

Table 5. COMPARISON OF SOME N.D.A.C. EXPERIMENTAL DENT DOUBLE CROSS HYBRIDS WITH STANDARD VARIETIES AND HYBRIDS BY AREAS IN 1940

Location	Yield of corn — bushels per acre						Check varieties		
	N.D.A.C. experimental hybrids						Minn. 13 (early)	M.H. 402	Fal- coner
	M222	M254	M298	M301	M456	M467			
Fargo	44.8	48.4	45.2	44.1	47.3	46.7	32.7	44.5	43.3
Davenport	45.7	48.7	43.9	47.0	....	45.0	45.3	49.6	....
Arthur	41.5	46.6	45.5	....	45.6	....	39.4	47.9	46.2
Gilby	51.5	53.4	46.2	53.5	50.1	51.1	46.4	54.8	45.1
Edgeley .....	....	22.9	....	21.6	20.2	19.9	17.3	20.6	20.9
Mandan	38.6	....	37.3	43.7	33.4	36.0	....	30.9	36.8 ^a
Dickinson	32.7	....	....	30.5	34.7	31.0	....	29.2	37.8
Williston	25.4	....	....	22.9	....	31.1	22.0	39.5	27.6
Langdon	35.0	....	....	....	33.0	....	33.2	33.1	41.2

^a Northwestern open-pollinated variety used instead of Falconer.

compared with Falconer they yielded significantly higher at Fargo and Gilby while at Arthur, Williston, Edgeley, and Langdon they were equal to or lower than Falconer.

Suggestions

In the **southeastern area**, including Richland, Sargent and parts of Ransom, Dickey, Cass counties, and other favorable areas, the following varieties and hybrids are suggested. For heavy and cold soils—Minhybrid 402, Wisconsin 279, Kingscrosst A and Minhybrid 401. For lighter more fertile soils—Minhybrid 401, Kingscrosst A, Minnesota 13 (Mund strain), Kingscrosst D4, TruKrost 170, Wisconsin 355 and possibly other hybrids in the late maturing group.

In the **east-central area**, including Cass and parts of Traill, Steele, Ransom and Dickey counties, and also in very favorable areas in central and western North Dakota, the

following varieties appear adapted for production of mature corn—Minhybrid 402, Wisconsin 279, Kingscrosst 125, TruKrost 100, Haney strain of Minnesota 13, Rainbow flint and others of equal maturity.

For the **northeastern area** and most of western and northern areas, the early strains of Falconer, Northwestern, and a number of early flint varieties are preferable for the production of mature corn. Growers in more favorable areas with light and fertile soil may select some of the earlier hybrids such as Wisconsin 279, Minhybrid 402, Kingscrosst 125, TruKrost 100 and Kingscrosst E.

The suitability of hybrids to an area or to individual farms can best be determined by comparison with locally adapted varieties. Individual growers will find it desirable to choose hybrids or varieties of the same maturity requirements as the variety previously found adapted to his conditions.

Spring Wheat Varieties at the Mandan Station

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VARIETIES of spring wheat have been tested in varietal plots at the Northern Great Plains Field Station during the 25 years 1916-1940. Before 1930 most of the wheat varieties were susceptible to rust. It was after 1930, especially in the rust epidemics of 1935, 1937, 1938 and 1939, that the importance of growing rust resistant varieties came to be generally recognized.

Yield data on 22 wheat varieties grown on disked corn ground for 2 or more of the years 1930 to 1940,

inclusive, are presented in Table 1. Some varieties, grown only 1 or 2 years, or that appeared unpromising and have not been distributed commercially, are not included.

Thatcher is a good standard of comparison because it is the leading wheat variety now grown in this area. The average yield of Thatcher for 9 years, 1930 to 1940 with the 2 years of crop failure omitted, 1933 and 1936, was 16.2 bushels per acre. Omitting 1934, when the crop was hardly worth harvesting, the aver-

Table 1. ANNUAL AND AVERAGE ACRE YIELDS OF WHEAT VARIETIES GROWN IN TRIPPLICATE FIELD PLOTS AT THE MANDAN STATION IN THE YEARS INDICATED AND AVERAGE YIELDS COMPARED WITH THATCHER FOR THE SAME YEARS.

The crops in 1933 and in 1936 were failures and are omitted in computing averages. Arranged in rank of percentage of Thatcher.

Variety	C.I. No.	1930	1931	1932	1934	1935	1937	1938	1939	1940	No. of years grown	Average	Thatcher	% of Thatcher
HARD RED SPRING														
Vesta	11712	....	....	....	....	....	14.1	20.8	20.4	16.0	4	17.3	16.9	106
Rival	11708	....	....	....	....	....	16.8	19.1	18.7	15.1	4	17.4	16.9	103
Premier	11940	....	....	....	....	....	....	....	18.9	14.5	2	16.7	16.6	101
Thatcher*	10003	11.0	13.7	22.9	3.4	27.6	15.0	19.3	19.4	13.7	9	16.2	16.2	100
Hope x Hard Federation*	11798	....	....	....	....	....	9.5	18.8	21.6	17.3	4	16.8	16.9	100
Pilot-13	11945	....	....	....	....	....	....	....	19.7	12.5	2	16.1	16.6	97
Pilot B	11428	....	....	....	2.6	27.2	11.5	17.4	19.3	15.3	6	15.6	16.4	95
H-44 x Ceres	12010	....	....	....	....	....	....	16.6	18.9	14.0	3	16.5	17.5	95
Merit	11870	....	....	....	....	....	....	15.9	19.6	13.9	3	16.5	17.5	94
'Nordhogen'"*	11801	....	....	....	....	....	14.2	19.0	16.0	12.6	4	15.5	16.9	92
Great Northern	11937	....	....	....	....	....	....	16.0	17.2	....	2	16.6	19.4	86
Ceres	6900	13.0	17.1	22.8	3.0	18.6	8.0	11.5	18.9	12.5	9	13.9	16.2	86
Reliance x Hope	11433	....	....	....	2.4	25.1	12.0	16.0	....	....	4	13.9	16.3	85
Apex	11636	....	....	....	....	....	11.0	15.4	17.4	....	3	14.6	17.9	82
Reliance	7370	11.2	17.5	25.3	2.8	8.7	10.4	....	....	....	6	12.7	15.6	81
Renown*	11947 ¹	....	....	....	....	....	6.8	14.7	18.4	11.2	4	12.8	16.9	76
Reward*	8182	10.0	10.7	21.8	.9	20.3	7.3	14.1	....	....	7	12.2	16.1	75
Hope	8178	9.5	14.0	15.0	2.0	22.0	7.7	....	....	....	6	11.7	15.6	75
Marquis*	3641	9.5	14.4	18.7	2.3	11.1	6.4	9.4	17.6	12.9	9	11.4	16.2	70
Supreme*	8026	11.1	11.4	20.3	1.4	5.7	....	....	....	....	5	10.0	15.7	64
DURUM														
Kubanka	1440	12.2	9.2	23.0	2.0	25.5	14.0	14.1	18.6	9.9	9	14.3	16.2	88
Mindum	5296	11.1	7.0	23.2	2.1	23.0	16.5	14.5	17.0	10.5	9	13.9	16.2	86

* Awnless varieties. ¹ 11709 used first 2 years.

age yield for the 8 years is 17.8 bushels per acre.

Two of the hard red spring varieties, Ceres and Marquis, and the two durum varieties, Kubanka and Mindum, grown for the entire period shown, yielded significantly lower than Thatcher.

The varieties Komar, Marquillo, Reliance, Hope, Supreme and Comet were discarded before 1938 because they yielded definitely lower than Thatcher. Monad durum was dropped from the trials because it is inferior in semolina quality to Kubanka or Mindum.

Other varieties previously omitted from plots because they were susceptible to stem rust, and therefore not included in Table 1, were Kota, Red Bobs, Preston, Power, Hard Federation, Ruby, Quality, Garnet and Bluestem. These have been grown in single nursery rows during the years 1930 to 1940.

Only three varieties averaged higher in yield than Thatcher in the years grown. These are Vesta, Rival and Premier. Some of the others are not significantly lower in yield than Thatcher. Pilot and Rival, which have been released to farmers, are more resistant to leaf rust than Thatcher and may be expected to outyield Thatcher under some conditions. Vesta, Premier and Merit have been increased under control pending more complete information from tests for flour quality. If released, information will be given out.

Eight new varieties grown for the first time in 1940 are omitted from the table because results for one year are not considered sufficient indication of the value of a variety. Six of these varieties yielded higher than Thatcher, indicating that progress is being made in developing varieties better than Thatcher.

An Investigation of Micro Methods in Comparison with the Standard Method of Determining the Test Weight of Hard Red Spring Wheat

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Importance of Test Weight

THE term "test weight" is a grading designation used in the official grain standards established by the United States Department of Agriculture. It is the weight of the volume of grain necessary to fill level full a Winchester bushel of 2150.42 cubic inches capacity. Test weight is a very important factor in wheat grading. Definite limits in test weight differentiate between the various numerical grades in sound and unmixed wheats. As grade in turn regulates the price this factor is highly significant to the wheat grower and is therefore of interest to the agronomist and the cereal technologist when evaluating varietal and cultural effects upon wheat quality.

Test weight is also a factor of importance to the flour manufacturer as it is highly correlated with the quantity of flour which may be obtained from a given lot of wheat. Sound wheats of high test weights produce more flour per bushel than low test weight wheats and are accordingly sought after by the miller. This desirability is reflected in the Federal grading system.