labor and Horse and Tractor Work Used per Acre of Silage Corn - 1931

Farm No.	Yield tons	To Harvest			Cutting		Filling			Total			Twine lbs.
		Man	Horse	Tractor	Man	Horse	Man	Horse	Tractor	Man	Horse	Tractor	
401	8.0	4.01	11.48	.73	2.13	6.40	8.46	12.31	-	14.60	30.19	.73	4.5
113	8.4	6.94	27.58	-	-	-	7.80	13.26	1.16	14.74	40.84	1.16	-
602	5.9	5.74	13.58	1.93	1.46	4.29	10.18	17.35	-	17.38	35.22	1.93	4.8
202	4.4	9.87	30.45	.72	1.00	2.70	6.52	8.86	-	17.39	42.01	.72	3.7
419	4.6	8.89	35.30	.21	1.57	4.13	8.67	12.17	-	19.13	51.60	.21	2.2
104	5.2	7.99	32.61	.66	1.53	4.57	11.06	11.56	-	20.58	48.74	.66	2.5
102	7.0	10.53	36.19	-	1.95	5.82	8.34	13.41	-	20.82	55.42	-	3.2
Ave. 1931	6.2	7.71	26.74	.61	1.38	3.99	8.72	12.70	.16	17.81	43.43	.77	3.5*
1930	5.1	8.56	28.28	.81	1.32	3.82	7.66	11.68	-	17.54	43.78	.81	4.1*
1929	7.3	7.97	27.96	.5	1.75	5.18	11.35	16.50	.25	21.07	49.64	.75	4.8*

*Average for the farms using twine.

The labor for the individual operations up to harvest is not shown, since the operations and time required for preparation, seeding and cultivating of silage corn are essentially the same as for husked corn.