

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.

GROWING CONDITIONS – 1986

Fall precipitation during the last four months of 1985 was 2 inches above average and provided good soil water for fall seedings of winter wheat and winter rye, pasture and hayland as well as residual soil water for fallow and recrop stubble. Above average precipitation was well distributed during the growing season except for a dry period starting on May 25 and extending through June. While total precipitation for June was above average, 3.30 inches of that total fell during the last four days of the month.

Insect damage during the 1986 season requiring control included seed weevil on sunflower and blister beetle on lupine and canola. Grasshoppers were a serious pest in some areas in southwestern North Dakota, but were not a problem on the station. Sawfly damage seemed to be more prevalent in 1986 in this region than it has been for many years.

Leaf spotting diseases and leaf rust developed under the good moisture conditions which prevailed, but the most severe disease problem occurring was stem rust of both winter and spring wheat. The most stem rust susceptible winter wheat variety in trials at Dickinson was Norstar. Bronze Chief, the most susceptible spring wheat in Dickinson trials produced 15.3 bushels of 56.5 pound wheat compared with 69.8 bushels of 59.5 pound wheat from the highest yielding entry, showing the serious effect of stem rust on susceptible cultivars.

WEATHER DATA SUMMARY Dickinson 1986

<u>Precipitation</u>	<u>1985-86</u>	<u>94 Year Average</u>
Sept. – Dec. 1985	5.19	3.15
Jan. – Mar. 1986	1.35	1.53
April – June	9.44	7.30
July – Aug.	<u>4.46</u>	<u>3.91</u>
Total	20.44	15.89

<u>Average Temperature °F</u>	<u>1986 Average</u>	<u>94 Year Average</u>
April	40	41
May	52	54
June	65	61
July	65	69
August	64	67