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AGRICULTURAL EXTENSION DIVISION
UNIVERSITY OF MINNESOTA

F.W. Peck, Director

MINNESOTA FARM BUSINESS NOTES

No. 158

February 20, 1936

Prepared by the Division of Agricultural Economics
University Farm, St. Paul, Minnesota

SELECTING CROPS FOR FEED PRODUCTION AND SOIL CONSERVATION

Prepared by G. A. Pond and S. B. Cleland

The value of legume roughages in economical livestock production and the importance of legumes as soil building and conserving crops were stressed in the last number of Minnesota Farm Business Notes. The use of these legume crops does not necessarily involve a sacrifice in the amount of feed available for livestock production. If they are properly chosen, a gain in both the quantity and the quality of feed produced may be effected.

Average Yield per Acre of Important Feed Crops in Minnesota

The ten-year average yields of the three common feed grain crops in Minnesota, corn, barley, and oats, of the three principal legume roughages, alfalfa, red and alsike clover, and sweet clover, and of the principal non-legume roughages, corn silage and timothy hay, are shown in Table 1. These are based on the reports of the United States Census and the Minnesota agricultural statistician for the years 1921 to 1930. They are shown for each of the nine type-of-farming areas in Minnesota (see map on page 2) in order to bring out the difference in yields between these crops in different parts of the state. Corn, corn silage, alfalfa, and sweet clover have been omitted in Area 9 because climatic conditions restrict corn production very narrowly and lime deficiency makes alfalfa and sweet clover uneconomical except in very limited areas.

Table 1

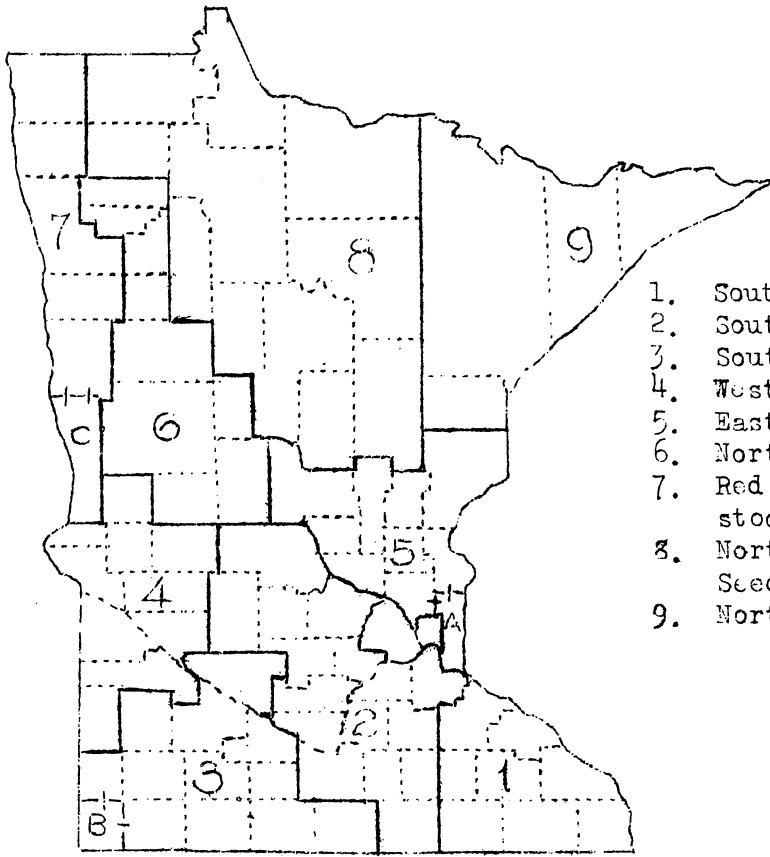
Ten-Year Average Yield of Feed Crops by Areas, 1921-1930*

Crop	Type-of-Farming Areas								
	1	2	3	4	5	6	7	8	9
Corn	37	38	34	31	29	28	26	26	-
Barley	29	32	30	26	27	25	24	25	28
Oats	37	39	36	34	34	31	29	32	37
Alfalfa	2.6	2.6	2.3	2.2	2.2	2.0	2.0	2.2	-
Clover**	2.1	1.9	1.5	1.5	1.6	1.6	1.7	1.6	1.6
Sweet clover	1.7	1.6	1.4	1.3	1.4	1.2	1.5	1.5	-
Corn silage	7.7	9.0	8.3	7.3	7.2	6.4	5.2	5.4	-
Timothy	1.7	1.6	1.3	1.2	1.5	1.2	1.3	1.5	1.6

*Grain yields expressed in bushels; hay yields in tons.

**Includes red and alsike clover.

Published in furtherance of Agricultural Extension Act of May 8 and June 30, 1914, F. W. Peck, Director, Agricultural Extension Division, Department of Agriculture, University of Minnesota, cooperating with U.S. Department of Agriculture.



Type-of-Farming Areas

1. Southeastern Dairy and Livestock
2. South Central Dairy
3. Southwestern Livestock and Cash Grain
4. West Central Livestock and Cash Grain
5. East Central Dairy and Potato
6. Northwestern Dairy and Livestock
7. Red River Valley Small Grain, Livestock and Potato
8. North Central Dairy, Potato and Clover Seed
9. Northeastern Dairy, Potato and Poultry

Average Production of Digestible Nutrients per Acre for Important Feed Crops in Minnesota

The pounds of total digestible nutrients produced per acre with the yields given in Table 1 are shown in Table 2. These computations are based on data pre-

Table 2

Pounds of Total Digestible Nutrients Produced per Acre
(Based on average crop yields, 1921-1930)

Crop	<u>Type-of-Farming Areas</u>								
	1	2	3	4	5	6	7	8	9
Corn	1693	1739	1556	1418	1327	1281	1190	1190	-
Barley	1105	1220	1143	991	1029	953	915	953	1067
Oats	834	879	811	766	766	698	653	721	834
Alfalfa	2652	2652	2346	2244	2244	2040	2040	2244	-
Clover*	2037	1843	1455	1455	1552	1552	1649	1552	1552
Sweet clover	1724	1622	1420	1318	1420	1217	1521	1521	-
Corn silage	2587	3024	2789	2453	2419	1702	1383	1436	-
Timothy	1663	1565	1271	1174	1467	1174	1271	1467	1565

*Including red and alsike clover.

sented by Eckles in Minnesota Agricultural Experiment Station Bulletin 218, with the exception of corn silage in areas 6, 7 and 8. For these areas, the data for silage from immature corn given by Henry and Morrison in "Feeds and Feeding" were used. In every area, alfalfa produces more digestible feed per acre than any of the grain crops. The clovers exceed oats and barley in every area and in northern Minnesota they exceed corn. The leguminous hays produce more digestible feed than timothy. Corn silage is the only crop that produces more feed than alfalfa, but this seeming advantage is offset by the fact that the cost of producing an acre of silage is from 50 to 30 per cent higher than that of an acre of alfalfa.

Leguminous Roughages Have a High Protein Content

The leguminous hays not only produce a large amount of digestible feed per acre but their relative protein content is high. Protein is usually the most costly element in purchased feeds and it is the one most likely to be deficient in the ration. The proportion of the total digestible nutrients that is digestible protein is reported by Eckles as follows:

Corn	2.7%	Alfalfa	20.3%	Corn silage	7.1%
Barley	11.3	Red and alsike clover	15.9	Timothy	5.7
Oats	13.8	Sweet clover	21.5		

The Clovers and Alfalfa Conserve Soil Productivity

These leguminous crops have a further advantage in storing nitrogen in the soil and thus increasing the yield of succeeding crops. Agronomists of the Minnesota Experiment Station estimate that by the use of a crop rotation, including an ample acreage of legumes, the yields of other crops may be increased 12 to 15 per cent from the averages given. Legumes have the further advantage that they aid in weed control and prevent soil erosion.

Planning Cropping Systems for Livestock Farms

These facts should prove useful as a general guide to the livestock farmer in planning his cropping system. Any individual will, of course, have to adjust these area data in so far as relative yields on his farm may vary from these averages. Then, too, all of these crops are not equally adapted to all farms. For example, alfalfa and sweet clover may not be adapted to low lime or poorly drained land on which alsike clover would thrive. Furthermore, there are limits beyond which the acreage of hay crops can not be increased without unbalancing the farm organization. Some small grain is desirable as a companion crop for seeding the legume hays. Cultivated crops are needed to control weeds. On many farms, cash sale crops increase or stabilize the income. A variety of crops provides a more economic utilization of labor, power, and equipment. Even if all crops are to be fed to livestock, there must be a reasonable balance between concentrates and roughages. Livestock, such as swine and poultry, can utilize but little roughage. Some concentrates are needed in the rations of other classes of livestock, especially high producing dairy cows and cattle and sheep that are being fattened. However, a considerable increase in leguminous roughages would be a profitable adjustment on most farms. Conserving the soil and building up its productivity do not necessitate sacrificing the quantity or quality of feed produced and they may contribute materially to present and future incomes.

MINNESOTA FARM PRICES FOR JANUARY 1936
Prepared by W. C. Waite and W. B. Garver

The index number of Minnesota farm prices for the month of January 1936 was 85.3. When the average of farm prices of the three Januarys 1924-25-26 is represented by 100, the indexes for January of each year from 1924 to date are as follows:

January 1924 - 86	January 1930 - 100
" 1925 - 102	" 1931 - 73
" 1926 - 113	" 1932 - 48
" 1927 - 112	" 1933 - 36
" 1928 - 100	" 1934 - 46
" 1929 - 101	" 1935 - 83*
	" 1936 - 85*

*Preliminary

The price index of 85.3 for the past month is the net result of increases and decreases in the prices of farm products in January 1936 over the average of January 1924-25-26 weighted according to their relative importance.

Average Farm Prices Used in Computing the Minnesota Farm Price Index,
January 15, 1936, with Comparisons*

	Jan. 15, 1936	Dec. 15, 1935	Jan. 15, 1935	Av. Jan. 1924-25- 26	% Jan. 15, 1936 is of Dec. 15, 1935	% Jan. 15, 1936 is of Jan. 15, 1935	% Jan. 15, 1936 is of Jan. 15, 1924-25-26
Wheat	\$1.01	\$1.00	\$1.00	\$1.46	101	101	69
Corn	.42	.42	.34	.69	100	50	61
Oats	.21	.20	.52	.40	105	40	53
Barley	.37	.36	.91	.64	103	41	58
Rye	.39	.37	.39	.98	105	100	40
Flax	1.65	1.60	1.71	2.59	103	96	64
Potatoes	.41	.38	.35	.77	109	117	53
Hogs	9.10	8.90	7.00	8.63	102	130	105
Cattle	6.30	5.90	5.00	5.41	107	126	116
Calves	8.40	8.20	5.80	8.25	103	145	102
Lambs-sheep	8.75	8.58	7.34	11.85	102	119	74
Chickens	.153	.146	.105	.158	105	146	97
Eggs	.19	.25	.22	.35	76	86	54
Butterfat	.35	.34	.33	.47	103	106	74
Hay	5.76	5.06	15.44	11.38	113	37	51
Milk	1.72	1.66	1.68	2.24	104	102	77

*Except for milk, these are the average prices for Minnesota as reported by the United States Department of Agriculture.

Indexes and Ratios of Minnesota Agriculture*

	Jan. 1936	Dec. 1935	Jan. 1935	Av. Jan. 1924-26
U.S. farm price index	76.8	80.9	75.3	100.0
Minnesota farm price index	85.3	79.2	82.3	100.0
U.S. purchasing power of farm products	95.0	100.7	90.3	100.0
Minnesota purchasing power of farm products	105.6	98.8	99.3	100.0
U.S. hog-corn ratio	16.7	16.5	7.7	11.0
Minnesota hog-corn ratio	21.7	21.2	8.3	13.2
Minnesota egg-grain ratio	17.2	22.8	13.8	21.3
Minnesota butterfat-farm-grain ratio	49.4	49.5	19.9	40.6

*Explanations of the computation of these data are given in Farm Business Notes No. 144.