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UNIVERSITY OF MINNESOTA
Department of Agriculture
and the
TENNESSEE VALLEY AUTHORITY
and the
County Extension Services of
Brown, Jackson, Kandiyohi, Martin, Nobles,
Stevens, Watonwan, and Yellow Medicine Counties
Cooperating

- 0 -

Annual Report
of the
Farm Management Service
for T.V.A. Phosphate-Test
Demonstration Cooperators
in Southwestern Minnesota
1940

- 0 -

Cooperator _____

Mimeographed Report No. 126
Division of Agricultural Economics
University Farm
St. Paul, Minnesota
June, 1941

FIRST ANNUAL REPORT OF THE FARM MANAGEMENT SERVICE
FOR T.V.A. PHOSPHATE TEST DEMONSTRATION COOPERATORS
IN SOUTHWESTERN MINNESOTA FOR THE YEAR 1940

Prepared by T. R. Nodland, G. A. Pond, and J. R. Burkholder

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INTRODUCTION

The Division of Agricultural Economics and the Division of Agricultural Extension of the University of Minnesota, the Tennessee Valley Authority and the county extension services of several southwestern Minnesota counties are cooperating in a phosphate test demonstration project and in a farm management service. This service is offered to a selected group of farmers who have agreed to demonstrate the value of phosphate fertilizer and who have also agreed to keep farm business records. The phosphate is provided by the T.V.A. and the fieldman is provided by the T.V.A. and the Agricultural Extension Service. Each farmer pays the freight and other miscellaneous expenses that may occur between the point of shipment and the farm on all the T.V.A. phosphate furnished and \$10.00 per year to cover the summarization of the records and other miscellaneous expenses. The balance of the cost is defrayed by the University of Minnesota.

The analysis of the farm business record and the preparation of the reports are handled by the Division of Agricultural Economics under the direction of G. A. Pond and T. R. Nodland. The field organization is handled by the Division of Agricultural Extension with C. L. McNelly in charge of this work. J. R. Burkholder has been fieldman since the organization of the project. County agricultural agents who cooperated in this project include Paul Kunkel, L. S. Orfield, Ronald McCamus, C. G. Powell, C. E. Stower, Kenneth Hanks, J. R. Gute, and George Gehant.

The following tabulation shows by counties the number of cooperators who completed records in 1940:

Brown	15	Stevens	10
Jackson	13	Watonwan	10
Kandiyohi	9	Yellow Medicine	<u>14</u>
Martin	15		
Nobles	15		101

The tables on page 4 and succeeding pages show data for 99 farms. Two farms have been omitted from all the averages in the tables because the records were not sufficiently complete for a full analysis.

The records kept by the cooperators include inventories at the beginning and end of the year, cash receipts and expenses and a record of the farm produce used by the farm family. Complete household and personal records were also kept by 46 co-operators. Supplementary information was secured during the year regarding crop and livestock production practices.

At the end of the year, the books were taken to the central office at University Farm, where they were checked and summarized. For the purpose of comparison, the earnings as shown in this report are computed as if each operator was a full owner; however, each tenant is supplied a statement of his earnings on the basis of the rental system under which he is operating.

TYPE OF FARMING*

The farms in this area have a wide diversity of enterprises. All classes of livestock are important although livestock kept for meat production tends to predominate. The sale of crops constitutes an important source of income. The principal feed crops grown are corn, oats, barley and hay. In addition wheat, flax, sweet corn, and canning peas are grown to a limited extent as cash crops.

TOPOGRAPHY, SOILS AND WEATHER

The soils range from dark brown to heavy black loam. The major part of the area is undulating to gently rolling land interspersed with almost level tracts. In the southwestern part of the area the surface ranges from undulating to sharply rolling and in the northwestern part the surface is nearly level. Nearly all the land is tillable and well drained.

*For a more complete description of the area see Engene, S. A., and Pond, G. A., "Agricultural Production and Types of Farming in Minnesota", Minnesota Bulletin No. 347, May, 1940.

Table 1. Monthly and Annual Precipitation

	Worthington		Fairmont		Willmar		Morris	
	Precipitation	Departure from normal	Precipitation	Departure from normal	Precipitation	Departure from normal	Precipitation	Departure from normal
	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
January	Trace	-0.63	0.23	-0.57	0.34	-0.12	0.18	-0.59
February	0.82	+0.05	0.70	-0.27	0.91	-0.01	0.77	+0.09
March	1.96	+0.70	1.35	-0.06	1.54	+0.29	3.82	+2.86
April	2.75	+0.67	1.57	-0.66	1.60	-0.16	1.53	-0.42
May	1.20	-2.74	2.12	-1.93	1.69	-1.32	1.76	-1.45
June	5.67	+1.38	4.84	+0.50	3.29	-0.79	1.64	-2.40
July	0.34	-3.05	0.60	-2.96	1.08	-2.12	1.82	-1.74
August	2.77	-0.99	8.80	+5.06	4.76	+1.12	5.66	+2.85
September	0.70	-2.84	1.41	-2.22	1.06	-2.04	0.74	-1.68
October	2.81	+1.12	3.38	+1.53	2.78	+1.00	5.16	+1.52
November	2.72	+1.55	2.56	+1.05	2.09	+1.11	1.85	+0.81
December	0.76	+0.15	1.16	+0.26	0.75	+0.09	0.59	-0.07
1940 total	22.50	-4.63	28.72	-0.27	21.89	-2.95	23.72	-0.22
1939 total	24.27	-2.86	21.92	-7.07	18.99	-5.85	21.70	-2.24
1938 total	40.50	+13.37	39.99	+11.00	26.28	+1.44	23.06	-0.88
Normal annual precipitation	27.13		28.99		24.84		23.94	

The year 1940, as a whole, was normal in regard to temperatures. Cool, wet weather in the early spring delayed the seeding of small grain; however, the growing conditions in May and June were favorable for most crops. Conditions during June and July were unfavorable for securing satisfactory stands of grasses and legumes over much of the area. Corn was injured to some extent by hot, dry weather in the latter part of July. Weather conditions in September and October were very favorable for late crops and pasture.

Table 2. Monthly Temperatures, 1940

	Worthington		Fairmont		Willmar		Morris	
	Temperature	Departure from normal	Temperature	Departure from normal	Temperature	Departure from normal	Temperature	Departure from normal
(Degrees Fahrenheit)								
January	7.2	-6.9	7.4	-6.4	4.0	-7.1	4.0	-4.3
February	20.7	+3.5	20.3	+3.2	18.4	+3.5	17.2	+4.7
March	26.8	-3.2	25.9	-4.2	22.6	-4.9	22.4	-4.5
April	42.1	-3.2	43.2	-2.8	42.6	-1.7	40.0	-4.5
May	56.6	+0.1	56.6	-0.9	56.4	+0.3	55.2	-0.7
June	68.4	+2.4	68.4	+1.1	67.6	+2.0	66.0	0.0
July	75.0	+3.8	74.8	+2.5	74.7	+3.7	73.4	+2.8
August	68.8	-0.3	68.2	-1.6	67.3	-1.0	67.0	-1.1
September	65.4	+4.3	64.7	+3.1	64.6	+5.1	62.8	+3.4
October	54.8	+6.4	55.6	+6.7	53.4	+6.9	53.4	+6.9
November	27.1	-5.4	28.0	-4.9	25.6	-3.7	25.4	-4.1
December	24.0	+4.6	23.7	+3.4	19.9	+4.2	19.5	+3.8

Summary of Farm Inventories (Beginning of Year), 1940

Items	Your farm	Average of 99 farms	20 most profitable farms	20 least profitable farms
Size of farm (acres)	_____	225	286	173
Size of business (work units)*	_____	490	617	381
Horses	\$ _____	\$ 352	\$ 423	\$ 287
Productive livestock (total)	_____	2,356	3,206	1,674
Dairy and dual purpose cows	_____	684	718	505
Other dairy & dual purpose cattle	_____	385	512	306
Beef cattle (including feeders)	_____	633	1,184	466
Hogs	_____	421	588	305
Sheep (including feeders)	_____	145	79	41
Poultry (including turkeys)	_____	88	125	51
Crop, seed, and feed	_____	2,355	3,568	1,581
Mach. & equipment (total)	_____	2,200	2,908	1,671
Power mach. (f. share)	_____	840	1,170	648
Crop & gen. mach.	_____	1,096	1,411	824
Livestock equip. & supplies	_____	264	327	199
Buildings, fences, etc.	_____	5,917	6,687	5,148
Land	_____	10,828	16,185	7,299
Total farm capital	\$ _____	\$24,008	\$32,977	\$17,650

*Explanation of term: "Work units."

The total "work units" for any one farm is a measure of size of that farm business. It is the accomplishment of a farm worker in a ten-hour day working on crops and productive livestock at average efficiency.

The number of work units for each animal and each acre of crops used in this report are listed as follows:

Item	Per	No. of work units	Item	Per	No. of work units
Dairy and dual purpose cows	cow	13.5	Small grain	acre	.7
Other dairy & dual purpose cattle	) animal	4.0	Soybeans for grain	"	.9
Beef breeding herd	) unit*	4.0	Sugar beets	"	3.0
Sheep - farm flock	)	1.6	Sweet corn	"	2.5
Hens	100 hens	26.0	Corn, husked	"	1.3
Feeder cattle	)	.35	Corn, hogged	"	.8
Feeder sheep	) 100 lbs.	.4	Corn, shredded	"	2.5
Hogs	) produced	.25	Corn silage	"	1.9
Turkeys	)	.7	Corn fodder	"	1.3
Canning peas	acre	2.0	Alfalfa hay	"	1.0
			Soybean hay	"	1.4
			Other hay crops	"	.6

*Animal unit represents one cow, one bull, one feeder steer or heifer, two head of other cattle, seven head of sheep, fourteen lambs, five hogs, ten pigs, 100 hens, or 1,400 lbs. turkeys produced.

Summary of Farm Inventories (End of Year), 1940

Items	Your farm	Average of 99 farms	20 most profitable farms	20 least profitable farms
Horses	\$ _____	\$ 332	\$ 417	\$ 285
Productive livestock (total)	_____	2,826	4,074	1,888
Dairy & dual purpose cows	_____	739	802	546
Other dairy & dual purpose cattle	_____	396	418	365
Beef cattle (including feeders)	_____	814	1,771	427
Hogs	_____	596	792	463
Sheep (including feeders)	_____	180	144	24
Poultry (including turkeys)	_____	101	147	63
Crop, seeds, and feed	_____	2,783	4,379	1,679
Mach. & equipment (total)	_____	2,408	3,125	1,893
Power machinery (f. share)	_____	937	1,187	729
Crop and gen. machinery	_____	1,186	1,568	960
Livestock equipment & supplies	_____	285	370	204
Buildings, fences, etc.	_____	6,066	7,122	5,185
Land	_____	10,228	16,185	7,299
Total farm capital	\$ _____	\$25,243	\$35,302	\$18,229

Summary of Amount of Livestock

Items	Your farm	Average of 99 farms	20 most profitable farms	20 least profitable farms
No. of horses	_____	3.8	4.3	3.6
No. of colts	_____	.9	1.3	.7
No. of dairy & dual purpose cows	_____	10.4	10.8	9.3
Head of other dairy & dual purpose cattle	_____	10.3	11.6	11.1
Head of cattle kept in beef breeding herd	_____	9.9	11.2	6.7
Pounds of beef cattle produced	_____	1,112	4,214	369
Litters of pigs	_____	13.0	17.8	10.0
Pounds of hogs produced	_____	20,544	28,841	14,529
Head of sheep (2 lambs = 1 head)	_____	21.1	15.8	6.1
No. of hens	_____	130	180	78
Total no. of prod. livestock animal units	_____	38.8	50.1	29.1
% of total that are:				
Dairy and dual purpose cows	_____	28.9	22.7	32.7
Other dairy and dual purpose cattle	_____	15.4	11.4	20.8
In beef breeding herd	_____	15.5	17.1	13.0
Feeder cattle	_____	4.6	12.0	2.4
Sheep - farm flock	_____	5.7	2.6	3.5
Sheep - feeders	_____	1.2	2.0	0
Hogs	_____	23.4	25.4	24.0
Turkeys	_____	1.6	3.2	.4
Chickens	_____	3.7	3.6	3.2

Summary of Farm Earnings (Cash Statement), 1940

Items	Your farm	Average of 99 farms	20 most profitable	20 least profitable
FARM EXPENSES				
Horses bought	\$ _____	\$ 26	\$ 33	\$ 36
Dairy and dual purpose cows bought	_____	27	47	14
Other dairy & dual purpose cattle bought	_____	37	53	28
Beef cattle bought (including feeders)	_____	258	864	113
Hogs bought	_____	78	163	31
Sheep bought (including feeders)	_____	106	160	13
Poultry bought (including turkeys)	_____	67	109	29
Misc. crop expenses	_____	219	267	160
Feed bought	_____	497	720	375
Power mach. (farm share) (new)	_____	304	272	192
Power mach. (farm share) (upkeep)	_____	318	354	273
Custom work hired	_____	124	138	94
Crop and general mach. (new)	_____	266	400	256
Crop and general mach. (upkeep)	_____	50	61	38
Livestock equipment (new)	_____	50	70	26
Livestock equipment (upkeep)	_____	13	13	4
Misc. livestock expense	_____	58	66	27
Buildings and fencing (new)	_____	297	618	134
Buildings and fencing (upkeep)	_____	130	150	176
Hired labor	_____	251	300	230
Taxes	_____	228	312	164
Insurance	_____	9	9	3
General farm	_____	33	36	23
(1) Total farm purchases	_____	3446	5215	2439
(2) Decrease in farm capital	_____	-	-	-
(3) Board furnished hired labor	_____	112	139	108
(4) Interest on farm capital	_____	1231	1707	897
(5) Unpaid family labor	_____	246	264	300
(6) Total farm expenses (Sum of (1) to (5))	_____	5035	7325	3744
FARM RECEIPTS				
Horses	_____	37	27	27
Dairy and dual purpose cows	_____	108	107	84
Dairy products	_____	673	738	475
Other dairy and dual purpose cattle	_____	172	119	182
Beef cattle (including feeders)	_____	548	1362	386
Hogs	_____	1075	1588	693
Sheep and wool (including feeders)	_____	204	215	58
Poultry (including turkeys)	_____	273	523	84
Eggs	_____	188	268	103
Corn	_____	302	623	207
Small grain	_____	637	933	487
Other crops	_____	154	140	122
Power machinery sold	_____	115	133	48
Crop and gen. mach. sold	_____	61	104	20
Misc.	_____	252	353	141
Income from work off the farm	_____	115	119	106
Agricultural adjustment payments	_____	419	508	330
(7) Total farm sales	_____	5333	7860	3553
(8) Increase in farm capital	_____	1235	2325	569
(9) Farm prod. used in house + house rent	_____	455	551	389
(10) Total farm receipts (7) + (8) + (9)	_____	7023	10736	4511
(6) Total farm expenses	_____	5035	7325	3744
(11) Operator's labor earnings (10) - (6)	_____	1988	3411	767

Summary of Farm Earnings (Enterprise Statement), 1940 (A)

Items	Your farm	Average of 99 farms	20 most profitable farms	20 least profitable farms
<u>EXPENSES AND NET DECREASES</u>				
Total power	\$ _____	\$ 550	\$ 654	\$ 480
Horses	_____	130	161	127
Tractor	_____	191	231	167
Truck	_____	41	77	16
Auto (farm share)	_____	113	101	114
Gas engine (farm share)	_____	3	2	4
Elec. plant or current (farm share)	_____	21	28	8
Hired power	_____	51	54	44
Crop and general machinery	_____	173	214	135
Livestock equipment	_____	40	39	23
Buildings, fencing and tiling	_____	166	210	175
Misc. productive livestock expense	_____	58	65	26
Labor	_____	638	738	660
Real estate taxes	_____	197	265	142
Personal property tax	_____	31	47	22
Insurance	_____	9	9	3
General farm	_____	33	36	23
Interest on farm capital	_____	1,231	1,707	897
(1) Total expenses & net decreases	_____	3,126	3,984	2,586
<u>RETURNS AND NET INCREASES</u>				
All productive livestock	\$ _____	\$3,351	\$4,663	\$2,234
Dairy and dual purpose cows	_____	768	830	574
Other dairy & dual purpose cattle	_____	342	326	318
Beef breeding herd	_____	323	456	244
Feeder cattle	_____	128	462	22
Hogs	_____	1,215	1,713	856
Sheep - farm flock	_____	94	74	28
Sheep - feeders	_____	39	46	0
Turkeys	_____	146	323	24
Chickens	_____	296	433	168
Crops, seed and feed	_____	951	1,727	503
Income from work off the farm	_____	115	119	106
Agricultural conservation payments	_____	419	508	330
Miscellaneous	_____	278	378	180
(2) Total returns & net increases	_____	5,114	7,395	3,353
(1) Total expenses & net decreases	_____	3,126	3,984	2,586
(3) Oper. labor earnings (2) minus (1)	_____	1,988	3,411	767

(A) Cash receipts and expenses are adjusted for changes in inventory for each enterprise and for each item of expense in order to show total receipts and net increases, and total expenses and net decreases. The operator's labor earnings are the same as those on page 6.

ANALYSIS OF THE REASONS FOR DIFFERENCES IN OPERATOR'S EARNINGS

The financial statement on the preceding pages shows that there is a wide range in earnings. The average operator's labor earnings for the 20 most profitable farms was \$3,411, and for the 20 least profitable farms \$767. The difference between the averages for these two groups was \$2,644. Some of the causes for these differences in earnings may be beyond the control of the farmer. It is significant, however, that the data in this report indicate that there are several factors which show definite relationships with operator's labor earnings and which suggest opportunities for increased earnings. The more important of these factors and their relationship with earnings are presented in the following tables.

Table 3. Relation of Crop Yields to Farm Earnings

Per cent crop yields were of the average for all 99 farms	No. of farms	Average operator's labor earnings
Group	Average	
Below 90	75	25
90-113	103	50
114 and above	120	24
		\$1,666
		2,058
		2,176

High production per acre, up to certain limits, tends to lower the cost per bushel of grain or per ton of hay. Any possible method of management that will increase crop yields and therefore lower cost of production more than the extra expense incurred in securing the higher yields should be given consideration.

Table 4. Relation of Choice of Crops to Farm Earnings

Per cent of tillable land in high return crops*	No. of farms	Average operator's labor earnings
Group	Average	
Below 31.0	26.7	25
31.0-39.9	35.3	53
40.0 & above	43.9	21
		\$1,559
		2,045
		2,353

*Crops are marked on page 14 as (A), (B), (C), and (D). All of acres in (A) crops, one half of acres in (E) crops, and one-fourth of acres in (C) crops are used in calculating per cent of tillable land in high return crops.

As a rule, on these farms, such crops as alfalfa, clover, canning crops, sugar beets, corn, and flax bring a higher net return per acre than other crops usually grown. Additions can be made to earnings by putting as high a percentage as possible of the tillable land into these higher return crops.

Table 5. Relation of Returns from Productive Livestock to Farm Earnings

Index of gross returns from productive livestock*	No. of farms	Average operator's labor earnings
Group	Average	
Below 88	74	23
89-115	101	53
116 & above	124	23
		\$1,636
		2,063
		2,166

*Feed records were not kept on most of these farms. The index represents gross returns and is weighted by the number of animal units of each class of livestock.

The majority of these farms are livestock farms. High gross returns from livestock are accompanied by high farm income. A large proportion of the crops raised are fed on the farm and some additional feed is purchased. Feed is the major item of cost in livestock production and livestock constitute an important source of income on these farms. There are a number of reasons for differences among farms in livestock returns. High productivity per animal and economy in the use of feed and labor are important. Other factors of considerable importance are kind of feed used, quality of pastures, balance of ration, degree of sanitation, and kind of shelter and equipment.

Table 6. Relation of Amount of Productive Livestock to Farm Earnings

Productive livestock units per 100 acres*		No. of farms	Average operator's labor earnings
Group	Average		
Below 11.8	9.5	16	\$1,981
11.8-24.4	18.7	61	1,927
24.5 & above	29.4	22	2,160

*Acres in timber not pastured, roads, waste and farmstead were not included.

The information in Table 6 shows the farms with a small amount of livestock to be as profitable as those with an average amount of livestock. However, an examination of the farms in these two groups shows that several very specialized crop farms with very little livestock are included in the group having less than 11.8 productive livestock units per 100 acres. If the four farmers receiving more than 50 per cent of their income from crops were to be omitted from the averages the operator's labor earnings of the group with a small amount of livestock would be \$1,770. If the livestock is yielding a net return, an increased amount of livestock adds to size of business and the opportunity to increase the farm earnings. Livestock produces manure and aids in keeping up the fertility of the land, and utilizes waste products on the farm. Livestock also helps to provide productive employment throughout the year. Any method that aids in utilizing the available resources to full and efficient capacity should add to the farm income.

Table 7. Relation of Size of Business (Work Units) to Farm Earnings

No. of work units		No. of farms	Average operator's labor earnings
Group	Average		
Below 350	295	23	\$1,489
350-624	494	56	1,857
625 & above	705	20	2,926

Average farm earnings tend to increase with an increase in size of business. For farmers operating their farms at a loss, the larger the volume of business, the larger will be the loss, but a farmer who is making a profit could make a larger profit if he increased his size of business, providing that in so doing he does not lower materially the efficiency in some one or more important branches of his business. Those farmers who have large businesses usually have more flexibility of their organization than does the man with a small business, and can utilize more efficiently and to better advantage available labor, power, machinery and buildings. The size of the farm business may be increased by farming more land, by keeping more livestock, or by keeping livestock or growing crops of a more intensive type.

Table 8. Relation of Amount of Work Accomplished per Worker to Farm Earnings

Work units per worker		No. of	Average operator's
Group	Average	farms	labor earnings
Below 200	170	20	\$1,279
200-299	246	57	2,034
300 & above	349	22	2,511

More units of work accomplished per worker reduces the labor charge per unit of business. Higher labor accomplishment can be secured in several ways. In the first place, the business must be large enough so that there will be at least sufficient work available for the family labor. The farm should be so organized that the labor requirements are well distributed throughout the year. Handling pastures in such a way that as large a proportion as possible of the year's feed for livestock may be obtained from them helps to reduce labor requirements. Proper planning of the farm work and economical use of labor-saving machinery help to increase the work accomplished per worker.

Table 9. Relation of Power, Machinery, Equipment and Building Expense to Farm Earnings*

Expense per work unit		No. of	Average operator's
Group	Average	farms	labor earnings
\$2.35 & above	\$2.96	21	\$1,788
\$1.50-\$2.34	1.90	58	1,961
Below \$1.50	1.23	20	2,273

*Includes building, fencing, all crop machinery and livestock equipment, horse feed, and miscellaneous horse expense.

The expense factor does not show as high relationship with earnings when prices are high as when they are low. Some farms are under-equipped. On a few farms, excessive expenses constitute the main factor causing earnings to be very low.

Some of the cash expenses can be kept down by careful management. Oftentimes necessary repairs and improvements can be made by using the available farm labor rather than by hiring extra help. Repairs and overhauling should be done before spring work begins insofar as possible; or on rainy days or in other spare time during the summer. Reducing the number of horses to the minimum required for efficient operation of the farm helps reduce the power expense. In some cases, farmers can offset some or all of the power and machinery expense by using their equipment for outside work.

EFFECT OF WELL-BALANCED EFFICIENCY ON FARM PROFITS

It is quite evident from this report that few farmers have a monopoly on efficiency. Quite often farm operators show efficient management in one part of the farm business, which is offset by poor results in other phases. These farmers get medium returns while those who fall down all along the line get the lowest returns, and on the other hand those few who can manage to attain high efficiency in all parts of their organization receive returns well above the average. This is well illustrated in Table 10.

Table 10. Relation of Operator's Labor Earnings to the Number of Factors in which the Farmer is Above Average

No. of factors in which farm excels	No. of farms	Your farm	The length of the shaded lines are in proportion to the average operator's labor earnings	Average operator's labor earnings
None or one	9	_____	XXXXXXXXXXXXXXXXXXXX	\$1215
Two or three	47	_____	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1681
Four or five	29	_____	XX	2228
Six or seven	14	_____	XX	3016

The array in Table 10 indicates that it will be worth-while for each cooperator to study carefully his ranking on pages 12 and 13, and learn his standing in respect to each of the above factors and the elements of strength and weakness in his farm business.

Measures of Farm Organization and Management Efficiency, 1940

Measures used in chart on page 13	Your farm	Average of 99 farms	20 most profit- able farms	20 least profit- able farms
Operator's labor earnings	\$ _____	\$1,988	\$3,411	\$767
(1) Crop yields*	_____	100	109	93
(2) % of tillable land in high return crops**	_____	34.9	35.6	30.7
(3) Gross returns from prod. livestock***	_____	100	103	96
(4) Prod. livestock units per 100 acres****	_____	19.6	19.6	18.8
(5) Size of business - work units	_____	490	617	381
(6) Work units per worker	_____	253	299	197
(7) Power, mach., equip. & bldg.exp. per work unit\$	_____	\$1.99	\$1.89	\$2.24

Measures and items related to some of the above measures:

(3) Index of gross returns from -				
Dairy cattle	_____	100	103	81
Dual purpose cattle	_____	100	78	103
Beef cattle - breeding herd	_____	100	115	108
Beef cattle - feeders	_____	100	105	69
Hogs	_____	100	101	98
Sheep - farm flock	_____	100	138	69
Sheep - feeders	_____	100	118	-
Turkeys	_____	100	95	116
Chickens	_____	100	105	87
(5) Work units on crops	_____	169	229	127
Work units on productive livestock	_____	292	358	227
Other work units	_____	29	50	27
(6) Total number of workers	_____	2.0	2.1	2.0
Number of family workers	_____	1.5	1.5	1.6
Number of hired workers	_____	.5	.6	.4
(7) Power expense per work unit	\$ _____	\$1.18	\$1.12	\$1.30
Crop machinery expense per work unit	_____	.37	.37	.38
Livestock equip. expense per work unit	_____	.08	.06	.06
Bldgs. and fencing exp. per work unit	_____	.36	.34	.50

*Given as a percentage of the average.

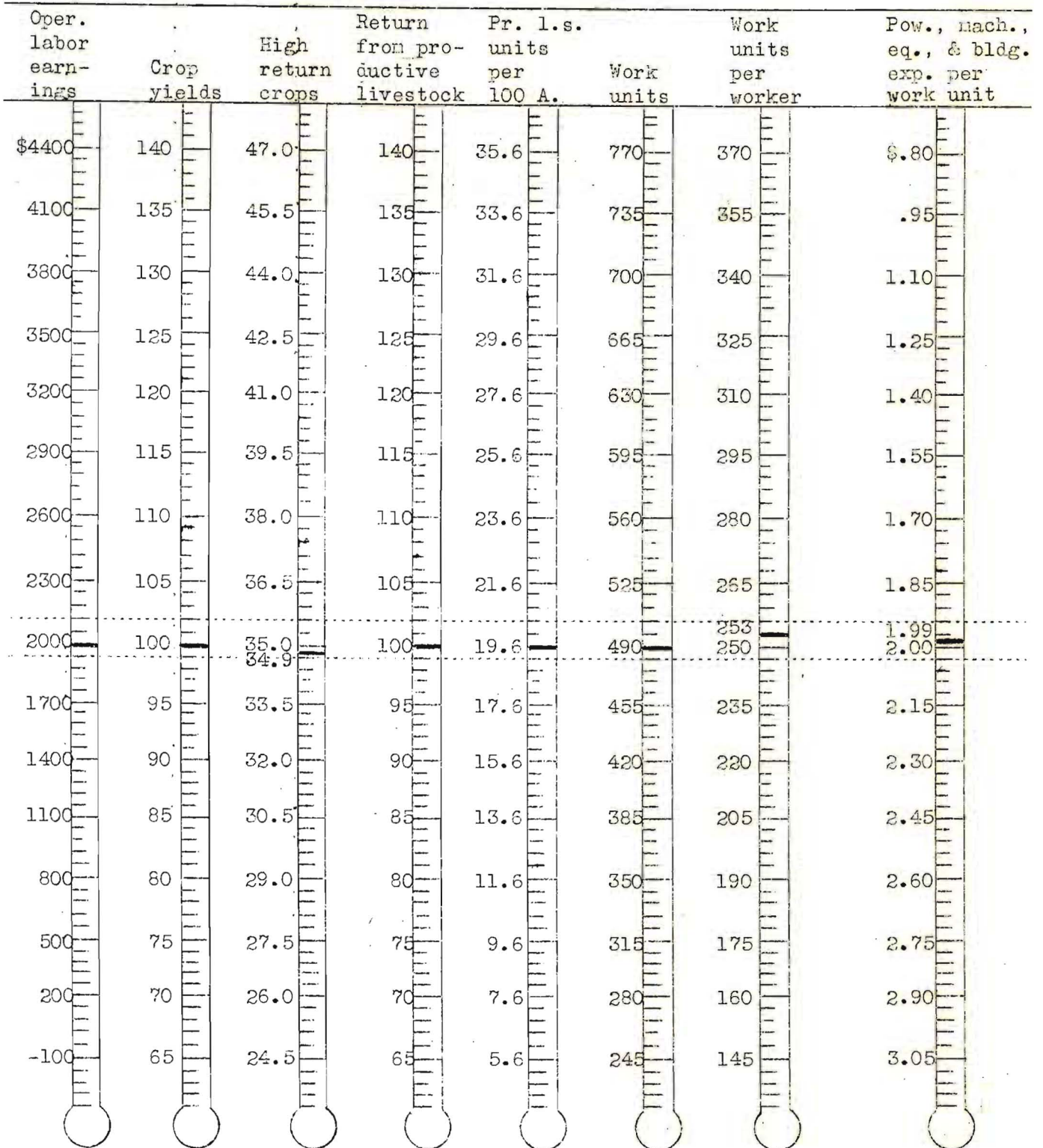
**Crops are marked on page 14 as (A), (B), (C) and (D). All of acres in (A) crops, one half of acres in (B) crops, and one-fourth of acres in (C) crops are used in calculating per cent of tillable land in high return crops.

***An index weighted by the animal units of livestock.

****Acres in timber not pastured, roads, waste and farmstead were not included.

Thermometer Chart

Using your figures from page 12 locate your standing with respect to the various measures of farm organization and management efficiency. The averages for the 99 farms included in this summary are located between the dotted lines across the center of this page.



Distribution of Acres in Farm, 1940

Crop: (A), (B), (C), and (D) refer to ranking used in calculating % of tillable land in High Return Crops (see page 12)	No. growing this crop	Your farm	Average of 99 farms	20 most profitable farms	20 least profitable farms
Canning peas	(A) 3	_____	.6	.3	0
Flax	(B) 89	_____	22.6	29.5	16.9
Barley	(C) 66	_____	16.2	19.6	16.5
Barley and oats	(C) 9	_____	3.2	7.7	0
Spring wheat	(C) 48	_____	7.2	6.4	4.7
Oats	(D) 94	_____	35.7	48.6	29.6
Oats and wheat	(D) 7	_____	1.9	1.0	3.3
Rye	(D) 12	_____	1.8	1.3	.2
Soybeans for grain	(D) 11	_____	1.5	3.6	1.0
Miscellaneous	(D) 3	_____	.3	1.2	.1
Total Small Grain and Peas		_____	91.0	119.2	72.3
Sugar beets, hybrid seed corn, potatoes and truck crops	(A) 31	_____	1.5	3.2	.4
Sweet corn	(B) 3	_____	.4	.9	0
Corn, grain	(B) 95	_____	44.2	67.5	29.0
Corn silage	(C) 60	_____	7.1	7.7	5.3
Corn fodder	(D) 32	_____	2.5	1.7	5.7
Total cultivated crops		_____	55.7	81.0	40.4
Alfalfa hay	(A) 87	_____	14.1	17.3	8.7
Sweet clover hay	(B) 15	_____	1.0	1.8	.5
Soybean hay	(C) 26	_____	1.9	1.8	2.1
Mixed legumes & non-legumes	(C) 18	_____	2.2	1.4	2.3
Legumes for seed	(C) 9	_____	.8	.6	1.8
Timothy and/or brome	(D) 13	_____	.8	.2	.3
Other annual hay	(D) 33	_____	1.9	2.7	2.6
Total tillable land in hay		_____	22.7	25.8	18.3
Alfalfa pasture	(A) 29	_____	1.4	1.1	1.3
Sweet clover pasture	(B) 49	_____	8.1	12.4	4.1
Mixture incl. alf., sw.clov., brome	(B) 18	_____	2.5	1.5	.9
Other legumes and mixtures	(C) 17	_____	2.0	1.9	1.3
Sudan grass pasture	(C) 22	_____	1.7	.9	1.3
Other tillable pasture	(D) 46	_____	7.3	12.2	8.2
Total tillable land in pasture		_____	23.0	30.0	17.1
Tillable land not cropped	(D) 15	_____	1.2	1.1	0
Total tillable land		_____	193.6	257.1	148.1
Phalaris hay (non-tillable)	3	_____	.2	0	0
Wild hay (non-tillable)	35	_____	4.1	1.4	4.2
Non-tillable pasture	45	_____	9.2	7.3	6.3
Timber (not pastured)	11	_____	.8	.8	.6
Roads and waste		_____	9.0	10.1	7.1
Farmstead		_____	7.7	9.0	7.0
Total acres in farm		_____	224.6	285.7	175.3
% land tillable		_____	86.5	89.6	85.8
% tillable land in high return crops		_____	34.9	35.6	30.7

Crop Yields per Acre, 1940

Crop	Your farm	Average of 99 farms	20 most profitable farms	20 least profitable farms
Canning peas, value above seed cost	\$ _____	\$26.89	-	-
Flax, bu.	_____	13.6	15.2	11.3
Barley, bu.	_____	41.9	45.6	38.4
Barley and oats, bu.	_____	55.7	69.8	-
Spring wheat, bu.	_____	26.0	34.0	22.6
Oats, bu.	_____	59.5	65.7	56.2
Oats and wheat, bu.	_____	55.7	-	45.5
Rye, bu.	_____	26.7	32.5	-
Soybeans for grain, bu.	_____	19.1	15.7	21.0
Sweet corn, tons	_____	3.5	3.0	-
Corn, grain, bu.	_____	49.5	53.7	52.5
Corn silage, tons	_____	8.9	9.5	8.8
Corn fodder, tons	_____	3.0	3.5	2.3
Alfalfa hay, tons	_____	1.9	2.1	1.8
Sweet clover hay, tons	_____	1.8	2.9	1.2
Soybean hay, tons	_____	1.5	1.1	1.3
Mixed legume & non-legume hay, tons	_____	1.4	1.3	1.2
Legumes for seed, lbs.	_____	245.9	221.9	77.8
Timothy and/or brome hay, tons	_____	2.0	-	2.0
Other annual hay, tons	_____	1.5	1.4	1.5
Phalaris hay on non-tillable land, tons	_____	1.3	-	-
Wild hay, tons	_____	1.1	.9	1.0

Power and Machinery Expense

Item	Your farm	Average of 99 farms	20 most profitable farms	20 least profitable farms
Crop acres per farm	_____	173.7	227.4	135.2
Tractor and horse exp. per crop acre	_____	\$1.95	\$1.84	\$2.15
Crop and gen. mach. exp. per crop acre	_____	1.08	.99	1.02
Number of farms with tractors		93	20	17
Number of farms without horses		3	1	2

Returns from Productive Livestock, 1940

Items	Your farm	Average of 99 farms	20 highest in livestock returns	20 lowest in livestock returns
<u>DAIRY CATTLE--47 farms</u>				
Gross returns per dairy cow	\$ _____	\$80.75	\$98.44	\$52.74
Pounds of butterfat per cow	_____	246	281	174
No. of head of cows	_____	14.4	12.7	13.2
Gross ret. per head other dairy cattle	\$ _____	\$34.30	\$36.91	\$23.09
Gross ret. per ani. unit all dairy cattle	\$ _____	\$70.20	\$86.16	\$45.78
No. of ani. units all dairy cattle	_____	21.6	19.5	19.5
<u>DUAL PURPOSE CATTLE --35 farms</u>				
Gross ret. per dual purpose cow	\$ _____	\$60.20	\$69.38	\$46.06
Pounds of butterfat per cow	_____	188	214	134
No. of head of cows	_____	10.0	10.4	10.6
Gross ret. per head other du.pur.cattle	\$ _____	\$27.63	\$31.53	\$17.92
Gross ret. per ani. unit all du.pur.cattle	\$ _____	\$56.21	\$65.16	\$36.11
No. of animal units all dual pur.cattle	_____	16.1	16.8	20.3
Price rec'd. per lb. butterfat sold as-				
Manufacturing cream (cents)	_____	30.9	31.5	30.8
Retail milk or cream (cents)	_____	43.6	43.4	-
<u>BEEF-BREEDING HERD--34 farms</u>				
Gross returns per animal unit	\$ _____	\$57.71	\$90.40	\$30.00
No. beef cows and bulls per herd	_____	8.3	2.4	15.7
No. animal units per herd	_____	18.3	11.2	26.7
<u>FEEDER CATTLE--20 farms</u>				
Gross ret. per cwt. produced	\$ _____	\$10.02	\$12.68	\$ 8.71
Lbs. feeder cattle produced	_____	6045	13175	5153
Price rec'd. per cwt. sold	\$ _____	\$ 7.98	\$ 8.97	\$ 7.09
<u>SHEEP- FARM FLOCK--32 farms</u>				
Gross ret. per head*	\$ _____	\$ 6.30	\$ 7.90	\$ 4.92
No. of head of sheep	_____	50.8	52.1	94.2
No. of ewes kept for lambing	_____	34.6	34.5	66.3
% lamb crop	_____	103	113	101
Lbs. wool per sheep sheared	_____	8.7	8.5	8.6
Price rec'd. per lb. wool sold (cents)	_____	29.5	32.0	28.7
<u>SHEEP- FEEDERS--7 farms</u>				
Gross ret. per cwt. produced	\$ _____	\$10.65	\$11.50	-
Lbs. feeder sheep produced	_____	4669	4641	-
Price rec'd. per cwt. sold	\$ _____	\$ 9.15	\$ 9.74	-
<u>HOGS--99 farms</u>				
Gross ret. per cwt. produced	\$ _____	\$ 5.85	\$ 6.12	\$ 5.97
Lbs. hogs produced	_____	20544	18783	17778
Total no. litters raised	_____	13.0	12.1	11.0
Pigs per litter	_____	6.5	5.8	6.6
Price rec'd. per cwt. sold	\$ _____	\$ 5.36	\$ 5.77	\$ 5.37
<u>CHICKENS--75 farms</u>				
Gross ret. per hen	\$ _____	\$ 2.32	\$ 2.16	\$ 2.34
No. of hens	_____	167	187	133
Eggs laid per hen	_____	126	130	110
Price rec'd. per doz. eggs sold (cents)	_____	14.9	15.1	14.1
<u>TURKEYS--10 farms</u>				
Gross ret. per cwt. produced	\$ _____	\$12.55	\$11.17	\$13.15
Lbs. turkeys produced	_____	12794	12273	3576
Price rec'd. per lbs. sold (cents)	_____	15.3	13.7	17.2

*Two lambs under 6 mo. of age considered as one head.

Farm Produce Used in House and House Rental, 1940

Items	Quantities				Value			
	Your farm	Average of 99 farms	20 most profit-able farms	20 least profit-able farms	Your farm	Average of 99 farms	20 most profit-able farms	20 least profit-able farms
Whole milk	_____	1090 qts.	1321	1191	\$ _____	\$29.75	\$33.28	\$32.89
Skimmilk	_____	250 qts.	346	174	_____	.81	1.12	.56
Cream	_____	278 pts.	387	293	_____	25.24	34.44	26.56
Farm made butter	_____	13 lbs.	38	0	_____	3.71	10.92	0
Eggs	_____	144 doz.	207	97	_____	21.66	30.83	14.21
Cattle	_____	321 lbs.	327	304	_____	33.61	26.00	14.37
Hogs	_____	649 lbs.	817	656	_____	34.03	42.03	34.46
Sheep	_____	5 lbs.	4	0	_____	.33	.35	0
Poultry	_____	112 lbs.	178	74	_____	12.89	20.85	8.21
Potatoes	_____	24 bu.	36	22	_____	13.66	21.51	11.46
Vegetables & fruits	_____				_____	46.71	66.26	37.65
Farm fuel	_____				_____	25.24	41.23	11.55
Rental val. of house	_____				_____	217.19	222.20	197.09
Total	_____				_____	454.83	551.02	389.01

Household and Personal Expenses for
Those Farms Which Kept Complete Accounts of these Expenses, 1940

Items	Your farm	Average of 46 farms	9 most profit-able farms	9 least profit-able farms
Number of persons - family	_____	4.2	4.6	4.0
Number of persons, (Family adult equivalent (Other*)	_____	3.3	3.4	3.2
	_____	.6	.7	.4
Food and meals bought	\$ _____	\$277	\$320	\$236
Operating and supplies	_____	107	121	104
Clothing and clothing materials	_____	141	169	122
Personal care, personal spending	_____	50	88	39
Furnishings and equipment	_____	106	103	127
Education, recreation and development	_____	89	102	118
Medical care and health insurance	_____	91	91	39
Church, welfare, and gifts	_____	77	71	25
Personal share of auto expense	_____	81	130	46
Household share of elect. & gas eng. exp.	_____	24	27	17
H.H. & pers.shr. of new auto; gas eng. & motors bot	_____	76	246	0
Life insurance and other investments	_____	74	112	58
Total household and personal cash expenses	_____	1193	1580	931
Food furnished by the farm	_____	208	260	179
Fuel furnished by the farm	_____	28	57	13
House rental	_____	213	215	210
Total household and personal expenses	_____	1642	2112	1333

*Hired help or others boarded.

Summary of Farm Earnings and Farm Inventories--Averaged by Counties, 1940

Item	Brown	Jackson	Kandiyohi	Martin	Nobles	Stevens	Watonwan	Yellow Medicine
Number of farms	15	13	9	15	14	9	10	14
<u>FARM EXPENSES</u>								
Horses bought	11	49	3	11	31	3	64	33
Dairy and dual purpose cows bought	14	38	52	-	-	17	50	58
Other dairy & dual purpose cattle bought	28	42	18	46	55	19	74	11
Beef cattle bought (including feeders)	664	550	16	332	104	69	-	88
Hogs bought	110	156	46	65	47	22	115	47
Sheep bought (including feeders)	205	75	29	160	264	1	1	7
Poultry bought (including turkeys)	45	34	18	60	230	59	24	30
Misc. crop expenses	193	227	199	241	243	183	212	231
Feed bought	527	596	355	461	1003	297	441	164
Power mach. (farm share) (new)	204	354	318	275	339	281	507	154
Power mach. (farm share) (upkeep)	272	340	380	319	298	385	302	291
Custom work hired	132	102	61	131	198	87	120	119
Crop and general mach. (new)	236	456	412	223	170	127	270	257
Crop and general mach. (upkeep)	47	67	61	43	41	49	48	52
Livestock equipment (new)	62	59	20	45	82	42	59	22
Livestock equipment (upkeep)	15	7	19	20	16	8	9	5
Misc. livestock expense	68	58	29	93	68	46	56	32
Buildings and fencing (new)	224	680	350	149	346	280	182	189
Buildings and fencing (upkeep)	69	104	121	228	88	41	141	212
Hired labor	266	212	247	357	265	97	252	247
Taxes	203	283	197	225	236	215	227	229
Insurance	7	14	6	13	13	3	15	2
General farm	34	34	22	48	38	17	27	30
(1) Total farm purchases	3696	4537	2979	3545	4175	2348	3196	2510
(2) Decrease in farm capital	-	-	-	-	-	-	-	-
(3) Board furnished hired labor	132	128	117	138	99	47	108	104
(4) Interest on farm capital	1376	1507	827	1471	1291	908	1205	990
(5) Unpaid family labor	281	187	338	183	278	395	212	172
(6) Total farm expenses (Sum of (1) to (5))	5485	6359	4261	5337	5843	3698	4721	3776

Summary by years (continued)

FARM RECEIPTS

Horses	30	55	24	20	78	42	29	16
Dairy and dual purpose cows	115	83	159	97	76	116	119	121
Dairy products	763	616	1054	844	575	475	662	432
Other dairy and dual purpose cattle	155	124	228	150	313	211	96	112
Beef cattle (including feeders)	756	1419	173	550	397	141	308	342
Hogs	1246	1441	606	1516	892	822	1085	720
Sheep and wool (including feeders)	278	190	134	326	330	181	44	58
Poultry (including turkeys)	88	170	71	191	1172	262	33	65
Eggs	156	224	92	205	370	74	130	165
Corn	303	544	5	238	498	269	325	143
Small grain	510	906	565	396	637	613	557	902
Other crops	244	89	45	264	133	27	49	247
Power machinery sold	45	135	142	137	109	65	214	98
Crop and gen. mach. sold	59	101	122	38	24	34	90	46
Misc.	146	274	313	240	373	189	338	174
Income from work off the farm	79	120	300	112	39	102	190	61
Agricultural adjustment payments	<u>373</u>	<u>453</u>	<u>346</u>	<u>470</u>	<u>445</u>	<u>407</u>	<u>413</u>	<u>415</u>
(7) Total farm sales	5346	6944	4379	5794	6461	4030	4682	4117
(8) Increase in farm capital	1276	1560	886	1056	1420	1047	1300	1196
(9) Farm prod. used in house plus house rent	537	461	419	455	446	370	419	474
(10) Total farm receipts (7) + (8) + (9)	7159	8965	5684	7305	8327	5447	6401	5787
(6) Total farm expenses	5485	6359	4261	5337	5843	3698	4721	3776
(11) Operator's labor earnings (10) - (6)	1674	2606	1423	1968	2484	1749	1680	2011

FARM INVENTORIES (Beginning of year)

Horses	\$400	\$337	\$297	\$354	\$376	\$454	\$340	\$264
Productive livestock	2508	2723	1670	2988	2312	2185	2535	1639
Crop, seeds and feed	2507	2645	1432	2668	3018	1503	2207	2171
Machinery and equipment	1876	2928	2078	2442	1923	2357	1995	2016
Buildings, fences, etc.	7303	6038	4987	7090	5537	4555	5282	5370
Land	<u>12285</u>	<u>14688</u>	<u>5644</u>	<u>13336</u>	<u>11949</u>	<u>6611</u>	<u>11098</u>	<u>7728</u>
Total farm capital	26879	29359	16108	28878	25115	17665	23457	19188

Miscellaneous Information - Averaged by Counties, 1940

	Brown	Jackson	Kandiyohi	Martin	Nobles	Stevens	Watowan	Yellow Medicine
Meas. of farm org. & management efficiency								
Index of crop yields	109	112	74	106	103	72	100	104
% tillable land in high return crops	39.0	34.9	28.6	34.6	38.5	30.6	35.6	33.6
Index of returns from livestock	97	107	104	105	104	90	95	95
Prod. livestock units per 100 acres	21.9	19.0	19.3	23.4	22.0	15.5	19.9	14.0
Size of business - work units	484	500	546	527	515	485	457	415
Work units per worker	235	268	256	270	261	257	246	235
Power, mach., eq., bldg. exp. per w. unit	\$2.08	\$2.21	\$1.43	\$1.91	\$1.99	\$1.93	\$1.96	\$2.19
Amount of livestock								
No. of work horses	4.4	3.2	3.3	4.0	3.7	4.2	3.9	3.6
No. of colts	.6	1.0	1.2	1.2	1.1	1.4	.5	.6
No. of dairy and dual purpose cows	12.3	8.9	15.7	11.2	8.9	10.7	9.2	7.8
Head other dairy and dual purpose cattle	11.2	4.9	16.4	14.4	9.2	11.1	10.4	6.6
Head in beef-breeding herd	3.4	14.2	2.2	7.2	14.2	14.0	13.8	11.2
Pounds of feeder cattle produced	3559	2777	118	865	420	0	0	883
Litters of pigs raised	13.7	14.6	8.1	18.4	12.9	8.7	14.9	9.7
Pounds of hogs produced	21017	25441	12584	26996	20960	13809	22025	16551
Head of sheep	33.4	14.3	22.4	25.5	25.1	31.5	9.6	6.1
No. of hens	127	156	78	157	203	65	92	111
Total no. of prod. livestock units	42.3	38.9	35.0	44.5	43.2	37.2	36.0	29.9
% of total prod. livestock units that are:								
Dairy and dual purpose cows	32.0	23.5	46.7	25.6	22.6	29.9	29.0	28.4
Other dairy and dual purpose cattle	16.2	7.5	24.3	17.2	14.6	16.3	18.3	12.6
Beef-breeding herd	4.1	22.3	3.2	11.7	20.1	23.6	19.7	20.4
Feeder cattle	9.6	11.2	.7	2.6	1.4	0	0	7.3
Sheep (farm flock)	8.0	4.2	8.6	5.5	3.5	11.0	3.0	3.8
Sheep (feeders)	2.4	1.0	0	2.4	2.6	0	0	0
Hogs	24.3	26.0	14.2	30.4	21.0	15.8	26.9	23.2
Turkeys	.1	0	0	1.0	9.0	1.4	0	.2
Chickens	3.3	4.3	2.3	3.6	5.2	2.0	3.1	4.1

Miscellaneous Information (continued)

Distribution of acres in farms

Acres in small grain	81.2	99.2	102.5	73.2	80.8	119.7	75.9	107.7
Acres in cultivated crops	47.5	64.3	41.6	67.8	59.2	55.4	50.6	53.2
Tillable acres in hay	22.3	19.4	19.8	21.1	26.4	27.8	24.2	22.1
Tillable acres in pasture	15.8	21.8	27.1	27.0	23.2	30.1	26.8	17.3
Tillable land not cropped	.3	-	.4	.3	.3	6.7	.7	2.4
Total acres in farm	167.1	204.7	191.4	189.4	189.9	239.7	178.2	202.7
% of land tillable	80	88	83	90	90	86	88	86

Crop yields per acre

Flax, bu.	14.4	16.1	9.0	14.3	15.5	8.6	13.6	13.2
Barley, bu.	42.4	49.7	31.1	54.0	40.7	32.3	44.3	45.0
Wheat, bu.	26.4	30.2	17.9	28.2	27.3	20.9	23.1	30.7
Oats, bu.	66.6	67.4	40.1	61.7	60.6	41.8	62.5	58.9
Corn, grain, bu.	52.6	54.6	38.0	53.4	49.1	38.3	45.6	52.1
Corn silage, tons	9.4	10.3	7.0	9.2	9.3	6.6	8.2	9.8
Corn fodder, tons	2.9	4.3	1.7	2.9	3.0	1.9	7.0	2.9
Alfalfa hay, tons	2.4	2.2	1.9	2.3	1.9	1.1	1.9	1.4
Soybean hay, tons	2.4	1.0	1.5	1.3	1.9	.7	1.9	1.0
Wild hay, tons	1.3	1.1	.8	.9	1.2	.9	2.0	1.4