Wheat Varietal Surveys

By J. Allen Clark[1]

The North Dakota Agricultural Experiment Station is especially pleased to print this contribution from Mr. J. Allen Clark. Mr. Clark graduated from the North Dakota Agricultural College in 1910. He served as a scientific assistant at the Dickinson Substation from 1911 to 1914 and since 1914 has successively been assistant agronomist and senior agronomist in charge of Western Wheat Investigations in the Division of Cereal Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture.

He is the senior author of several important national publications on varieties of wheat, published by the U. S. Department of Agriculture, among which are the following:

U.S.D.A. Bulletin 1074	**"Classification of American Wheat Varieties" (with J. H. Martin and C. R. Ball) 1922.**
Tech. Bulletin No. 459	**"Classification of Wheat Varieties Grown in the United States" (with B. B. Bayles) 1935.**
Tech. Bulletin No. 795	**"Classification of Wheat Varieties Grown in the United States in 1939" (with B. B. Bayles).**
U.S.D.A. Circ. 424	**"Distribution of the Varieties of and Classes of Wheat in the United States in 1934" (with K. S. Quisenberry).**

This contribution to the Bimonthly Bulletin brings the variety survey down to 1944, it being the sixth such national survey conducted. Mr. Clark has been active in the promotion of the national plan for the registration of standard varieties ever since the cooperative plan between the American Society of Agronomy and the Bureau of Plant Industry was adopted in 1923. His contributions on the Registration of Improved Wheat Varieties have appeared annually in the Journal of the American Society of Agronomy. The 17th and most recent of such reports on the Registration of Improved Wheat Varieties appeared in the April, 1945 issue of the Journal of the American Society of Agronomy. (H. L. Walster, Director)

The United States Department of Agriculture has made varietal surveys for wheat at 5-year intervals starting with the 1919 crop. These surveys were made in census years. For the first four, the harvested acreages as reported by the regular and special agricultural census were used, but for the last two, the preliminary seeded wheat acreage estimates of the Crop Reporting Board, Bureau of Agricultural Economics were used. The 1944 survey is the last and sixth to be made.

Questionnaires were sent from the State offices of the Bureau of Agricultural Economics to crop correspondents of the United

[1]Senior Agronomist Wheat Investigations, Division of Cereal Crops and Diseases, Bureau of Plant Industry, Soils and Agr. Engineering, U.S.D.A.

States Department of Agriculture and also to the Agronomy Department of some of the State agricultural experiment stations for distribution. The correspondents were requested to name the varieties of wheat grown in their locality and to estimate the percentage of the total acreage occupied by each. Approximately 75,000 questionnaires were sent out. For 1944 only about 12,000 were returned and of these 10,636 were usable, or about 600 less than in 1939. In editing the usable returns for the last survey it was felt that the reporters were becoming more "variety conscious" and that the information given was more accurate than for previous surveys.

Acreage percentages for each variety reported from each county were averaged, and the county acreage as reported by the Bureau of Agricultural Economics was then broken down according to these acreage percentages. The results gave the estimated acreages for each variety by counties. These county figures were used as the basis for determining the total acreage of varieties for each crop reporting district, State and for the United States. All varieties in each commercial class were then totaled for each district and State and for the United States. The total seeded acreage of wheat in the United States in 1944 was slightly more than 65½ million acres which is approximately 1¾ million acres larger than in 1939. Decided increases were reported in North Dakota and seven other States. Wheat was grown in 40 of the 48 States.

The estimated acreage in 1944 and 1939 and the percentage of the total wheat acreage occupied by each variety at 5-year intervals, starting in 1919, are shown for North Dakota in table 1. North Dakota was the second largest wheat growing State with 10,162,000 acres in 1944, being exceeded only by Kansas which had 13,103,000 acres for the same year.

For the entire United States 217 varieties were reported grown in 1944, 15 occupied more than 1 million acres each; 23 from 250,000 to 1,000,000 acres each; 35 from 50,000 to 225,000 acres each; and 144 occupied less than 50,000 acres each. The 5 leading varieties were Tenmarq, Turkey, Blackhull, Thatcher, and Rival. These five varieties occupied about 46 percent of the total wheat acreage. The first 3 varieties are winter and the last two spring wheats.

As shown in table 1 almost all of the wheat grown in North Dakota is spring wheat. Hard Red Spring wheat occupied 82.3 percent of the State acreage and Durum and Red Durum 17.7 percent. There were also small acreages of the Hard Red Winter and White wheat classes.

The five leading Hard Red Spring varieties in North Dakota were Thatcher, Rival, Regent, Pilot, and Renown in the order listed. They occupied 73.5 percent of the wheat acreage of the State.

For many years Marquis was the leading variety grown in North Dakota. In 1924 it occupied 52.9 percent of the total acreage. Since 1929 its acreage has decreased sharply due to losses from stem rust and in 1944 it occupied only 0.1 percent

Table 1.—Estimated percentage of the total wheat area occupied by the classes and varieties of wheat grown in North Dakota at 5-year intervals since 1919 and the acreage in 1939 and 1944

(Figures in parentheses under "Acreage," show the number of reports used in computing the data for each survey. The asterisk in parentheses (*) indicates a variety reported as grown, but an estimate of acreage either was not given or if given was less than 0.1 percent of the total acreage of the State)

Class and variety	Percentage						Acreage	
	1919	1924	1929	1934	1939	1944	1939	1944
							(1,038)	(715)
Hard Red Spring	.....	.....	60.1	77.9	68.9	82.3	5,771,895	8,361,179
Thatcher	.....	.....	.....	(*)	41.6	26.4	3,481,333	2,680,753
Rival	.....	.....	.....	.....	(*)	25.8	1,011	2,617,083
Regent	.....	.....	.....	.....	.....	9.8	.....	995,776
Pilot	.....	.....	.....	.....	(*)	7.0	1,964	708,130
Renown	.....	.....	.....	.....	.6	4.5	45,514	456,497
Vesta	.....	.....	.....	.....	.....	3.7	.....	373,795
Ceres	.....	.....	3.0	34.0	20.3	2.7	1,695,854	275,773
Reward	.....	.....	(*)	1.5	1.2	.9	97,028	89,496
Premier	.....	.....	.....	.....	.....	.3	.....	25,833
Carleeds	.....	.....	.....	.....	1.0	.2	86,753	23,912
Great Northern	.....	.....	.....	.....	.1	.2	11,634	23,047
Apex	.....	.....	.....	.....	(*)	.2	482	21,145
Mida	.....	.....	.....	.....	.....	.2	.....	18,425
Marquis	47.0	52.9	52.6	39.4	3.0	.1	251,481	11,480
Marvel	.....	.....	(*)	.1	.3	(*)	26,089	1,620
Progress	.....	.....	.1	.2	.1	(*)	6,834	1,504
Marquillo	.....	.....	.....	(*)	.2	(*)	18,101	1,414
Preston	8.4	2.7	1.4	.9	.1	(*)	8,855	1,100
Kota	.....	4.9	.8	.4	.....	(*)	.....	825
Hope	.....	.....	.....	(*)	.2	.....	15,716	.....
Coronation	.....	.....	.....	.....	.....	.....	2,182	.....
Power	.1	.6	.2	.2	(*)	.....	1,017	.....
Ruby	.....	3.3	.9	.3	(*)	.....	812	.....
Komar	.....	.....	.....	(*)	(*)	.....	801	.....
Haynes Bluestem	8.0	.6	.2	.1	(*)	.....	516	.....
Red Fife	5.8	1.6	.2	.1	(*)	.....	267	.....
Durum	.....	.....	39.0	21.7	31.0	17.7	2,598,449	1,797,409
Durum (varieties not reported)	28.7	22.5	23.3	8.9	13.5	8.3	1,133,766	846,267
Mindum	.....	.....	3.0	4.0	8.2	6.0	686,288	612,189
Kubanka	.3	5.3	6.9	6.9	5.0	1.6	418,301	163,435
Pentad	.4	2.7	4.3	1.7	4.1	1.5	339,012	148,958
Stewart	.....	.....	.....	.....	.....	.2	.....	12,389
Carleton	.....	.....	.....	.....	.....	.1	.....	6,113
Acme	(*)	.1	.1	(*)	.....	(*)	.....	436
Arnautka	.....	.....	.1	(*)	.1	.....	4,908	.....
Golden Ball	.....	.....	.....	.....	(*)	.....	4,048	.....
Monad	.....	.8	5	.1	(*)	.....	2,233	.....
Nodak	.....	(*)	.3	(*)	(*)	.....	1,892	.....
Peliss	.....	(*)	(*)	.1	(*)	.....	957	.....
Hard Red Winter	.....	.....	.2	2	.1	(*)	4,300	2,566
Turkey	.4	.2	.2	.1	.1	(*)	4,284	2,552
White	.....	.....	.7	.2	(*)	(*)	3,356	846
Florence	.....	(*)	.7	.2	(*)	(*)	3,346	840
Others and not reported	.9	1.8	1.2	.8	.3	.4	24,721	41,213
Total							8,378,000	10,162,000

of the acreage. In 1934 Ceres occupied 34.0 percent of the acreage and in 1939 Thatcher was the leading variety with 41.6 percent. By 1944 the acreage of Thatcher was almost reached by Rival. This shift emphasizes the change that is taking place in the varietal picture in North Dakota as well as in the United States. Of the 217 varieties grown in the Unit-

ed States only 28 are grown in North Dakota. This is 12 less than were reported in 1939.

North Dakota led all states in the growing of Durum wheat with 1,797,409 acres or 17.7 percent in 1944. This is a reduction from 1939 of nearly 800,000 acres. Much of the durum acreage is unidentified by varieties but Mindum and Kubanka were the leading varieties. Pentad or the Red Durum class decreased from 339,012 acres in 1939 to 148,958 acres in 1944 when it occupied only 1.5 percent of the acreage of the State. With the distribution of the two new rust resistant durum varieties Stewart and Carleton, the acreage of Pentad and the older susceptible varieties are since being further reduced but the total acreage of durum in the State apparently has increased. The newer varieties of Hard Red Spring wheat, Mida, Newthatch and Cadet also are causing rapid changes in the varieties which were grown in 1945 and which are now growing in 1946.

New varieties are continually being developed by State, Federal, and private breeders and in other countries. Of the 217 varieties of wheat grown in the United States in 1944, 110 were produced by breeding or selection at State or Federal agricultural experiment stations. These were grown on 33 million acres or on slightly more than half the acreage. Of the remaining varieties 63 are foreign introductions from other countries and 44 were developed by private breeders and these occupied 22 percent of the acreage.

Of the 28 varieties grown in North Dakota in 1944, 13 were produced by cooperating State and Federal workers in the United States and these occupied 7,333,837 acres or 72.1 percent of the acreage. Most of the others were produced at experiment stations in other countries, especially Canada. Some of these foreign wheats were introduced by the United States Department of Agriculture and distributed by the State stations. Six of the varieties were produced at Canadian experiment stations and occupied 1,575,494 acres or 15.7 percent of the total Three of the varieties were produced by private breeders and these occupied only 0.5 percent of the acreage.

These varietal surveys furnish a historical record of the shifting of varieties. In addition they form a basis for further wheat improvement.