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AGRICULTURAL EXTENSION DIVISION
UNIVERSITY OF MINNESOTA

F.W. Peck, Director

MINNESOTA FARM BUSINESS NOTES

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

QUALITY OF MINNESOTA INSPECTED POTATOES*

Prepared by W. C. Waite, D. C. Dvoracek and V. C. Norton

An indication of the quality of the commercial potato crop of Minnesota is provided by the portion of the crops inspected by the Federal-State inspection service. In the four-year period 1932 to 1935, the quantity of potatoes included in these inspections ranged from slightly over a million hundredweight, or about 3,200 cars, in 1934 to something over two million hundredweight, or 6,000 cars, in 1933. Inspection is optional and may be requested by either the purchaser or seller, the applicant paying the nominal fee collected. These inspections were almost exclusively limited to carlots shipped out of the county where grown, and included from 30 to 40 per cent of these shipments during the period under consideration. Since the inspections cover only a portion of the potatoes produced in the state, the results of this study may not apply to the general run of the entire crop. There is a considerable probability, however, that the uninspected potatoes are not, in general, of as good quality as those which are inspected.

Proportion of Inspected Potatoes Meeting Grade Requirements

There are four principal factors important in the grade of potatoes--size, hollow heart damage, soft rot, and other defects such as cuts, bruises, scab, etc. Lots of potatoes of suitable size, with not over 5 per cent showing hollow heart damage or more than 1 per cent affected by soft rot and whose total imperfections, including other defects, do not exceed 6 per cent, are classified as U.S. No. 1 grade. Somewhat similar requirements are necessary for lots to grade U.S. No. 2 and somewhat higher standards for Minnesota Certified Seed. There is considerable difference between years in the proportion of potatoes meeting the requirements of these grades, as is indicated in Table 1. In 1934-35 nearly two-

Table 1

Grades of Inspected Minnesota Potatoes, Crop Years 1932-33 to 1935-36							
Crop year, August to July	Proportion grading U.S.No. 1, U.S.No. 2, or Minnesota Certified Seed (per cent)	Proportion failing to meet requirements of U.S.No.1, Total U.S.No.2, or Minnesota Certified Seed grades inspec-					tions
		Lots with over 80 per cent U.S.No.1 potatoes (per cent)	Lots with 60-78 per cent of U.S.No.1 potatoes (per cent)	Lots with 40-58 per cent of U.S.No.1 potatoes (per cent)	Lots with 5-38 per cent of U.S.No.1 potatoes (per cent)	Lots of unknown grade (per cent)	
1932-33	37.2	53.3	8.8	.5	.1	.1	100
1933-34	34.1	44.5	15.9	3.1	1.8	.6	100
1934-35	64.5	21.9	9.9	1.3	.2	2.2	100
1935-36	52.1	33.2	9.5	1.2	.9	3.1	100

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thirds of the inspections met the grade requirements while in 1932-33 and 1933-34 scarcely a third were able to do so. When a car fails to meet the requirements of these grades, the proportion of U.S. No. 1 potatoes in the car may be determined by deducting from a hundred per cent the total of the percentage of undersize potatoes, the per cent showing hollow heart, the percentage affected by soft rot and the percentage of other defects. The resulting percentage is an indication of the quality of the particular lot.

Relative Importance of Factors Lowering Grade

Hollow heart is reported almost exclusively in the Cobbler and Round White varieties. It was most extensive in 1935 when 20 per cent of all the Cobblers and over 30 per cent of all the Round White potatoes were damaged to some extent. There was virtually no damage in 1932, and while in 1933 and 1934 damage was high in certain districts, it was not important in the state as a whole. Soft rot was most serious in 1935 when 43 per cent of all inspections showed some soft-rot damage. However, even in 1935 only $2\frac{1}{2}$ per cent of the inspected potatoes exceeded the 1 per cent of soft rot which is the maximum tolerated in the U.S. No. 1 grade. The earlier years showed a considerably smaller proportion affected. Undersized potatoes and soft rot would be sufficient to fail only a small number of cars if it were not for the additional factors included in "other defects". In consequence, most of the following analysis is of this group of imperfections.

The items included in "other defects" have been grouped in the following four classes: (1) Injuries which include the damages caused by handling in harvesting and marketing, such as cuts and bruises; (2) diseases which include scab, dry rot, stem-end discoloration, etc.; (3) growth conditions which are due largely to weather and include such things as growth cracks, misshapen potatoes, second growth, etc.; and (4) miscellaneous items such as freezing, sunburn and worm injury. The most important class in the defect group in each year has been injuries, the second disease, then growth conditions and finally miscellaneous. This is shown in Table 2 where the figures are the percentages of the total defects mentioned in the

Table 2

Classification of "Other Defects" of Inspected Minnesota Potatoes,
which Failed to Grade U. S. No. 1 in the Crop Years 1932-33 to 1935-36

Crop year	Proportion of total defects mentioned				Total inspections
	Injuries	Disease	Growth conditions	Miscellaneous	
	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)
1932-33	37.5	32.6	20.3	9.6	100
1933-34	37.6	28.6	20.8	13.0	100
1934-35	39.4	29.6	22.3	8.7	100
1935-36	42.5	26.1	24.2	7.2	100

various years. That is, the 37.5 per cent under injuries in 1932-33 means that of all the "other defects" mentioned for all the lots of potatoes, items listed in the injury classification were 37.5 per cent of the total. More careful handling probably would materially reduce losses from injuries. Similarly, diseases are subject to some control. Conditions resulting from weather are largely beyond the grower's control. It is evident that many of the defects mentioned are subject to some control by growers and handlers and could be reduced.

Some defects occur more often than others. Table 3 shows the proportion of the lots, cars or part-cars in which the five most frequently mentioned defects--

bruises, cuts, scab, stem-end discoloration, or dry rot--were reported. The prevalence of bruises and cuts is especially striking. Bruises were reported in nearly every lot of potatoes which failed to grade U.S. No. 1, and cuts were reported in about three-fourths of the lots. There were no great differences among the years nor between sections of the state. Evidently the handling of potatoes at digging and subsequently is an important element in decreasing the grade of potatoes marketed. Scab, stem-end discoloration and dry rot depend largely upon the weather conditions of the particular year. There is in consequence a considerable variation among years and sections of the state in the extent of these items.

Table 3

Proportion of the Lots of Inspected Minnesota Potatoes Failing to Grade U.S. No. 1 which Reported Specified Defects in Crop Years 1932-33 to 1935-36

Crop year	Defect				
	Bruises	Cuts	Scab	Stem-end discoloration	Dry rot
	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)
1932-33	93.1	81.2	86.8	13.6	52.9
1933-34	95.2	81.9	64.7	17.4	48.7
1934-35	93.4	73.9	73.8	18.7	28.4
1935-36	96.6	76.7	53.5	14.1	39.8

Reported Varieties of Inspected Potatoes

If the inspections are representative of the potato varieties grown in the state, the Irish Cobbler is the most important variety and the Early Ohio is next. A considerable number of Round Whites were reported which were probably of the Cobbler type. There is some difference between sections of the state in the proportion of the varieties grown. In the Hollandale district of Freeborn County only Cobblers were inspected. In the Red River Valley, Cobblers and Early Ohios were the main varieties. There was less uniformity in the sandland district around the Twin Cities and the northeastern section of the state where a number of varieties were reported.

Table 4

Proportion of Potatoes of Indicated Variety Reported in Minnesota Potato Inspections, 1932-33 to 1935-36

Crop year	Variety						Total inspections
	Cobbler	Ohio	Triumph	Round White	Long Red	Others	
	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)
1932	21.0	36.6	1.9	32.2	3.5	4.8	100
1933	27.9	26.7	2.1	34.5	5.9	2.9	100
1934	41.8	21.6	7.0	20.6	4.7	4.3	100
1935	45.7	28.4	8.5	12.4	.9	4.1	100

There is some difference in the reported defects in the two principal varieties, Cobblers and Ohios. In each year injuries and disease were mentioned relatively more often in Cobblers than in Ohios, and, contrarily, growth conditions appear to have been a more important defect in Ohios than in Cobblers as judged by the relative frequency of mention. Examination of the inspections of these two varieties by sections of the state show differences similar to those for the state as a whole.

MINNESOTA FARM PRICES FOR FEBRUARY 1937
Prepared by W. C. Waite and W. B. Garver

The index number of Minnesota farm prices for the month of February 1937 was 107. When the average of farm prices of the three Februarys 1924-25-26 is represented by 100, the indexes for February of each year from 1924 to date are as follows:

February 1924 -	88	February 1931 -	69
" 1925 -	100	" 1932 -	46
" 1926 -	115	" 1933 -	36
" 1927 -	113	" 1934 -	54
" 1928 -	101	" 1935 -	86
" 1929 -	107	" 1936 -	87*
" 1930 -	102	" 1937 -	107*

*Preliminary

The price index of 107 for the past month is the net result of increases and decreases in the prices of farm products in February 1937 over the average of February 1924-25-26 weighted according to their relative importance.

Average Farm Prices Used in Computing the Minnesota Farm Price Index,
February 15, 1937, with Comparisons*

	Feb. 15, 1937	Jan. 15, 1937	Feb. 15, 1936	Av. Feb. 1924-25- 26	% Feb. 15, 1937 is of Jan. 15, 1937	% Feb. 15, 1937 is of Feb. 15, 1936	% Feb. 15, 1937 is of Feb. 15, 1924-25-26
Wheat	\$1.38	\$1.39	\$1.03	\$1.41	99	134	98
Corn	1.08	1.05	.45	.64	103	240	169
Oats	.48	.48	.22	.39	100	218	123
Barley	1.01	.99	.40	.61	102	253	165
Rye	1.01	.99	.44	.82	102	230	123
Flax	2.06	2.12	1.64	2.57	97	126	80
Potatoes	1.35	1.25	.46	.80	108	36	156
Hogs	9.40	9.60	9.60	8.88	98	98	106
Cattle	6.70	6.70	6.60	5.54	100	102	121
Calves	8.60	9.00	9.50	8.50	96	91	101
Lambs-sheep	8.60	8.40	8.76	11.63	102	98	74
Chickens	.108	.103	.151	.167	105	72	65
Eggs	.173	.198	.209	.30	87	83	58
Butterfat	.36	.36	.37	.45	100	97	80
Hay	9.23	9.02	5.74	11.41	102	161	81
Milk	1.91	1.93	1.72	2.19	99	111	87

*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*

	Feb. 1937	Jan. 1937	Feb. 1936	Av. Feb. 1924-26
U.S. farm price index	89.0	92.0	77.0	100.0
Minnesota farm price index	107.0	106.0	87.0	100.0
U.S. purchasing power of farm products	108.0	109.0	98.0	100.0
Minnesota purchasing power of farm products	130.0	125.0	111.0	100.0
U.S. hog-corn ratio	8.9	9.3	16.8	11.4
Minnesota hog-corn ratio	8.7	9.1	21.3	13.7
Minnesota egg-grain ratio	8.7	10.0	18.2	18.3
Minnesota butterfat-farm-grain ratio	20.5	20.8	49.1	36.4

*Explanations of the computation of these data may be had upon request.