

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

TIME PERIOD: July 1, 2003 to June 30, 2004

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, recrop conditions. (WTARC)
- c. Evaluation of winter wheat varieties under no-till, recrop conditions following barley near Moccasin, Montana. (CARC)
- d. Evaluation of winter wheat varieties under no-till, recrop conditions near Denton, Montana. (CARC)
- e. Evaluation of IMI-tolerant winter wheat lines under no-till, recrop conditions in a goat grass infested environment near Belt, Montana. (CARC)

- f. Evaluation of spring wheat varieties under no-till, recrop conditions following a pulse crop near Moccasin, Montana. (CARC)
- g. Evaluation of spring wheat varieties under recrop conditions near Denton and Fort Benton, Montana. (CARC)
- h. Evaluation of durum varieties under no-till, recrop conditions following a pulse crop near Moccasin, Montana. (CARC)
- i. Evaluation of six select durum varieties under recrop conditions near Denton and Fort Benton, Montana. (CARC)
- j. Evaluation of spring barley varieties under no-till, recrop conditions following an oilseed near Moccasin, Montana. (CARC)
- k. Evaluation of spring barley varieties under recrop conditions near Denton and Fort Benton, Montana. (CARC)

III. Cereal Cultivar 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 hard red and hard white 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 Montana Triangle Area. (WTARC)
- c. Evaluation of winter wheat variety performance near Winifred, Montana. (CARC)

Hard Red and Hard White Spring Wheat Trials

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

Durum Trials

- a. Off-station durum variety evaluations in eastern Montana. (EARC)
- b. Evaluation of six select durum varieties near Winifred, Montana. (CARC)

Spring Barley Trials

- a. Dryland and irrigated spring barley performance trials near Bridger, Hysham, Molt and Ryegate, Montana. (SARC)
- b. Off-station barley variety evaluations in four Montana 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 western Montana. (NWARC)
- b. Evaluation of winter hardiness and agronomic performance of soft white winter wheat varieties near Moccasin, Montana. (CARC)

IV. Insect Management Investigations

- a. Wheat-straw management to enhance sawfly parasitoid survival. (WTARC)

V. Weed Management Investigations

- a. Evaluation of wild oat herbicides in spring wheat. (NWARC)
- b. Evaluation of reduced herbicide rates for wild oat control in spring wheat. (NWARC)
- c. Evaluation of Clearfield winter wheat lines for herbicide tolerance. (NWARC)

VI. 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 'MT 960228' relative to 'Harrington' and other selected barley lines. (CARC)

VII. 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	\$ 11,000	\$12,000
Eastern at Sidney	1,000	11,000	12,000
Northern at Havre	1,000	11,000	12,000
Northwestern at Kalispell	1,000	11,000	12,000
Southern at Huntley	1,000	11,000	12,000
Western Triangle at Conrad	1,000	11,000	12,000
Totals	\$ 6,000	\$66,000	\$72,000