North Dakota State University * Dickinson Research Extension Center
1133 State Avenue, Dickinson, ND 58601 Voice: (701) 483-2348 FAX: (701) 483-2005

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 applications 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 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-fifteenth 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

Fall precipitation during the last four months of 1984 was slightly below average as was winter precipitation the first three months of 1985, the deficiency during this seven month period amounting to 1.12 inches of water. Precipitation during the rest of the growing season was just about normal. April precipitation was considerably lower than average

amounting to .87 inches which came in the form of seven light showers scattered through the month. May rainfall was most effective for crop growth. Two periods of rain, from May 11th through the 15th amounting to 2.63 inches and from May 27th through the 31st of 1.59 inches plus a shower of .09 on the 22nd, resulted in a well above average of 4.31 inches for the month.

June rainfall, while below average was fairly well distributed and with the cool temperatures occurring during the month was sufficient to promote excellent growth of small grain crops. Row crops, principally corn, sorghum and sunflowers did not thrive during the below average temperatures in June. Weather conditions generally were not conducive to development of foliar diseases on small grain crops. Grasshoppers were a severe problem in certain localized areas in southwestern North Dakota during the year but were not severe at the station.

Weather Data Summary

Precipitation	1984-85	94 year average
Sept. - Dec. 1984	2.74	3.15
Jan. - Mar. 1985	.82	1.53
April - June	7.31	7.30
July - Aug.	3.66	3.91
Total	14.53	15.89
Average Temperature ^{o}F	1985 Avg.	94 year average
April	45	41
May	57	54
June	56	61
July	68	69

August	61	67

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Email: drec@ndsuext.nodak.edu