

Oakes Irrigation Research Site



'Specializing in irrigated crop research to promote commercial production in North Dakota

Research focus - in brief

- Investigate irrigated high-value crop production practices for North Dakota
- Develop and refine best management practices for irrigation
- Promote irrigation development
- Provide irrigators with research data that aids efficient crop production
- Evaluate crops suited for irrigation

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Location

The Oakes Irrigation Research Site was established in 1970 on a 15.8-acre tract of land 4.5 miles south of Oakes, ND and adjacent to ND State Hwy 1. In 1993 the site was increased to 20 acres. It is a sub-unit of the Carrington Research Extension Center (CREC).

Function and goals

The major goals of the Oakes Irrigation Research Site are encompassed in the following objectives:

- Determine alternate and specialty crops (especially vegetables) adapted for commercial production under irrigation in North Dakota and define the agronomic practices needed to successfully produce them.
- Develop and refine Best Management Practices for irrigation that are producer acceptable.
- Promote irrigation development within the Garrison Diversion Project and encourage private development.
- Provide irrigators with research data that aids in efficient crop production.

Collaboration

A cooperative agreement between North Dakota State University and the Garrison Diversion Conservancy District makes this research effort possible.

North Dakota State University faculty and staff from the departments of Soil Science, Plant Sciences, Agricultural and Biosystems Engineering, and Plant Pathology participate in conducting experiments at the site. The Garrison Diversion Conservancy District provides the majority of the financial resources.

Why irrigate? Irrigation increases the number of crops that can be successfully produced in North Dakota as it makes it possible to grow crops that need to achieve a high level of quality to be marketable. Potatoes, onions and carrots are just some of the crops where quality and consistency are very important.

To be adaptable to varying crop mixes and responsive to changes in the markets, research on existing irrigated crops as well as new crops is needed on a continuing basis.

Crops are grown under sprinkler, aboveground drip and subsurface drip irrigation systems.

Research projects

- variety performance trials
- cover crop and living mulch studies
- crop rotation studies
- weed control studies
- plant population and planting pattern studies.
- Timing of irrigation applications studies



Research Results – 2003

Performance Trials

Cabbage

Cabbage grows well in the cool climate of North Dakota, but cabbage production is limited due to market uncertainty and lack of information on available hybrids. We evaluated the suitability of 16 cabbage hybrids for both the fresh and slaw markets. These were evaluated using three planting methods: direct seeded, plug transplants, and bare-root transplants.

Chinese cabbage often has not formed a good head when direct seeded in North Dakota, making it unmarketable. Five present hybrids were evaluated to test the head formation under North Dakota conditions when transplanted or direct seeded.

Carrots

Carrots have greater commercial production potential than any other vegetable. We tested true baby, cut and peel, cello, processing and dicing types of carrots.

Field corn

Field corn generally grows very well in this area of North Dakota. The short summer is compensated for by long days and lots of sunshine. This performance trial tested 66 hybrids.

Sweet corn

In our trials of sweet corn it has always matured before frost. In addition to testing sweetcorn harvested at the regular time, we also tested for harvest as baby corn and the effects of harvesting secondary ears as baby corn on the yield of regular sweet corn.

Onions

Onions growers are producing mostly yellow sweet Spanish onions and some storage onions. This study evaluated 30 onion hybrids.

Peppers

Peppers generally grow well in southern North Dakota, although late in the season some hot peppers lose their heat if the weather is too cool. In cool years, yields and quality may be reduced.

Pumpkins

Early maturing pumpkins are usually best, but later maturing ones do well in some years. In this study we evaluated 10 pumpkins.

Soybeans

A replicated trial tested 20 soybean varieties.

Winter squash

A small, but steady, market is available within the state. There are also markets outside the state, especially if squash is stored then shipped during the winter.

Weed Control Studies

Cabbage

Farmers growing cabbage have difficulty controlling weeds because few herbicides are available for weed control in cabbage production. We evaluated several new herbicides and herbicide combinations for use in direct seeded and transplanted cabbage production.

Carrots

Only a few herbicides are available for weed control in carrots. Treflan, Lorox, Poast and Fusilade are the most commonly used. In this study we evaluated several new herbicides and herbicide combinations for use in carrots.

Pumpkins

Weed control is difficult in pumpkins because few herbicides are available for pumpkin production. In this experiment we looked at several herbicides and herbicide combinations for use in pumpkins.

Sweetcorn

Two new herbicides have become available for weed control in sweetcorn. There is some concern that some sweetcorn hybrids may be injured by these new herbicides. We tested the sweetcorn hybrids received for the sweetcorn performance trials for their tolerance to Aim and Callisto.

Other studies

- Furrow vs. hill planting of irrigated potatoes.
- Effects of previous crops on potatoes.
- Pumpkin cover crop and living mulch study.

For further information

For information on the results of these studies visit the website and follow the Annual Report 2003 link.