

**CONTRACT BETWEEN
MONTANA AGRICULTURAL EXPERIMENT STATION
RESEARCH CENTERS
and the
MONTANA WHEAT AND BARLEY COMMITTEE**

TIME PERIOD: July 1, 2004 to June 30, 2005

TITLE: Evaluation of various materials and practices contributing toward economic crop production under flexible, continuous and other cropping systems in Montana.

PERSONNEL: Research faculty members at the following Research Centers:

1. Central Agricultural Research Center (CARC) – Moccasin
2. Eastern Agricultural Research Center (EARC) – Sidney
3. Northern Agricultural Research Center (NARC) – Havre
4. Northwestern Agricultural Research Center (NWARC) – Kalispell
5. Southern Agricultural Research Center (SARC) – Huntley
6. Western Triangle Agricultural Research Center (WTARC) – Conrad

OBJECTIVES:

1. To evaluate the effects of differing systems on crop and variety performance under diverse environments represented across the Montana Agricultural Experiment Station – Research Center network.
2. To evaluate the potential fit of other materials, concepts and techniques with various cropping systems employed.

BACKGROUND AND JUSTIFICATION:

An ever-increasing need is felt among Montana agricultural producers for development and implementation of new and/or refined materials and methods for enhanced economic efficiency in crop production.

PROJECTS:

I. Cropping Systems Investigations

- a. Evaluation of continuous spring wheat cropping systems. (EARC)

II. Cereal Variety Performance Investigations Under Recrop or Continuous Cropping Conditions

- a. Evaluation of spring wheat, durum, and barley varieties under minimum-till, continuous cropping conditions. (EARC)
- b. Small grain variety performance evaluations under no-till, continuous cropping conditions. (WTARC)
- c. Evaluation of winter wheat, spring wheat, durum and barley variety performance under no-till, recrop conditions at Moccasin and Denton, Montana. (CARC)
- d. Evaluation of spring barley variety performance under recrop conditions at Geraldine, Montana. (CARC)

III. Cereal Variety Performance Investigations Under Fallow Cropping Conditions

Multi-Crop Investigations

- a. Long-term small grain variety performance evaluations under mechanical or chemical fallow conditions off-station in northern Montana counties. (NARC)
- b. Long-term winter and spring wheat variety performance evaluation under northern Montana conditions on the basis of gross production value as influenced by yield, protein, and market. (NARC)
- c. Regional spring wheat, durum, and oat variety yield trials. (EARC)

Hard Red and Hard White Winter Wheat Trials

- a. Dryland and irrigated winter wheat performance trials near Forsyth, Huntley, Indian Creek, Lodge Grass and Rapelje, Montana. (SARC)
- b. Off-station winter wheat variety evaluations in the central Triangle Area. (WTARC)
- c. Evaluation of winter wheat variety performance under no-till, fallow conditions at Geraldine and Winifred, Montana. (CARC)

Hard Red and Hard White Spring Wheat Trials

- a. Dryland and irrigated spring wheat performance trials near Fromberg, Hysham, Molt and Ryegate, Montana. (SARC)
- b. Off-station spring wheat variety evaluations in eastern Montana. (EARC)
- c. Off-station spring wheat variety evaluations in four Triangle Area counties. (WTARC)
- d. Evaluation of spring wheat variety performance under fallow conditions at Geraldine and Winifred, Montana. (CARC)

Durum Trials

- a. Off-station durum variety evaluations in eastern Montana. (EARC)
- b. Evaluation of six durum varieties under fallow conditions at Geraldine and Winifred, Montana. (CARC)
- c. Durum variety evaluations in northwestern Montana. (NWARC)

Spring Barley Trials

- a. Dryland and irrigated spring barley performance trials near Fromberg, Hysham, Molt and Ryegate, Montana. (SARC)
- b. Off-station barley variety evaluations in four Triangle Area counties. (WTARC)
- c. Evaluation of malt barley varieties under irrigated and dryland conditions. (EARC)

Soft White Winter Wheat Trials

- a. Soft white winter wheat evaluation in northwestern Montana. (NWARC)

- b. Evaluation of soft white winter wheat varieties at Moccasin, Montana. (CARC)

IV. Weed Management Investigations

- a. Evaluation of wild oat herbicides in spring wheat. (NWARC)
- b. Evaluation of Clearfield winter wheat lines for herbicide tolerance. (NWARC)
- c. Evaluation of IMI tolerant winter wheat lines for IMI tolerance, adaptation and performance under recrop conditions near Moccasin, Montana. (CARC)

V. Other Agronomic Investigations

- a. Evaluation of seed boot and furrow opener configurations for optimizing seed and fertilizer placement with air drills under differing cropping systems. (NARC)
- b. Evaluation of post-harvest seed dormancy of newly released barley varieties 'Haxby' and 'Eslick' relative to 'Harrington' and other selected popular varieties. (CARC)
- c. Evaluation of cultural practices (seeding rate and fertilizer rate) for producing dryland malt barley. (WTARC)
- d. Evaluation of plant growth regulators in spring wheat. (NWARC)

VI. Uniform Statewide Small Grain Variety Investigations

- a. Intrastate Winter Wheat Variety Evaluation
- b. Advanced Yield Spring Wheat Variety Evaluation
- c. Intrastate Spring Barley Variety Evaluation
- d. Montana Oat Variety Evaluation

Trials to be conducted on dryland and/or under irrigation at Bozeman, Conrad, Havre, Huntley, Kalispell, Moccasin and Sidney under the leadership of, and in cooperation with, MAES Breeder/Geneticists and their Research Associates in Bozeman.

PROCEDURES:

Scientific research procedures will be employed appropriate to each specific project listed herein.

APPLICATION AND RESULTS:

Results substantiated via consistency with adequate repetition are available for dissemination to the Montana crop producer as well as to the scientific community.

CURRENT or PENDING BUDGETARY SUPPORT:

All projects included herein are partially supported by MAES funding.

POTENTIAL FOR ENHANCED EXTRAMURAL FUNDING:

Much of the research conducted within this overall project is associated with the development of crop performance databases over substantial periods of time and numerous environments. While it is difficult to obtain most types of extramural funding for such work, the results arising from long-term investigations serve well in documenting base data for proposals toward other grant-supported

research endeavors.

INCREASED COMPETITIVENESS DUE TO THIS FUNDING:

Much of the research associated with this project is conducted off-station on cooperating producer's farms. The addition of important cropping environments differing from those represented by the fixed-location research facilities is additive to overall databases employed to support producer decisions in cropping systems, crop and variety selection, crop nutrition, crop pest management and general agronomics.

BUDGET:

MWBC = partial project funding

Research Center	Uniform Statewide Variety Testing	Off-Sta Trials & Other Projects	Research Center Total
Central at Moccasin	\$ 1,000	\$ 14,000	\$15,000
Eastern at Sidney	1,000	14,000	15,000
Northern at Havre	1,000	14,000	15,000
Northwestern at Kalispell	1,000	14,000	15,000
Southern at Huntley	1,000	14,000	15,000
Western Triangle at Conrad	1,000	14,000	15,000
Totals	\$ 6,000	\$84,000	\$90,000