

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

TIME PERIOD: July 1, 2002 to June 30, 2003

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 cultivar 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 Cultivar Performance Investigations Under Recrop or Continuous Cropping Conditions

- a. Evaluation of spring wheat, durum, barley, and oat cultivars under minimum-till, continuous cropping conditions. (EARC)
- b. Evaluation of spring and winter cereal grain cultivars under a no-till, continuous crop environment at Moccasin, Denton and Fort Benton, Montana. (CARC)
- c. Evaluation of winter wheat cultivar performance in off-station, no-till, continuous crop trials near Moore, Montana. (CARC)
- d. Evaluation of spring barley cultivar performance in off-station, recrop trials near Denton and Fort Benton, Montana. (CARC)
- e. Small grain cultivar performance under no-till, recrop conditions. (WTARC)

III. Cereal Cultivar Performance Investigations Under Fallow Cropping Conditions

Multi-Crop Investigations

- a. Long-term small grain cultivar performance evaluations under mechanical or chemical fallow conditions off-station in northern Montana counties. (NARC)
- b. Long-term winter and spring wheat cultivar 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 cultivar yield trials. (EARC)
- d. Evaluation of spring and winter wheat cultivar performance in off-station trials near Winifred, Montana. (CARC)

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 cultivar evaluations in the central Montana Triangle Area. (WTARC)

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 cultivar evaluations in eastern Montana. (EARC)
- c. Off-station spring wheat cultivar evaluations in four Montana Triangle Area counties. (WTARC)

Durum Trials

- a. Dryland and irrigated durum performance trials near Bridger, Hysham, Molt and Ryegate, Montana. (SARC)
- b. Off-station durum cultivar evaluations in eastern Montana. (EARC)

Spring Barley Trials

- a. Dryland and irrigated spring barley performance trials near Bridger, Hysham, Molt and Ryegate, Montana. (SARC)
- b. Off-station barley cultivar evaluations in four Montana Triangle Area counties. (WTARC)

Soft White Winter Wheat Trials

- a. Dryland soft white winter wheat performance trial near Huntley, Montana. (SARC).
- b. Soft white winter wheat evaluation in western Montana. (NWARC)

IV. Oilseed, Pulse and Miscellaneous Crop Investigations

- a. Evaluation of winter pea and winter lentil lines for adaptation (winter hardiness) plus seed yield and foliage production for green manure. (CARC)

V. Crop Fertility Investigations

- a. Effects of seeding rate and nitrogen rate on durum quality. (WTARC)

VI. Disease Management Investigations

- a. Evaluation of early generation winter wheat lines for TCK resistance. (NWARC)

VII. 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)

VIII. 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)

IX. Uniform Statewide Small Grain Cultivar Investigations

- a. Intrastate Winter Wheat Cultivar Evaluation
- b. Advanced Yield Spring Wheat Cultivar Evaluation
- c. Intrastate Spring Barley Cultivar Evaluation
- d. Montana Oat Cultivar 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 cultivar selection, crop nutrition, crop pest management and general agronomics.

BUDGET:

MWBC = partial project funding

Research Center	Uniform Statewide Cultivar Testing	Off-Sta Trials & Other Projects	Research Center Total
Central at Moccasin	\$ 500	\$ 7,500	\$ 8,000
Eastern at Sidney	500	7,500	8,000
Northern at Havre	500	7,500	8,000
Northwestern at Kalispell	500	7,500	8,000
Southern at Huntley	500	7,500	8,000
Western Triangle at Conrad	500	7,500	8,000
Totals	\$ 3,000	\$45,000	\$48,000