

SPRING WHEAT YIELD TRIALS

Varietal Field Plot Trials:

A total of 22 varieties of spring wheat were seeded in 4 field plots each. Yields were low in this trial as well as in all other trials conducted here this year because of low rainfall during the growing season. The five highest yielding spring wheats in the Dickinson trials were, Pilot which averaged 13.6 bushels per acre, Cadet, 13.0 bushels per acre, Ceres, 12.5 bushels per acre, N. NO. 1843-41, 12.3 bushels per acre and Mida, 11.9 bushels per acre. Two wheats produced at this station, N. No. 1924 and N. No. 2083 ranked 9th and 15th in the Dickinson trials this year with respective yields of 11.1 and 10.0 bushels per acre. The two lowest yielding wheats in the trials here this year were Redman with an average of 8.9 bushels per acre and Haynes Bluestem which yielded 8.6 bushels per acre.

Test weights were good, due mainly to rains in July which aided greatly in producing well filled grain. Only three varieties, Cadet and Redman which weighed 59.0 pounds per bushel and Haynes Bluestem which weighed 59.5 pounds per bushel, were below 60.0 pounds per bushel, with the majority of the entries in this trial going over the 60.0 pound mark. Highest test weight, 63.0 pounds per bushel was from N. No. 1953, a Pilot x Mida cross produced by the U.S.D.A.

Comparison of average yields of wheat varieties for the past several years shows that the yield of Mida, which has been used as a comparison standard, has been equalled or exceeded by several new strains. N. No.1924, a Dickinson Experiment Station production has been in varietal yield trials for five years, and has averaged 113% of the yield of Mida over this period. N. No. 1831, a production of the U.S.D.A., which has also been in the Dickinson trials for five years has averaged 112% of the yield of Mida. Pilot and Rival, in trials for the last ten years have respective averages of 104% and 105% of the yield of Mida for that period, and four years results give N. No. 2012 an average of 106% of the yield of Mida. The long term averages for Cadet over the last 9 years and Thatcher for the past 10 years show no appreciable differences in yield in comparison with Mida, for the same periods. Comparisons between Mida and three obsolete varieties still being carried in the Dickinson trials show that the standard has outyielded all three by a wide margin. For the last 10 year period, Haynes Bluestem, Red Fife and Marquis have respective yields of 70%, 75% and 81% of the yield of Mida for the same period.

Two durum wheats were also included in the 1949 varietal trials at this station. Mindum durum averaged 12.0 bushels per acre and weighed 63.0 pounds per bushel and Ld. 303 averaged 9.4 bushels per acre and weighed 62.0 pounds per bushel. Mindum has averaged 109% of the yield of Mida over the last 10 year period. Ld. 303 has been included in the Dickinson trials for only the last two years.

Uniform Regional Nursery: 26 varieties or crosses-triplicated three row plots-grown at 18 stations in the spring wheat region.

Complete results for this nursery are not available at this writing. Preliminary yield results from the five cooperating North Dakota stations show Minn. II – 39 – 51 (Hope x Timstein) to be the highest yielding entry in North Dakota this year with a 5 station average of 25.9 bushels per acre, followed by Minn. II – 39 – 8 (Thatcher x Supreza) 25.0 bushels per acre, N. No. 1953 (Pilot x Mida), developed by the U.S.D.A., 24.8 bushels per acre, Minn. II – 39 – 47 (Hope x Timstein) 24.8 bushels per acre and N. No. 2083 (1552 x Mida), developed by the Dickinson Experiment Station, 24.1 bushels per acre. The only other Dickinson Experiment Station entry in this nursery, N. No. 1924-44 (1552 x Mida) ranked 13th in the average for the five North Dakota stations with a yield of 21.9 bushels per acre.

Since N. No. 2083 is already being tested in the varietal field plot trials at several North Dakota stations it probably will be replaced in the 1950 Regional nursery by another promising Dickinson strain. N. No. 1924-44 will be continued in the Regional nursery for at least one more year.

Intrastate Nursery: 26 varieties or crosses-quadruplicate single rows-grown at 4 stations in North Dakota; Fargo, Langdon, Mandan and Dickinson.

Complete results for this nursery are not available at this writing. Results from this station's trial show a Dickinson Experiment Station entry, N. No. 2286 (Regent-Mida x 1552-Mida), to be the highest yielder with an average of 10.0 bushels per acre. Second highest in yield here this year was N. No. 2164 (Pilot² x Merit), developed by the U.S.D.A., which averaged 9.6 bushels per acre, and third highest was Ns. 3674, developed by Dr. L. R. Waldron, North Dakota Agricultural Experiment Station, Fargo, which averaged 9.0 bushels per acre. Lowest yielding entry was Ns. 3664 which averaged 3.8 bushels per acre. Thatcher, used as a check in this trial yielded 7.8 bushels per acre.

Five Dickinson Experiment Station entries in this nursery have an average yield of 8.1 bushels per acre, which compares very favorably with the average for the balance of the nursery, 6.6 bushels per acre.

Test weights were only fair in this nursery, ranging from 55.8 to 59.5 pounds per bushel. Test weights for the Dickinson entries compare favorably with the other entries, two Dickinson wheats weighing 59.0 pounds per bushel, one 58.5 pounds per bushel, one 57.0 pounds per bushel and one 56.5 pounds per bushel.

Complete results and 4 station averages for the Intrastate nursery will be incorporated in subsequent reports from this office as soon as these results are available.

Elimination nursery: 101 varieties or crosses-single rows-grown at 4 stations in North Dakota; Fargo, Langdon, Mandan and Dickinson.

Averages for the four stations are not available at this time. Highest yielding entry in the Dickinson trial this year was N. No. 1844-15 (Regent x Mida), developed by the Dickinson Experiment Station, which yielded 12.2 bushels per acre. Second highest yield was obtained from N. No. 2218, a U.S.D.A. development and N. No. 2345, produced by the Dickinson Experiment Station, both of which gave yields of 11.2 bushels per acre. Newthatch, used as a check in this trial yielded 4.4 bushels per acre and weighed 61.4 pounds per bushel.

The 20 Dickinson Experiment Station strains included in this nursery compared favorably with the rest of the nursery, averaging 7.7 bushels per acre as against 6.9 bushels per acre for all other entries.

Test weights ranged from poor to very good for the nursery as a whole, the Dickinson strains being better than average in this respect, with only 3 entries dropping below 58.0 pounds per bushel and with 5 strains weighing 60.0 pounds or more per bushel.

“State VI” Nursery: 10 entries-quadruplicate-3 row plots.

This nursery, included in the 1949 yield trials at the request of Dr. L. R. Waldron, Plant Breeder, North Dakota Agricultural Experiment Station, was also grown at Fargo, Edgeley, Park River, Langdon and Minot. All entries in this nursery except Thatcher, used as a check, and Minn. 2776 were developed by Dr. Waldron.

Averages for the six stations show three entries to have yields which are significantly higher than the average yield for Thatcher, which was 20.1 bushels per acre. The top yielder, Ns. 3681 averaged 23.7 bushels per acre. Second highest was Ns. 3654 with a yield 23.5 bushels per acre and Minn. 2776, a close third, averaged 23.3 bushels per acre. Yields at Dickinson were considerably lower than the six station average with Thatcher yielding 10.5 bushels per acre and Ns. 3681, Minn. 2776 and Ns. 3654 averaging 9.4, 9.2 and 9.0 bushels per acre respectively.

Advanced Station Nursery: 20 varieties or crosses-triplicated-3 row plots.

This nursery is made up of promising strains of wheat, produced at the Dickinson Experiment Station, and from which are selected entries for the Intrastate and Uniform Regional nursery. In most years milling and baking tests are made on 15 selections and one check from this nursery, but unfortunately the yields were too light to furnish sufficient seed for milling and baking trials this year.

Highest yielding entry in this nursery was a selection from Regent x Mida² crossed in 1943 by Mr. Ralph W. Smith, former Agronomist at the Dickinson Experiment Station, which averaged 13.7 bushels per acre and weighed 59.0 pounds per bushel. Nursery numbers 2335 and 2336, both selections from Regent-Mida x 1552-Mida were high yielders averaging 11.4 and 12.6 bushels per acre respectively, and both weighing 61.0 pounds per bushel.

Lowest yielding entry in this nursery was Mida, used as a check, which averaged 8.4 bushels per acre in comparison with an average yield of 10.9 bushels per acre for the 19 Dickinson strains.

Test weights were good in this nursery with half of the Dickinson strains weighing 60 pounds or more per bushel and with the lightest grain testing at 56.5 pounds per bushel.

Dickinson Spring Wheat Nursery: 200 varieties or crosses-triplicated single rows.

Thirteen selections in this nursery had average yields which were as good or better than the highest yielding check variety, Pilot, which yielded 10.0 bushels per acre, and 83 selections yielded as much or more than Cadet, another check variety which averaged 8.2 bushels per acre. Highest 3 row average was made by N. No. 1844-110 (Regent x Mida) with a yield of 12.5 bushels per acre.

The more promising strains from this nursery will be included in the Advanced Station Nursery as rapidly as space becomes available so that milling and baking tests may be made and an indication of quality established before they are included in one of the more widely grown nurseries.

All selections included in this nursery were produced at the Dickinson Experiment Station with the exception of check varieties.

Mr. J. A. Clark's Nurseries: 90 varieties or crosses-single rows
18 varieties or crosses-triplicate

Entries in this nursery were strains being tested for Mr. J. A. Clark, Senior Agronomist, Wheat Investigations, U.S.D.A. Highest yielding cross in the single row nursery was 1753 x 2033, three selections of which yielded better than 10.0 bushels per acre, with one going to 14.0 bushels. Another high yielding cross was 1764 x Temstein, four selections of which also averaged more than 10.0 bushels per acre. Thatcher and Pilot, used as checks in this trial yielded 10.0 and 10.6 bushels per acre respectively, and all entries except those mentioned above yielded less than the checks.

In the triplicate single row nursery Thatcher, used as a check, averaged 9.7 bushels per acre, and 6 of the 18 entries averaged more than Thatcher although none were particularly outstanding.

Test weights ranged from poor to good in both nurseries, the lightest grain being a selection from a Pilot x Cadet cross which weighed 54.0 pounds per bushel. Several entries weighed 60.0 pounds or more per bushel with the majority weighing between 57.0 and 59.0 pounds.

Uniform Bunt Nursery: 50 varieties or crosses-duplicate 8' rows.

This nursery containing current Uniform plot varieties, wheats from the Uniform Regional Nursery, a susceptible check variety, Ulka, and promising hybrid strains bred for smut resistance was seeded at 5 stations in the Spring wheat region. Complete results for all stations are not available at this writing. Susceptibility in the Dickinson trial varied from zero for several entries to 68% infection for Ulka, the susceptible check.

Two strains from Dickinson included in this nursery, N. No. 2083 and N. No. 1924-44 showed no infection in the local trial.

Dickinson Smut Nursery: 615 varieties or selections-4' rows.

Selections in this nursery, all wheats developed at the Dickinson Experiment Station with the exception of standard checks, showed marked resistance to smut this year with only 2 of the 615 entries showing infection.

Several hundred selections were made from this nursery for future use.

Wheat Breeding-1949:

A poor set of seed, perhaps at least part of which was due to the dry season, plus hail and high winds on two separate occasions which broke off many of the bagged heads combined to cause considerable difficulty in the wheat breeding program this year. However, even with these adverse conditions, the number of crosses maturing seed was nearly 50% more than the number maturing seed in 1948.

All crosses in 1949 were made using a promising Dickinson strain as one parent, and many are crosses between two Dickinson strains.

Seed of these crosses has been sent to Mr. J. A. Clark, U.S.D.A., Beltsville, Md., who will grow a crop in the greenhouse this winter and return seed from this crop in time for sowing in the spring of 1950.