

EXPERIMENTAL PROCEDURE

Seeding rates are calculated from 1000 kernel weights and germination percentages are adjusted to provide a seeding rate of 1,000,000 live seeds per acre for hard red spring wheat and durum and 750,000 live seeds per acre for oats and barley. These rates are approximately equivalent to 60 pounds of wheat and durum (1 bushel), 65 pounds of barley (1.3 bushels), and 48 pounds of oats (1.5 bushel) per acre.

All variety comparison trials and uniform regional nursery trials are seeded on summer fallow. Rotation and tillage trials follow appropriate cropping sequence. Soil tests are used to determine proper fertilizer application. Herbicide application follows current procedure as outlined in the NDSU agricultural weed control guide circular W253 as revised annually. All trials are machine-planted with a K.E.M. four-row double disk cone seeder at appropriate rates for each species being tested. Trials are seeded in randomized complete block design in either three or four replications as requested by respective project leaders. Plot size for all regional tests are four by fourteen feet. Plant growth is monitored and agronomic information on planting date, time of emergence, seeding vigor, stand percent, heading date, height, disease and insect phenomena is recorded by Station personnel as required by respective project leaders throughout the growing season. Grain yields are determined from hand-harvested plots. Grain samples for quality tests are supplied as requested by respective project leaders.

Variety comparison trials are seeded at the Dickinson Branch Station each year. Trials consist of named cereal cultivars and advanced experimentals in the final testing stages preparatory to release. All trials are seeded on summerfallow. Soil tests are used to determine proper fertilizer application for selected yield goals. Herbicide application follows current procedure as outlined in the NDSU agricultural weed control guide, circular W253 as revised annually. All trials are machine-planted with a Melroe double disk drill at appropriate rates for each species. Drill row spacing is six inches. Plot size is five feet by one hundred thirty-two feet. Trials are seeded in randomized complete block design using four replications. Plant growth is monitored as necessary to record agronomic, disease and insect phenomena occurring during the growing season. Grain yields are determined from combine harvest of the entire plot. Grain samples for quality tests are supplied as requested by the chairman of the Department of Agronomy, NDSU.

Off-station variety comparison trials of newly released varieties from both public and private sources are seeded on selected off-station sites in Golden Valley, Dunn, Morton, Oliver and Mercer Counties. Procedure described for the variety comparison trials will be followed for off-station trials also.

All row crops to include corn, sunflower, dry beans and grain sorghum, are planted with an Allis row crop planter equipped with double disk furrow openers spaced 36 inches apart. Trials are planted at an excessive rate and thinned to the desired uniform stand.

Plot size for all row crops are one-fiftieth acre with yield determined from hand-harvested samples of a one-hundredth acre portion of the plot. Grain or seed is weighed at harvest and moisture percentage determined. Yield is determined on a uniform moisture basis for the species being tested. Corn silage yields are determined on a 70% moisture basis.

All small seeded crops are machine planted with a Melroe double disk drill set at 6 inch row spacing or a K.E.M. double disk cone seeder designed to plant from 3 to 7 rows set at 6 inch row spacing, depending on amount of available seed and plot size.

Plot size for all small seeded crops is one-hundredth acre, seed supplies permitting. Yield determinations are from combine harvest. Grain samples for quality tests are supplied as required to the Department of Cereal Science and Food Technology, NDSU.

Data are analyzed using statistical procedure for analysis of variance.

DICKINSON EXPERIMENT STATION

GROWING CONDITIONS – 1988

Severe drought prevailed throughout the growing season of 1988.

Total precipitation for the twelve month period, September, 1987 through August, 1988 was 8.63 inches as compared to the 94 year average of 15.89 inches.

Low rainfall throughout the entire growing season was coupled with temperatures that were far above average. The month of June was the most devastating in terms of adverse weather with average temperatures 14°F higher than the 94 year norm, and with precipitation 2 inches below average. Evaporation for June, July and August was 34.9 inches compared to the norm of 21.3 inches. High temperature, low precipitation and excessive wind combined to create the worst growing conditions experienced in this region for the past fifty years.

The most severe plant disease problem in 1988 was the onset of wheat streak mosaic, which was an extremely serious problem, particularly on winter wheat, early in the season. Effects of the drought masked development of other leaf diseases.

WEATHER DATA SUMMARY

Dickinson 1987-88

<u>Precipitation</u>	<u>1986-87</u>	<u>1987-88</u>	<u>94 Year Average</u>
Sept. – Dec. 1986	6.43	1.16	3.15
Jan. – Mar. 1987	2.73	1.96	1.53
April – June	4.36	3.64	7.30
July – Aug.	7.67	1.87	3.91
Total	21.19	8.63	15.89

<u>Average Temperature °F</u>	<u>1987</u>	<u>1988</u>	<u>94 Year Average</u>
April	48	42	41
May	57	59	54
June	66	75	61
July	69	71	69
August	62	68	67