

CARRINGTON RESEARCH EXTENSION CENTER

2021 SBARE
Listening Session



DESCRIPTION

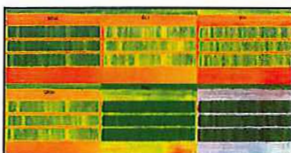
The Carrington Research Extension Center conducts research and educational programs to enhance the productivity, competitiveness, and diversity of agriculture in central North Dakota. Research activities at the CREC include scientists and support staff trained and implementing programs in Agronomy, Plant Pathology, Soil Science, Precision Agriculture and Animal Science. The crop diversity of the state is addressed in all program areas and is further supported by the ability to conduct research under both dryland and irrigated conditions. Projects addressing organic crop production and a fruit and berry program broaden the constituency being served. The foundation seed program of the center represents an important part of the overall NDSU Foundation Seed program. The CREC is the base of operation for four Extension specialists. Currently, CREC has collaborative projects with over 48 researchers from other research extension centers, campus departments, USDA, facilities, and other universities.

FACILITIES

The CREC operates on a land base of just over 2,000 acres of which the Agriculture Experiment Station owns 840 acres and cooperating area landowners are depended on for rental of the remaining acres. Four center pivots provide irrigation on 250 acres while infrastructure supplies water for more than 80 acres of misting systems on owned land. Researchers also conduct off-station crop production field trials near Dazey, Wishek, LaMoure, and Fingal, and operate an expanded research program on irrigated crop production at the Oakes Irrigation Research Site.

Center facilities include the headquarters building, an agronomy laboratory and greenhouse, shop, seed conditioning plant, and seed and equipment storage buildings. The livestock unit can accommodate about 500 head of cattle. It includes a feed mill, feedlot pens, feed and forage storage, animal shelters and an office.

PROGRAM IMPACTS



- UAS imagery using both multispectral and RGB cameras demonstrated the ability to discern damage caused by different rates of dicamba herbicide injury to non-dicamba tolerant soybeans.

- Tolerance of cool-season cover crops to common residual herbicides used for corn and soybean production are being

evaluated to improve the success of cover crop establishment.

- Evaluated corn and wheat grazing systems side-by-side, demonstrating several advantages of corn plus cover crops, including an increased grazing window and better cover crop establishment.
- Initiated a series of studies at the Oakes Irrigation Research Site to study the drought-tolerant traits in corn from several private seed companies. Future iterations aim to quantify any water-use reduction to expect from these traits.
- Developed a mobile application based on Geographic Information Systems (GIS) technology for real-time mapping and monitoring of Palmer Amaranth (*Amaranthus palmeri*) in North Dakota.



Program Highlights

- Crop nutrition and fertility
- Germplasm evaluation



- Disease research



- Soils and salinity
- Precision agriculture



- Livestock research



- Foundation seedstocks production
- Extension outreach
- Fruit and berry evaluation



NDSU Carrington Research Extension Center

Mike Ostlie, Asst. Director
663 Hwy. 281 NE
PO Box 219
Carrington, ND 58421
701-652-2951
fax 701-652-2055
www.ag.ndsu.edu/CarringtonREC

PROGRAM IMPACTS (CONT.)

- The Northern Hardy Fruit Evaluation Project provided distance learning for approximately 950 people through videos and webinars. We served over 100 people and educators in-state as well as in Iowa, Michigan, Minnesota, Montana and Tennessee through calls and email.
- NDSU Extension circular 'Soybean response to planting rates and row spacings in North Dakota' was published in 2020. It was the result of compiling and evaluating 37 NDSU field trials conducted during the past decade on soybean seed yield impacted by planting rates and/or row spacings.
- Completed the fourth and final year of a multi-location research effort assessing the impact of planting date on field pea agronomic performance under natural Fusarium and Aphanomyces root rot pressure and quantifying the returns to fungicide seed treatment relative to planting date.



- Provided farmers and the agri-industry with variety and hybrid performance trial results from 72 different trials representing 21 different crops in 2021.
- The CREC animal science program has evaluated the potential of soybean hulls to serve as a partial forage replacement for drylot beef cow/calf rations. Study results indicated that soybean hulls can be included as a replacement for a combination of corn silage, straw, and modified distillers grains at rates up to 25% without negatively impacting either cow performance or calf performance through weaning.

PROGRAMMATIC NEEDS

Further Support for Oakes Irrigation Research Site

The SBARE and ND Legislature's support of \$200,000 for the OIRS during the 2019 Legislative Session is greatly appreciated. Additional support is requested to cover the reductions that will occur in anticipation of the Garrison Diversion Conservancy District's planned phase out of operating support for OIRS.



Value-Added Cropping Systems

Operating support and a 0.3 FTE for Extension are needed in the area of value-added cropping systems. This area supports farming systems which capture additional value in harvested grain and/or land. Examples of value-added cropping systems include integrated crop/livestock production, intercropping, cover cropping, specialty markets, relay cropping, carbon markets, and organic agriculture. A current research position would be transitioned into this role.

Operational Funding Enhancement

Significant increases in operational costs have impacted the research programs across the Ag Experiment Station. The majority of the department's operational costs are supported by funds derived from grants secured by CREC researchers. Opportunities to pursue grants are not increasing and many types of operating costs are not allowed by grant agencies. Our Northern Hardy Fruit Project demonstrates community-oriented horticulture which allows us to reach new audiences and would be one of the programs that benefits from additional operational support.

CHALLENGES TO SUSTAINING PROGRAMS

Deferred Maintenance

Current support for maintenance of CREC facilities and infrastructure is inadequate to address current deferred maintenance costs. The programs of the CREC are supported by a diversity of facilities that include not only the primary buildings like headquarters and laboratory but also feedlot pens, feed and seed storage, animal shelters, roadways, parking lots, water supply features, storage buildings, and waste containment.

Land Base

A secure land base is critical to sustain the current and future research mission of the Carrington Center. The diverse programs of the CREC operate on an owned land base that is relatively small. The majority of the land used among programs is generally secured by annual rental agreements from seven different landowners. The heavy reliance on rented land comes with risks in our ability to maintain programs and with significant annual costs to the department.

FUTURE CAPITAL PROJECTS

Equipment Storage

Additional equipment storage capacity is needed to protect high-value research and large-scale equipment from exposure to the elements. Equipment degradation due to precipitation events, freeze-thaw cycles, and sunlight increases repair and replacement costs and results in faster equipment depreciation.

Feedlot Facility Enhancement

This CREC capital project priority would complete the facility enhancement requested in the previous session and includes bulk feed commodity storage, a hoop barn, waste containment enhancement and a smart feed technology system. Storage would increase the variety and number of commodities used and reduce waste and pricing risk. A hoop barn would allow research on an alternative beef production system for northern latitudes and expand capabilities to evaluate environmental stresses.