AGRONOMIC RESEARCH

FOR

SOUTHWESTERN NORTH DAKOTA

The addition of an agronomist to the staff of the Hettinger Branch Experiment Station has made possible a complete new program in field crops research at that station.

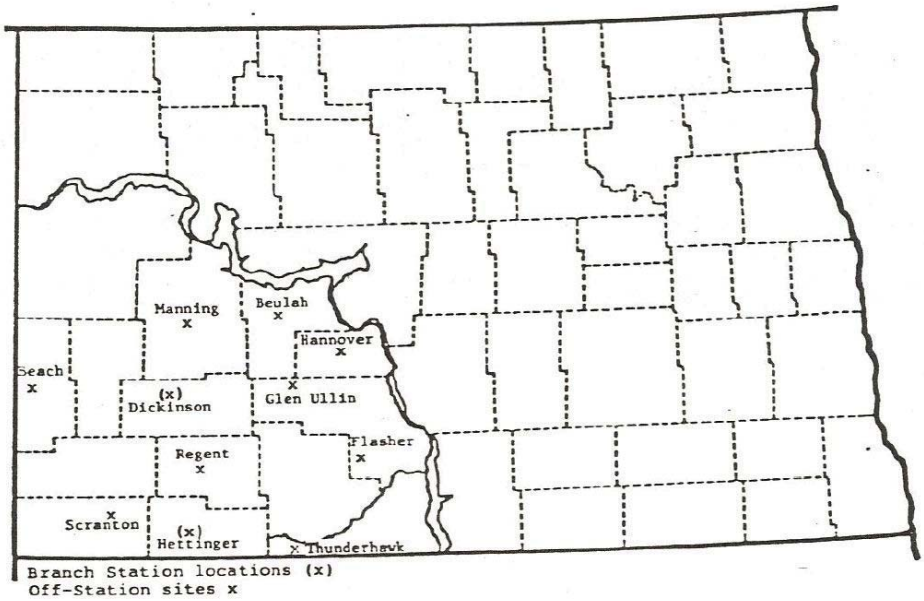
For the past thirty years prior to this year crops research at Hettinger has been limited principally to the off-station small grain variety trials conducted in southwestern North Dakota by the Dickinson Branch Station.

The Dickinson and Hettinger stations are now working together to provide farmers and ranchers in southwestern North Dakota with the information needed to improve crop production efficiency and economic returns from farming.

In meeting this goal, a complete field crops research program was begun at the Hettinger station this year. In addition, the agronomist at Hettinger, Mr. Jim Jakicic, has assumed responsibility for off-station sites at Scranton and Regent, formerly tended by the Dickinson station, and has started two additional off-station sites at Flasher and Thunderhawk.

The Dickinson station has conducted a complete field crops research program since 1905, and an off-station program which includes sites at Glen Ullin, Hannover, Beulah, Manning and Beach since 1967.

The combined crops research program of the Dickinson and Hettinger station provides an ideal means to determine which crops and which new varieties are best suited to growing conditions in the Missouri Slope.



EXPERIMENTAL PROCEDURE

TRIAL DESIGN:

All variety trials at both station and off-station locations are randomized complete block design with four replications.

SEEDING RATE:

Seed of selected varieties was cleaned and weighed to determine 1000 kernel weights. Seeding rates were calculated from 1000 kernel weights and germination percentages and were 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 bushels) per acre.

SEEDING METHOD:

At Hettinger all small grain trials were seeded with a plot drill designed for experimental plot trials. It is equipped with double disk openers set for a six inch row spacing. Trial plots were four feet wide and twenty feet long.

At Dickinson, small grain trials were seeded with a six foot wide Kirschmann double disk press drill. Row spacing is also set at six inches with this drill. Trial plots were five feet wide and one hundred thirty two feet long.

FERTILIZER APPLICATION:

At Hettinger as well as the Hettinger off-station locations, nitrogen and phosphorus fertilizers were broadcast and tilled under where needed to provide adequate fertility for yield goals of 45 bushels per acre of wheat and durum; 80 bushels per acre of oats and 65 bushels per acre of barley.

At Dickinson and all Dickinson off-station sites nitrogen and phosphorus fertilizers were drill applied at seeding time. Fertilizer rates used were based on the same realistic yield goals used at Hettinger.

All fertilizer applications were based on soil tests at all locations.

WEED CONTROL:

At Hettinger herbicides used included either Brominal 3+3 or 2,4 D Amine to control spring emerged broadleaf weeds. Broadleaf weed control was good to excellent with both herbicides. Wild oats was a problem at the Scranton location which contributed to low yields observed there. Low yields at Scranton were also due to an extremely heavy rainfall in August which caused severe lodging and shattering of seed.

At Dickinson and all Dickinson off-station sites herbicides used were Hoelon and Buctril for wheat, durum and barley; Buctril for oats and flax. Treflan for sunflowers and safflowers; Banvel and Lasso for corn and Paraquat, Glean, Roundup and Banvel in chemical fallow trials.

GROWING CONDITIONS

Dickinson, 1984

The fall of 1983 was drier than average with less than two and one-half inches of precipitation in the four month period September through December. Precipitation from January through March was also below average, and the dry period extended well into April, with the largest amount of precipitation during the month coming in the form of a thirty inch snowfall on the 27th. May was the driest in 93 years of record. Excellent distribution of five inches of rain in June was followed by a very dry July.

Army worms were severe enough to require control. Mostly dry weather conditions aided in keeping foliar diseases to a minimum.

WEATHER DATA SUMMARY

Dickinson, 1984

Precipitation	1983-84	93 Year Average
Sept. – Dec. 1983	2.37	3.18
Jan. – Mar. 1984	1.29	1.56
April – June	7.93	7.40
July – Aug.	3.58	3.97
Total	15.17	16.11

Average Temperature Of	1984 Average	93 Year Average
April	41	41
May	51	53
June	61	62
July	69	69
August	71	67

GROWING CONDITIONS

Hettinger, 1984

The 1984 growing conditions at Hettinger were similar to those at Dickinson. Fall and winter precipitation was below average. Most of the April precipitation came in a sixteen inch snowfall on April 27th. May was extremely dry and temperatures in May and June were cooler than average with killing frost occurring on May 26th. Precipitation in July and August was nearly two inches below average which hurt yields and test weights. There were no significant plant diseases. Grasshoppers damaged the row crops.

WEATHER DATA SUMMARY

Hettinger, 1984

Precipitation	1983-84	29 Year Average
Sept. – Dec. 1983	2.52	2.97
Jan. – Mar. 1984	0.74	1.13
April – June	8.24	8.08
July – Aug.	1.96	3.81
Total	13.46	15.99

Average Temperature Of	1984 Average	29 Year Average
April	42	42
May	52	54
June	61	64
July	70	70
August	72	69