

The North Central Quarterly

Published by the North Central Experiment Station of the University of Minnesota

GRAND RAPIDS, MINNESOTA

JULY 1991

VOLUME 61 NUMBER 3

This is Your Invitation to:

VISITORS DAY, THURSDAY, JULY 18, 1991



Exhibits and Displays

9:00 - 11:00 a.m. CONTINUOUS WAGON TOURS

Agronomy Research Plots
Horticulture Research Plots
Tree Improvement Nursery
Wild Rice Research Plots

11:30 a.m. - 12:30 p.m.
Lunch available at Itasca Community College

12:00 p.m.
Aspen/Larch Greenhouse Dedication

1:15 - 3:00 p.m. CHOOSE ONE TOUR

Wagon Tour to Agronomy Plots
Wagon Tour to Forestry Plots
Wagon Tour to Blueberry Plots
Wagon Tour to Oil Spill Area
Walking Tour of Animal Science Areas



Netting on Blueberries

ALL DAY EXHIBITS AND CLINICS

Open House Aspen/Larch Greenhouse
Livestock Area Open House
Minnesota Department of Agriculture
Endangered Species
Nitrogen Management in Manure
Specialists on Hand to Answer Questions

Visitors who arrive before 10:00 a.m. will be able to take two morning tours.

MORNING TOURS — 9:00 - 11:00 a.m.

HORTICULTURE RESEARCH

Blueberry observation trials.
Junebearing and day neutral strawberry evaluations.
All America Flower Selections for 1987-1991.
Chrysanthemum evaluations.
Intense management of bell peppers.
Raspberry and Juneberry cultivar evaluations.
Woody ornamental evaluations.
Cauliflower and broccoli cultivar evaluations

WILD RICE RESEARCH

Breeding
Yield and shattering trials
Varieties and experimental populations
Pistillate and bottlebrush populations
Populations undergoing recurrent selection for Shatter resistance and yield
Disease resistance
Pistillate trait, earliness, sturdiness, shatter resistance
Sturdiness and shatter resistance
Genetic experiments to determine Inheritance of seed tensile strength
Inheritance of disease resistance

Production
Herbicide screening on wild rice and burreed

FORESTRY

Red pine thinning strategies
96-year-old Red Pine plantation
Hybrid aspen/hybrid poplar comparisons
Tree improvement program update

AGRONOMY

Alternative crops demonstration
Small grain varieties.
Weed identification and control methods
Kura clover improvement
Intensive grazing demonstration

AFTERNOON TOURS — 1:15 - 3:00 p.m.

HORTICULTURE

The tour will visit the station blueberry plots. Updates of the blueberry research project will emphasize culture and management. Discussions of winter injury, winter protection and disease management will be conducted using examples from the station research plots.

ANIMAL SCIENCE

Walking tour of research facilities including swine, beef, dairy and angora goats.

WILD RICE

The afternoon tour will be at the University of Minnesota research paddies at Vomela Wild Rice in Aitkin, beginning at 2:00 p.m. You must provide your own transportation.

Breeding
Variety trial
Inheritance of seed tensile strength
Inheritance of disease resistance
Populations undergoing selection for shatter resistance, disease resistance and yield

Pathology
Disease development on 8 different populations/varieties

Production Effect of alternative crops and fallowing on wild rice productivity

FORESTRY

New technologies for tree propagation
Advanced generation spruce seed orchard
New plant materials for wildlife/conservation
Nature walk

OIL SPILL

Wagon tour to wetland recovery area.

This archival publication may not reflect current scientific knowledge or recommendations.
Current information available from University of Minnesota Extension: <http://www.extension.umn.edu>.

Shorter Breeding Season Increases Profits

Dan Brown, Assistant Animal Scientist

Summer is well underway and so is the breeding season for many beef cow/calf producers. This period should be limited to 60 to 75 days for commercial producers; making the time to bring your bull in soon. The economic impact of leaving a bull out with your herd for the whole summer is often overlooked.

First there is the simple fact of reducing the following calving season length. As a period of high labor cost, this is also a period of cost reduction opportunity. Shorter breeding and calving seasons result in a more uniform calf crop at weaning. Larger groups of uniform feeders usually command a \$2 to \$8 cwt premium, and this is especially important when dealing with on-the-farm sales. Late calves, pulled out, must be sold in small groups or as individuals which seldom top the market. Table 1 displays weight loss with each cycle in a breeding period and the resulting loss in gross income.

With total fixed and variable costs for the average beef herd ranging from \$360 to

\$440 per cow, even current high feeder prices are not profitable for calves conceived beyond day 63 for producers with high production costs. That cow calving late doesn't cover all her variable costs which include feed, labor and vet costs.

Next look at the individual cows which calve late. Chances are they will always be the ones that are last to calve or take several years to catch up. Assuming a sound breeding bull one must question the fertility of these cows. The heritability of fertility is low, none the less, it is heritable and heifers retained from these cows have greater chances of continuing this pattern. Selection and culling will increase the overall fertility and profitability of your herd.

Other areas of concern include the fall breeding of your heifer calves by bulls left out late. Heifers can start cycling as early as six months of age. This often results in the loss of highly productive animals when a bull is present.

Forage utilization and foraging ability is matched best to calves born in the spring

rather than early summer. During August when grazing becomes limited by weather, late born calves aren't able to meet their nutritional requirements for maximum gain. Neither the grass or dam's milk is sufficient to realize the full genetic ability for growth.

With cattle prices as high as they are now, the price reduction on late calves isn't felt in the pocketbook as it would be during a low market period. But cull cow prices are also high, making the sale of open cows after a short breeding season economically feasible.

Unless you have a marketing plan for those late calves limit your breeding season. A small pasture with a few cull cows will keep the bull content for the last half of the summer. Dealing with your bull now is easier and cheaper than dealing with those late calves next year.

Table 1. Length of breeding season effect on calf value.

Breeding season in days	Lbs lost 1.80 ADG	Calf wt	Price	Value	Total cost
0-21	0.0	550.0	\$93	\$511.50	
22-42	37.8	512.2	\$93	\$476.35	
43-63	75.6	474.4	\$95	\$450.68	\$440.00
64-84	113.4	436.6	\$95	\$414.77	
85-105	151.2	398.8	\$97	\$386.84	\$360.00



Utilizing Forest Planning Models in Canada

Howard Hoganson, Research Forester

The Ontario Ministry of Natural Resources funded a study to integrate methodology being developed at the NCES into a system for analyzing forest management policies and strategies in northern Ontario. The study, entitled Analyzing Wood Supply with Multiple Products and Multiple Market Locations: Methods for Northern Ontario, will hopefully help shed some insights on a complicated situation in northern Ontario. Both sawmills and pulpmills in that region are facing potential shutdowns. Recent studies have suggested potential timber supply problems in the future, especially for sawlog size material. The sawmills depend heavily on a market for the chips they produce as a by-product. The large pulpmill in the region is old and has been having financial difficulty. Owners have announced that they intend to downsize the mill significantly unless: (1) the government completes the purchase of their hydroelectric plant from them and (2) pulpmill employees are willing to purchase the mill. Downsizing the mill would eliminate ap-

proximately 1200 jobs in a town with essentially no alternative employment opportunities.

Grant Hauer, a University of Minnesota graduate research assistant working on this project, is a former employee of the Ontario Ministry of Natural Resources. Last summer we spent one week in Ontario learning more about the situation. Spruce is the dominant species with age class imbalances for the forest similar to the situation in Minnesota — most acres either relatively young or already financially mature. Significant volumes of the mature timber will be lost if it is not harvested soon. Aspen, the most common species harvested in Minnesota, is present in the region, but markets for it have not developed. Land tenure systems are significantly different in Canada. All of the forest land is publicly owned with long term lease agreements established that make industry responsible for most all forest management. Specific regeneration requirements are included in the agreements to help in-

sure long-term sustainability of the resource. Union logging contracts also influence forest management as these contracts influence the amount of wood shipped between regions. Roadbuilding costs are a very significant management cost as much of the high quality timber is currently inaccessible, and roads are generally very expensive not only to build but to maintain as much of the area is dominated by poorly-drained clay soils. Clearcutting is the predominant method of harvesting with some cuts as large as 5000 acres in size. Size of clearcuts and roadbuilding impacts have become a real concern in the region, with definite interrelationships complicating the issues even more. Some of the model enhancements developed as part of this study will likely be useful for future studies in northern Minnesota. Hopefully some lessons can also be learned as there are definite similarities between northern Ontario and northern Minnesota.

Biological Weed Control

Robert Nyvall, Plant Pathologist

Until a few years ago the common way to control weeds was through cultivation or to apply a herbicide. The use of herbicides has been a successful weed control strategy that has allowed farmers to economically control weeds in crop lands and help insure an adequate food supply at reasonable prices in the grocery store. Herbicides have also allowed for the successful control on unwanted vegetation in noncrop lands, thus eliminating the need for large amounts of backbreaking labor or expensive machinery.

Recently, the use of herbicides has come under scrutiny not only by concerned environmentalists but by the public at large. This is due to several factors including the appearance of chemicals in our groundwater supply, death or damage to nontarget plants, the potential risk that herbicides pose to human health, the potential harm to the environment, and to the misuse of chemicals in some instances by chemical applicators. This has led to the investigation of alternative means to control weeds including biological control or controls that are not perceived to be as harmful to the environment as chemicals.

Biological weed control may include the

use of a cover crop, insects or disease-causing microorganisms to eliminate the unwanted plants. Part of my research at the North Central Experiment Station will center on the use of fungi to control weeds. Fungi that are used to control weeds are called mycoherbicides. There have been several mycoherbicides discovered or developed over the past few years that have successfully controlled weed species in other parts of the country.

Initially, work will focus on purple loosestrife, a plant introduced into the United States from central and eastern Europe. Purple loosestrife is a plant that grows in wetlands and displaces the original vegetation that is beneficial to wildlife. Purple loosestrife itself is not considered to have any value for wildlife habitat and is therefore considered a pest. Present control measures center on the use of a herbicide. While relatively safe to the environment, herbicide control of purple loosestrife is expensive, time consuming and will likely have to be repeated after a few years.

My work will initially focus on investigating potential fungi that will successfully control purple loosestrife. Likely such fungi are present in nature and may be a suc-

cessful mycoherbicide. Candidate fungi may already be present in Minnesota, the Upper Midwest or the United States. However, a search for possible fungi may have to be conducted in the geographical center of origin of purple loosestrife where it is not considered a pest. Theoretically, biological controls already exist and are effective in these areas.

Some criteria for a successful mycoherbicide would involve the following. The fungus must be safe for other vegetation. The fungus must be pathogenic (cause disease) when the plant is most susceptible. The fungus must overwinter in a large enough population to successfully control purple loosestrife in succeeding years without additional inoculations. The fungus must be safe to animals. The fungus must be readily dispersed in nature, normally by air or water. Finally, a successful mycoherbicide must have a high and predictable level of control.

Although there is no guarantee a successful mycoherbicide will be found to control purple loosestrife, a successful search will result in a valuable tool to safely eliminate an unwanted pest in our native wetlands.

*The following article is reprinted from the April 17, 1991 issue of **Heralding 100 Years, Grand Rapids Herald Review.***

Experiment Station Holds First Visitors Tour

JULY 28, 1915...Fully 300 persons visited the North Central Experiment Farm Saturday at the invitation of Supt. Otto I Bergh, the first of what the superintendent expects to make annual occasions.

The day was pleasantly and profitably spent by those who went to the farm, and all of the features of the announced program were carried out. Many family parties took their dinners and enjoyed basket picnics at noonday. Sandwiches, pickles, baked beans, doughnuts and hot coffee were served by the young men employed at the farm. Up until noon every visitor was left entirely to his own resources and nearly all spent the time getting acquainted, bowling, strolling about the grounds and visiting the dairy barns and other buildings. An hour was given over to dinner.

There was quite a lot of teams and automobiles there by this time and the scene had taken on quite a gala appearance. Supt. Bergh was in his element as a host and entertainer and was busy from the time of the first arrivals until all had left for home. There are 454 acres in the state farm, with about 130 acres under cultivation.

Looking Back On Visitors Days

The first visitors day was held at the North Central Experiment Station (then known as the Northeast Experiment Station) on July 15, 1915. The visitors day held this year is 77 years later, but no visitors days were held during 1942, 1943 or 1944 due to "hardship of travel" during the war. Early visitors days were held on Saturday and according to the writeups in the QUARTERLY were "very social events." Families brought picnic lunches for noon and the station provided coffee, cream, milk and buttermilk. The program in 1926 consisted of a canning demonstration; stock judging contest; "talks of importance" to farmers in northern Minnesota — why taxes are high, presented by the state auditor, Ray Chase; comparisons of modern day farming and farming of years ago by Professor Andrew Boss of the University Farm in St. Paul and a discussion on marketing farm products by A. J. McGuire, a former station superintendent. Musical numbers were performed by Mrs. Otto Bergh accompanied by Miss Velma Gildemeister. After the formal program the visitors went on a tour of the fields, orchards and forestry plantings. The program concluded with several reels of motion pictures which proved "very interesting." The program in 1928 included a stone blasting demonstration by John H. Mollins "where farmers

who have large boulders on their land were shown how to remove them in the best manner."

Visitors days were popular. "Families came distances of upwards to one hundred miles to be present. The counties of Aitkin, Cass, Beltrami, St. Louis, Carlton as well as Itasca were very well represented."

NCSA Reunion

The alumni/employee reunion will be held on Saturday, July 20. Open house at the experiment station from noon to 3 p.m.; tours to Blandin, Forest History Center, Itasca Community College and Central School from 1 to 3 p.m. Social hour, banquet and dance at the Sawmill Inn in Grand Rapids starting at 5 p.m. Contact Tom Carpenter 218-327-4490 for reservations.

Horticulture Night

You are invited to North Central Experiment Station Horticulture Night on Wednesday, August 28, from 4:00 to 7:00 p.m. Continuous walking tours of the horticulture area will be conducted and experts will be available to explain the plots and answer questions.

News From North Central

David. L. Rabas, Superintendent

This has been a very busy spring at the North Central Experiment Station. The March 3 oil spill created a number of problems for our campus and research areas but also gave us an opportunity to work cooperatively with a number of agencies and individuals with whom we normally have very little contact. Prior to the oil spill we had met with representatives from Itasca Community College, U.S. Fish and Wildlife Service and the North Central Forest Experiment Station to plan the development of a wetland and wetland outdoor classroom in the pasture area directly west of the community college parking lot. Six days later, before the university paperwork had been completed, more than 1.5 million gallons of oil filled the proposed wetland site.

A million and a half gallons of oil made the project to turn the pasture into a wetland classroom considerably more difficult and infinitely more challenging. Those interested in developing this wetland were not deterred. The prospect of turning an oil soaked pasture into a quality wetland provided opportunities for cooperation with additional individuals and agencies. The wetland team now includes representatives from Lakehead Pipeline (the owner of the ruptured oil line), Soil Conservation Service, Minnesota Department of Natural Resources, Minnesota Department of Transportation and the Minnesota Pollution Control Agency as well as the original four agencies. Together we will succeed in creating a quality wetland classroom for students, adults and visitors to our area. Work has already begun on reclaiming the wetland. Visitors to our July 18 open house will have an opportunity to see the beginning of this wetland project.

Visitors to our campus will also find a new storm sewer and drainage system. The old sixteen inch line which drained the wetland pasture was contaminated with oil that flowed from the wetland to the Prairie

River. The old sixteen inch line was replaced with a new twenty four inch line which should better serve the needs of our growing campus. Unfortunately the storm sewer went through some of our research and pasture plots. Lakehead Pipeline and Casper Construction are to be commended for the care they took to avoid extensive damage to our research areas. None-the-less, some damage could not be avoided and some areas may not be suited for research for many years.

On a more positive note, it is my pleasure to announce that Daniel L. Erkkila will be coming to our station as a Tourism and Travel Specialist. Dan is expecting to officially begin his duties on August 1, 1991. He will be responsible for conducting research in support of improved profitability in the tourism and travel industry and community economic development as well as designing and delivering educational pro-

grams for businesses in the tourism and travel field. We will welcome Dan to our staff and community in our next issue of the **NORTH CENTRAL QUARTERLY**.

As I write this article I will have completed two months in my job as station superintendent. These two months have been a very busy and challenging time for our station. I want to thank our station staff and all of our North Central friends who have helped make this a more productive and enjoyable two months.

Please join us at our annual Visitors Day on July 18. I extend a special invitation to Visitors Day to the alumni and staff of the North Central School of Agriculture who will be joining us for a reunion on July 20. Visitors are welcome at our station throughout the year. Our annual Visitors Day is our way of saying thank you for your support of our station and its research and education mission.



Plant Disease Clinic



Wagon Tours



Forestry Tours



Tractor drivers for wagon tours, Dan Carey, John Teske and John Sucher

The North Central Quarterly

Issued by
THE UNIVERSITY OF MINNESOTA
North Central Experiment Station
1861 Hwy. 169 East
Grand Rapids, Minnesota 55744-3396
218-327-4490

DR. DAVID L. RABAS
Superintendent

Published February, April, July, November
ISSN 0199-6347
by the North Central
Experiment Station,
Grand Rapids, Minnesota

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, religion, color, sex, national origin, handicap, age, veteran status, or sexual orientation.

Second-class postage paid at Grand Rapids, Minnesota

MARLYS MCGUIRE
ST. PAUL CAMPUS LIBRARY
1984 BUFORD AVENUE
ST. PAUL MN 55108