DESCRIPTION

The Williston Research Extension Center (WREC), established in 1907 and relocated to the present site in 1954, is an 800-acre rain-fed farm located in northwest North Dakota near the city of Williston. In 2001, an additional 160 acres were purchased in the Nesson Valley 23 miles northeast of Williston and an irrigated research and development project was established. In 2012 an additional 1,100 acres of land were leased from the North Dakota Game and Fish Department for pure seed production and dryland research. WREC research studies are conducted on dryland and irrigated crops and crop varieties, herbicide performance, crop management research, plant diseases and control, cropping systems, soil and water conservation practices, pipeline and saline seep reclamation, and horticulture. WREC also produces and supplies foundation seed of new and popular varieties to area farmers. WREC research is intended to increase the producer's net profit, support crop diversification and encourage more intensive cropping and irrigation development.

GENERAL FUND BIENNIAL BUDGET ADJUSTMENT IMPACT

The 2017-2019 North Dakota Legislative Biennial Budget reduction of 13.5% resulted in the elimination of one general fund agronomy research specialist position, reduced seasonal staffing, restricted overtime, deferred maintenance, delayed equipment purchases, reduction in DOT vehicles, imposed travel restrictions, cutbacks in otfstation variety and crop production trials and less replication of treatments within crop research studies.

WILLISTON RESEARCH EXTENSION CENTER IMPACTS

- WREC established a one-of-a-kind partnership with the Williams County Soil Conservation District (WCSCD) to construct a new WCSCD 60x100 ft. steel building at a cost of $678,000 at WREC. The facility, completed in July 2017, has office space, equipment storage space, and a 20x40 ft. cooler for storing tree and nursery stock for distribution of 50,000 tree seedlings in May to early June. During the offseason, WREC will use the cooler for winter storage studies on potatoes and other vegetables.

- Dr. Audrey Kalil, our new WREC Plant Pathologist, has initiated a new plant pathology program to evaluate the efficacy of fungicides, crop rotations, tillage practices and other IPM management techniques on reducing disease and pathogen populations. One area of her focus will be the effect of different management practices on the naturally occurring beneficial organisms and the use of advanced molecular techniques to precisely quantify populations of soil-borne pathogens. Audrey was successful in obtaining grant funding for a pulse crop pest scout to serve northwest North Dakota, has assembled a new WREC plant pathology laboratory, and established collaborations with pathologists at the USDA-ARS, Montana State University, NDSU, and other REC’s.

- Soil disturbance during the construction of pipelines, roadways, and well pads is a serious issue in western North Dakota. Within cropland, soil health and yields need to be restored during the reclamation process. During 2015, installation of a 36" water pipeline was completed at WREC. A long-term experiment with five annual crop rotations and two perennial covers in pipeline, roadway, and undisturbed (control) areas has been established. In addition to cropping sequence, ripping/manure is being tested. This study aims to provide long-term management strategies for landowners to restore productivity to disturbed cropland from water, oil, and gas development.
WILLISTON RESEARCH EXTENSION CENTER IMPACTS (CONTINUED)

- Collaborating with the breeders of North Dakota State University, Montana State University, South Dakota State University, Minnesota State University, USDA-ARS, and ag companies, 50 variety trials are conducted each year to evaluate germplasms and varieties for biotic and abiotic stress tolerance and adaptation to the semi-arid dryland and irrigated conditions of the MonDak region. This year, trials included small grains (winter wheat, durum wheat, spring wheat, barley, and oat) and alternate crops (safflower, canola, flax, potatoes, carinata, sunflower, corn, field pea, chickpea, soybean, lentil, dry bean, and black gram) species. The agronomic data collected from these trials resulted into the release of the following crop varieties: North Dakota AES: Soybean (conventional) - ND Benson and ND Stutsman Soybean (Glyphosate resistant) - ND17009GT; Hard Red Spring Wheat - ND VitPro; Durum: ND Riveland and ND Grano; Minnesota AES: Hard Red Spring Wheat - Lang-MN; South Dakota AES: Hard Red Winter Wheat - Thompson.

- The effect of plant population and row spacing on physiology, water use efficiency, and yield of no-till dryland soybean was initiated.

- In 2005, WREC developed a 160-acre irrigated site and is in its twelfth year of research to identify improved irrigated cropping systems, tillage systems, and best crop varieties, and best management practices to improve water use efficiency, soil health, crop management systems, and economic and environmental sustainability. The Nesson Valley site, located 30 miles east of WREC consists of four - 40 acre fields each with overhead linear irrigation equipped with automated Variable Rate Irrigation (VRI). New studies include effects of sugar beet spent lime on crop production and dry bean and soybean management of white mold.

- Established a saline seep reclamation research and demonstration project to reclaim saline seep area on WREC land in collaboration with the Montana Salinity Control Association and to evaluate salt-tolerance of alfalfa varieties and perennial grasses.

- The WREC Horticultural Research Program has initiated and conducted research on hops production and the use of season extending high tunnels to expand local specialty crop opportunities for vegetables and cut flowers and initiated research on haskaps.

- Our WREC Area Extension Specialist, Dr. Clair Keene, conducted trainings with northwest county extension agents to build their agronomic knowledge of crop varieties, conducted weed control studies in safflower and durum, and organized and assisted with outreach programming opportunities in the region: National Hard Red Spring Wheat Show, Pulse Days, offstation trials and tours, field day events, and MonDak Ag Research Summit.

FUTURE CRITICAL ISSUES

- Budget cuts, 2017 drought conditions producing below average yields, increasing operating costs and higher labor costs for research activities impacted WREC abilities to carry out our research programs vital to the improvement of the economic and environmental performance of our agricultural lands. Deferred maintenance funding continues to be an important need for WREC to maintain its facilities.

- The WREC seed conditioning plant built in 1954 is antiquated and was designed to only handle cereal crops and does not have the capability of cleaning peas, lentils, chickpeas, and other fragile seeds that are in high demand by our farmers. The outdated seed conditioning plant also poses considerable safety issues. A horizontal seed conditioning plant with optical color sorter and higher bushel per hour capacity is needed to allow WREC to condition Foundation seed of a wide array of new crop varieties to provide pure seed to growers. A seed conditioning plant fundraising effort will be initiated in 2018.

- A greenhouse is needed for the new WREC Plant Pathology Program and the Horticulture Program to allow these programs to conduct plant disease and horticulture research during the winter months. A greenhouse fundraising effort will be initiated in 2018.

- An additional equipment storage building is needed to store high cost WREC farm and plot research equipment indoors from the elements.