

Williston Research Extension Center

The Williston Research Extension Center (WREC) conducts research to increase agricultural productivity in the semi-arid regions of north-western North Dakota while achieving a necessary balance between profitability and conservation of natural resources.

Studies at the center focus on crop variety evaluations, cultural practices, cropping systems, and soil and water conservation practices that will support more intensive cropping.

Research has been initiated on soil and crop management systems for sprinkler irrigation and alternative irrigated high value/value added crop production in cooperation with the MSU Eastern Agricultural Research Center and the USDA-ARS Northern Plains Agricultural Lab at Sidney, MT.

Research focus

- Evaluation of dryland and irrigated crop varieties and cropping systems,
- Soil management,
- Alternative crop research
- Safflower variety testing, production practices research
- Foundation seed increase

Location:

The WREC is located on an 800-acre farm 4 miles west of Williston on US Highway 2, 14 miles from the Montana border.

Operation:

The objective of the WREC's research program is to increase the productivity of dryland and irrigated agricultural crops while maintaining or improving the soil resource base in the semi-arid MonDak region.

The WREC emphasizes crop variety testing as well as evaluation of crop cultural practices, cropping systems, and soil and water conservation practices that will support more intensive cropping practices.

Facilities include farm, storage and machine buildings and a state approved seed condition plant where foundation seed is processed and conditioned.

The WREC and Montana State University's Eastern Agricultural Research Center (EARC) work cooperatively to coordinate, broaden and enhance the research programs and transfer of information for the MonDak region (northwestern North Dakota and eastern Montana).

Advisory Board

The WREC Advisory Board provides guidance to staff as to the research needs of the region. Its members include producers from Divide, Williams, Burke, Mountrail and McKenzie counties, county extension agents and representative of agribusiness and federal agencies.

Research Highlights 2003 - 2004

Crop varieties - Superior crop varieties of small grains and alternative crops are identified by means of variety testing on the Center as well as off-station sites.

Developing durum varieties for the MonDak region - Lines are selected based on heading date, height, disease resistance and other agronomic and quality characters.

White Wheat trials – Several varieties each of hard white spring wheat, soft white spring wheat and hard red spring wheat are being evaluated under irrigated and dryland conditions.

Alternative Crops Research – Field pea, chickpea, lentil, canola, mustard, buckwheat, potato, onions, sunflower, niger, flax, safflower, soybeans and other crops evaluated.

Sugarbeet Trials – A nitrogen budget system for sugarbeets produced under sprinkler and flood irrigation and the disease control management of *Cercospora* leaf spot is being tested and developed cooperatively with EARC.

Common Root Rot (CRR) testing - Trials evaluating reaction of some hard red spring and durum wheat varieties to CRR. No cultivars were immune but highly significant varietal differences were observed. Barley varieties were first included in 2003.

Wheat performance – The performance of wheat grown continuously or alternating with summer fallow, safflower, field pea, grain lentil or forage lentil has been measured since 1995.

Previous cropping effects on spring soil water and yield – Studies over an eight year period have shown that previous crop has a large effect on spring soil water content. The soil has been wettest after fallow, intermediate after wheat and driest after safflower. The 20% increase in wheat yield does not compensate for the loss of production during the fallow year.

Contact details:

Director: Jerry Bergman
Supt/Agron: Neil Riveland
Soil Scientist: Jim Staricka
Area Extension: Chet Hill

Email:
expwill@ndsuxext.nodak.edu

Web site:
<http://www.ag.ndsu.nodak.edu/wiliston>

Tel: (701) 774 4315
Fax: (701) 774 4307

14120 Hwy 2
Williston ND 58801-8629

In response to the growing interest in irrigation, the WREC expanded its research and extension efforts into the area of irrigated high value crops. Chet Hill, area Ag Diversification Extension Specialist, works with the WREC and producers on enterprise budgets to determine the feasibility of crops and their compatibility in crop rotations.

The main dryland crops here are spring wheat and durum, only 33% of which is grown on fallow. Barley, oats, safflower, annual legumes, and other alternative crops are also grown as livestock feed and cash crops. Major irrigated crops are sugar beets, alfalfa, spring wheat and malt barley.

The WREC, in cooperation with EARC, conducts breeding and variety testing on safflower, hard red winter wheat, durum, and high value/value added crops in an effort to enhance production of these crops in the MonDak region. Foundation seed production for area distribution of new and popular varieties is also a major part of the WREC's program.

The WREC and EARC are in the tenth year of cooperative research projects evaluating alternate high value/value added dryland and irrigated crops.



Agriculture Diversification Summary:

Alfalfa – Heartland Feed (Northwest Alfalfa) is starting to process hay into cubes and two different sizes of compressed bales. NDSU Extension Service conducted alfalfa workshops in January.

Corn – Corn grain acres almost doubled from in 2003. A company is looking at a possible ethanol plant at Williston which would utilize between six – eight million bushels of corn. NDSU Extension Service conducted Corn production workshops in January 2004.

Malt barley – Barley acreage and production increased dramatically in 2003. NDSU Williston Research Extension Center cooperatively with NDSU barley breeders, EARC staff and private companies are working to improve 6-row and 2-row malt barley varieties and dryland and irrigated barley management to help assure a more consistent supply and quality of malt barley and further stimulate and expand malt barley production and irrigation development in the MonDak region.

Small fruit production – the region has seen a revival in this area with two new wineries being set up. It takes approximately 6-8 pounds of fruit to make a gallon of wine. WREC has received grant monies to research variety response of fruits grown in the region, weed management and the health benefits of small fruit consumption.

Onions – 30 acres of onions were grown in 2003 by three growers. Average yield was 15 tons per acres with a high percentage of the onions over three inches in diameter. Producers are selling onions to area markets and locally. With WREC assistance, the group secured grants or loans to assist in purchasing a sorter and other onion equipment. Commercial onion acreage will be increased in 2004.

Other crops – As irrigation increases producers are seeking other crop opportunities. Over 1,500 acres of potatoes were harvested in the MonDak region in 2003. Producers are looking at more alternative crops in their rotations, including flax, peas, mustard, safflower, lentils, soybeans, potatoes and corn. Extension crop budgets are under development for new dryland and irrigated crops. Crop rotations will be developed to lower the risk of disease pressure as well as to spread the risk based on marketing opportunities.

Workshops – Several workshops promoting production agriculture as well as value added processing of commodities were held during the year. These include: Alfalfa Management, National Hard Spring Wheat Show, Value Added Ag Day, Gateway to Opportunities, MonDak Ag Open, MonDak Pulse Day, Pulse Crop Tour, sugarbeet growers seminars, corn production and irrigation workshops and Research Extension Center field days.

MonDak Irrigation Research and Development Project, Nesson Valley – New in 2004

The irrigation infrastructure for a multi-agency, multi-state irrigation research and development project will be completed in mid-summer 2004. This project will have both a Lake Sakakawea irrigation pumping system and a ground water well pumping system with separate pipeline systems to each of four 40-acre overhead linear irrigation systems. The project will examine the influence of water source on crop response and water qualities. The project will promote irrigated agriculture research and development and expanding and new food processing industries in the MonDak region. Benefits of the project include providing critical information on the effect of specific crop management programs in the transition from dryland to irrigated agriculture; assessment of the environmental impacts of improved management of water, nutrient, and pesticide applications and cultural practices in irrigated cropping systems in North Dakota; development of alternative cropping systems and a nutrient and pest management plan for irrigable lands; effects of crop rotations and tillage on crop yields and crop qualities, and nutrient and water movement; development of water and cultural management strategies for optimal production and water use efficiency of high value crops; improvement of the agronomic, and environmental qualities of irrigated row crop production in coarse-textured, well-drained soils; improved evapotranspiration crop curves for irrigation scheduling of high value crops; development of enterprise budgets to assist producers in making production decisions; and increased income, crop possibilities, land values, lease land rates, and production profitability from converted drylands to irrigated lands.