



Carrington Research Extension Center



‘Specializing in diversified agriculture for central North Dakota’

Carrington Research Extension Center (CREC) conducts research and educational programs to enhance the productivity, competitiveness, and diversity of agriculture in central North Dakota.

Research Focus - in brief

- Dryland and irrigated crop production methods
- Crop germplasm evaluation
- Cropping systems and crop rotation research
- Alternative crop development
- Feedlot beef nutrition and management
- Integrated crops and livestock systems
- Intensive beef cow-calf nutrition
- Feedlot beef nutrition and management
- Sustainable agricultural practices
- Foundation Seedstocks program
- Horticulture and forestry variety evaluations

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Location

The CREC is located three miles north of Carrington on US Highway 281. This central location is significant as research programs can address research needs that represent a significant part of agriculture in North Dakota.

Operation and facilities:

The center operates on 1,400 acres of land, about 250 acres irrigated by center-pivot systems and 150 acres by surface methods. The remaining acreage is managed as dryland, primarily for research activities.

700 acres is leased or rented for supplemental seed, feed and research needs. Off-station field trials to enhance crop variety data are conducted near Dazey, Wishek, LaMoure and Fullerton.

The center conducts an expanded research program on high-value irrigated crops at the Oakes Irrigation Research Site.

Web address:
<http://www.ag.ndsu.nodak.edu/oakes/oakes.htm>

The livestock unit research facilities can accommodate about 600 head of cattle and includes a feedmill, feed and forage storage, pole barns, pens and feedlots.

Facilities include a soil and plant analytical laboratory, a microscopy laboratory, storage and seed processing buildings.

Research Highlights

New feedmill online: A new feedmill increases bulk storage, provides faster processing, improves flexibility in ration ingredients, increases storage for diverse ration components, provides improved safety and greater precision in ration formulation.

Fly ash accepted for feedlot surfaces: Cattle can be maintained in much drier pens if fly ash is incorporated into the soil. Studies conclude that animals perform better, pens are easier to clean and cleanout is reduced. Guidelines for incorporation of fly ash are available.

Genetic differences become apparent in the feedlot: During the Dakota Feeder Calf Contest genetic differences were observed between herds in feedlot and carcass performance. Economic analysis calculated profitability of \$40 to \$205 per head during the feedlot period.

Cereal disease fungicide trials yield consistent responses: Cereal fungicide trials to evaluate control of leaf diseases and fusarium head blight continued at the CREC. The grain yield increased by 13% to 45%. Results of various grains available.

Record crop yield performance during 2003: A review of 20 different crops evaluated in CREC dryland variety trials during the past 17 years indicates the environment in 2003 was exceptional for crop production in central North Dakota.

Onion hybrid performance: CREC trials indicate that stand establishment techniques, including variety selection and using seed vs. sets, are critical. Yields ranged from 79 to 985 cwt/acre. Results available.

Flax processing: Feedlot research determined that processing flax is required to optimize its use in beef diets. Grinding or rolling increased daily gain by 0.3 lbs. compared to whole seeds in the ration. Processed flax diets were superior compared to linseed meal used as the protein source in the control diet.

Refined management for irrigated spring wheat Incremental increases in nitrogen resulted in an increase in grain protein but did not affect seed yield. Wheat yields under these management strategies were lower than wheat managed under dryland conditions.

Research Focus

Agronomy Research Program

Crop variety evaluations and development: Research conducted on barley, borage, buckwheat, camelina, canola, chickpea, corn, crambe, dry bean, durum, spring emmer, field pea, flax, forages, juneberry, lentil, lupin, millet, mustard, oats, onion, spring rye, winter rye, safflower, sorghum, soybean, spelt, sunflower, spring triticale, winter triticale, hard red spring wheat, and hard red winter wheat.

Crop Production and Management: Develops, refines and improves crop production and management practices. Includes plant establishment (row spacing and populations), crop fertility, inoculation, crop rotations, planting dates and input application strategies.

Irrigation Research: Provides farmers and industry with best management practices to grow traditional and high-value crops. Potatoes, dry beans, soybeans, corn, small grains, carrots, onions and others are being studied under irrigation. Dryland plots are established to compare yields with dryland farming.

Alternative Crop Development: Investigates existing and emerging alternative crops including borage, buckwheat, camelina, chickpea, crambe, field pea, flax, juncea, juneberry, lentil, lupin, niger thistle, onion, safflower, and others.

Cropping Systems Research Trial: An 18 year long-term trial evaluating rotations, tillage and fertility. A study has been developed evaluating the effects of previous crops on potato growth and yield.

Disease Management: Conduct extensive research on fungicide efficacy and application strategies. Evaluates disease resistance on potential new varieties.

Weed Management: Research trials on weed management in grass and broadleaf crops to screen herbicides for crop tolerance and to develop weed management strategies.

Insect Management: Research focuses on observed and potential problems in production fields. Chemical and non-chemical products and cultural practices are evaluated to identify management systems with increased effectiveness and reduce costs.

Foundation Seedstocks Program Part of NDSU's Foundation Seedstocks Program focusing on seed increase, conditioning and distribution. (See Agronomy Seed Farm information brochure or <http://www.ag.ndsu.nodak.edu/casselto/>)

Extension/Outreach Activities: CRES Extension specialists and researchers serve as resources for educators throughout the state. Seminars and demonstrations provide training in crop and livestock production and livestock waste management to agri-business and governmental resource persons across the state.

Livestock Research Program

Beef Feedlot Nutrition: Feeding cattle in background and finishing programs represents a significant opportunity to expand the livestock industry and economy in North Dakota. Feedlot research focuses on capturing more value from North Dakota grown grains, forages, and processing co-products. Environmental studies address the mitigation of weather stress and methods to minimize impact of cattle feeding on air and water quality. Carcass traits, meats analysis, and consumer preferences are included as variables in most studies. Economic comparisons are made in all receiving, growing, and finishing studies. Experiments are conducted with cattle from different genetic backgrounds sourced from commercial and university herds for assessment of breeds and crosses.

Beef Cow/Calf Production: The center serves as the primary source of new information on nutrition for cow/calf producers across the state and region. Using feed from crop residues and ag. processing co-product can be biologically and economically feasible and offers a legitimate enterprise for integrating cows into an intensively cropped region. Cows can add value to cropping system biomass and spread the risk of single enterprise farming. Research includes "new" and "unusual" feed for diets.

Integration of Crop and Livestock Production: Research includes feeding barley, field pea, wheat midds, flax, potato waste, lentil, chickpea, sunflower, and other crops to beef and bison. Nutritional research has been explored using scab-damaged durum, barley, spring wheat and sclerotia-infected sunflowers.

Livestock Waste Management: The Livestock Waste Technical Information and Assistance Program's goal is to improve water quality in North Dakota by educating livestock producers on suitable livestock waste management techniques and facilities and increase their utilization of livestock manure in crop fertility programs.

Waste management is a visible and restrictive program that affects all livestock producers. Improving the environment of confined animals by stabilizing soil with fly ash, controlling runoff, irrigating with livestock runoff and composting plant and animal biomass are areas of current and future focus.

Bison Nutrition: Previous research focused on the nutrition and management of bison bulls from weaning to market. The Bison Center of the Northern Plains now serves as a source of information for producers throughout North America.