

OFF-STATION RESEARCH PAYS OFF

Off-station crops research is returning big dividends through improved visibility and development of farmer confidence by bringing land grant research closer to home. Farmers take great pride in their local test sites. They support the work through their county agricultural improvement associations and individually as well, as evidenced by their excellent attendance at field days and by the increasingly numerous requests for test site results. There is an improved farmer confidence in recommendations based on the wider and more comprehensive tests of commercially available varieties made possible through this testing program.

Small grain variety testing has always had an important place in the research program at the branch stations,

but in recent years has been intensified through the use of off-station trials.

Off-station testing did not originate in North Dakota. Some of our neighboring states were using off-station, or what is sometimes called out-state testing programs, before the procedure was put into use here.

One big deterrent to earlier establishment of off-station work was concern about how much it would increase the cost of operation and work load. Under the direction and with the support and encouragement of Dean and Director Arlon Hazen, off-station testing was started on a trial basis at the Williston Branch Station, where it quickly demonstrated its effectiveness and



Growth at the branch stations is illustrated by two views of the Agronomy Seed Farm at Casselton, one taken in the 1950's, one in 1977.

value at a modest additional cost. After it was determined that the value of off-station work would far exceed the cost, the practice was implemented at all other branch stations.

There are numerous advantages for off-station testing, including: measurements of small but important local climatic differences; opportunity to test on a wide variety of soil types; the provision of a hedge against loss of all variety data to a hailstorm or other violent weather condition; extension of the area concerned by the testing program; and provision of a wider base for interpretation of yield data.

WILLISTON BRANCH STATION

Beginning in 1963, off-station trials have been conducted at five locations in Divide, Burke, Mountrail and McKenzie counties. These trials are conducted as a cooperative effort between the local county agent and the crop improvement associations in each of the counties. The trials are concerned mainly with small grain varieties, but have recently been expanded to include several specialty crops such as safflower, sunflowers, rape, mustard, and other crops that may be of importance to area farmers. The station has also cooperated with the area extension agent and the NDSU Soils Department in conducting fertilizer trials at the off-station sites. These trials have demonstrated the need for soil testing and proper fertilization for successful crop production on recrop land. Other production practices such as herbicide use and application have been and will continue to be demonstrated periodically.

DICKINSON BRANCH STATION

Off-station trials were started at Dickinson in 1968. They presently include six locations in Dunn, Mercer, Morton, Hettinger, Bowman and Golden Valley coun-

ties. In addition, the Hettinger Branch Station in cooperation with Dickinson provides a test site in Adams County. Basic procedure is similar to that in use at the Williston Station.

NORTH CENTRAL EXPERIMENT STATION

Off-station crop variety testing was initiated in 1971 at the North Central Experiment Station in Minot. The purpose is to demonstrate new varieties and add information on varieties for areas within the 12-county area this station was designated to serve. Varieties were compared for small grain crops, oil crops, and beans.

It was not possible to establish a test in each county because of limitation in staff, equipment, and funds. Therefore, the station started with two dryland sites, Rugby and Velva. In order to eventually serve all 12 counties, the sites were moved to another county after three years of testing. The sites are chosen by the county agent and the area crop improvement association board member with guidance from the soil conservation and staff. The county agent has the responsibility of coordinating all details such as setting up a summer tour, taking some field notes and distributing the research results from the tests. The fallow land (two acres) is either supplied by the farmer or the farmer is paid a cash rent by the county agricultural improvement association. The station staff prepares the land in the spring, plants, controls weeds, records observations, harvests, and prepares a written report each year. After three years a final report is prepared and is made available in the county agent office. Results are included in the farmer annual report and made available to every farmer in the 12-county area.

Up to the present time tests have been conducted at the following locations:

Location	County	Cooperator	Years of Testing
Rugby	Pierce	Darwin Kenny	2
Rugby	Pierce	Clement Schmaltz	1
Velva	McHenry	Larry Lee	1
Upham	McHenry	Maynard Thompson	2
Lincoln Valley	Sheridan	August Frey	1
Lincoln Valley	Sheridan	Armon Feichert	1
Lincoln Valley	Sheridan	Rausser Brothers	1
Souris	Bottineau	Larry Herslip	3
Washburn	McLean	Harry Sheldon	3
Tolley	Renville	Palmer Brekkus	1
Tolley	Renville	Kenneth Brekkus	1

The station has also conducted research at an irrigation site near Karlsruhe since 1974. The test includes the same crops as the dryland site along with forages and a number of row crops. The cooperating agencies are the farmer (Lawrence Black), Karlsruhe Irrigation District, Garrison Diversion Conservancy District, Bureau of Reclamation, and North Dakota State University.

CARRINGTON IRRIGATION STATION

Irrigated off-station trials are much more complex and demanding of resources than those conducted on dryland. When selecting a site it is not only necessary that the soils be representative, but they must be located

over a ground water aquifer that will supply adequate water for an irrigation well. Further, irrigation equipment necessary for distribution of water on experimental plots must be specially made or extensively modified commercial equipment. Thus, once a site is established it requires continuation of experiments at that location with a continuous cropping sequence that provides for weed, soil borne disease and insect control. Also, the need for irrigation by various crops during the growing season requires almost daily attention and thus higher labor requirements than on dryland.

This brief description of an irrigated off-station trial suggests limitation in number and thus careful selectivity

in its establishment. Since 1969 two such sites have been established — Oakes and Karlsruhe. Both are located in irrigation districts which are within the Garrison Diversion Conservancy District and both were established as satellite stations of the Carrington Irrigation Station. Oakes continues to be operated under supervision of Carrington, but responsibility for operating the Karlsruhe site has been shifted to the North Central Experiment Station at Minot for the past four years.

In the late 60's the Oakes Irrigation District was scheduled to receive the first irrigation water to be delivered by the Garrison Project in the 70's. In anticipation of the planned change in farming practices from dryland to irrigation a number of people involved with irrigation development in North Dakota and individual farmers in the Oakes District requested the Experiment Station to initiate crops testing and evaluation under irrigation in the Oakes area. Farmers wanted to know what the production potential of various crops would be and the production techniques necessary to achieve the potential under irrigation. The view was expressed that information obtained at Carrington might not apply at Oakes, a location 120 miles south and east of Carrington that has a 10 to 12-day longer growing season with higher temperatures, a climate more favorable for warm season crops such as corn, soybeans, sugar beets and alfalfa than at Carrington. Further, the soils at Oakes are quite sandy as contrasted with loams at Carrington, and would require different fertilizer needs and irrigation practices.

To obtain the desired information a 12-acre site within the boundaries of the Oakes irrigation district was leased, and an irrigation well installed with distribution pipeline and necessary irrigation equipment. To manage and fund what was to become known as the NDSU-Oakes Irrigation Field Trials a five-year cooperative agreement was entered into involving the Garrison Diversion Conservancy District, the Bureau of Reclamation and NDSU, with the Carrington Irrigation Branch Station as co-ordinator. Basically, the agreement provided for the latter to exercise research project leadership and the other two agencies to provide funding for operation. The agreement was renewed in 1974 to continue for an additional five years.

The Karlsruhe Irrigation Development Site came into being as a result of the interest and concerns of farmers and directors of the three irrigation districts within the "Souris-Loop" of the Garrison Diversion project. The proposal was to have an irrigation demonstration unit utilizing a center-pivot irrigation system installed in the Karlsruhe Irrigation District and leased to a farmer for use as a part of an operational farm unit. Basically, they wanted to discover how a modern day sprinkler system might perform mechanically and what effect supplemental irrigation would have on crop production levels, particularly on the very sandy soils identified as irrigable in that area. Further, they proposed that detailed research activity with a number of crops be conducted on a part of the tract with its water supply for irrigation separate from the farmer's center-pivot system. This proposal came into being in 1973 with the execution of a five-year cooperative agreement between the Conservancy District, Bureau of Reclamation, Karlsruhe Irrigation District and NDSU. The agreement

was renewed at the end of the first five years. As at Oakes the Carrington Station had responsibility for developing the research site and initiating the research activity at Karlsruhe. However, because of closer proximity to the Minot Station operation of the research site was shifted to that station.

Though the Garrison Project is currently stalemated by environmental concerns, legal problems and administrative decision the value of water resource development for irrigation has been clearly identified by research activity at Oakes and Karlsruhe in addition to Carrington.

LANGDON BRANCH STATION

The Langdon Branch Station began off-station testing in 1972. This first off-station plot was located near St. Thomas on what was known as the North Dakota State University Sugarbeet Research Site. This central Pembina County location was chosen because it was thought that the northern portion of the Red River Valley did not have crop variety performance records available for that unique area. The plot was continued in 1973, but was moved further north near Cavalier in 1974. At the same time (1974) the Langdon Station added two additional plots. These were located on the Walsh County Farm at Park River, and one mile west of Garske near the Ramsey-Towner County lines. In 1976, the Pembina County plot was moved still further north to within one mile of the North Dakota-Manitoba border just south of Neche. The Langdon Station has also cooperated with Grand Forks County tests since 1972.

The purposes of these plots are to supplement regular station data by providing variety performance information for unique areas of northeast North Dakota, and to demonstrate new and commercially available varieties. Since 1974 all Langdon off-station trials have been planted using a four replicate row-rod technique, and consist of 45 to 50 commercially available cereal grain varieties.

The Langdon off-station plots are conducted in cooperation with each respective county Extension office and local crop improvement association. The Langdon Station provides personnel and equipment to plant and harvest the plots, while the local Extension office selects the site and cooperating farmer. Any land rental is paid by each local county crop improvement association. Each county agent also assists with plot note taking and arranges plot tours.

Because of limited personnel and funds available, the Langdon Station has limited its off-station plots to those of Ramsey, Walsh, and Pembina counties and cooperates by providing seed for another in Grand Forks County. It is felt these locations provide an adequate number of tests to develop reliable variety recommendations for northeast North Dakota.

A summary of off-station plots conducted by the Langdon Branch Station are as follows:

Pembina County (St. Thomas)	1972 - 73
Pembina County (Cavalier)	1974 - 75
Pembina County (Neche)	1976 - 78
Walsh County (Park River)	1974 - 78
Ramsey County (Garske)	1974 - 78