

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

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

**TIME PERIOD:** July 1, 2008 to June 30, 2009

**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 Ag 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 minimum-till and no-till 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. Evaluation of agronomic performance of winter wheat, spring wheat, and barley varieties under no-till, recrop conditions near Moccasin and Denton, Montana. (CARC)
- c. Evaluation of agronomic performance of winter wheat and spring wheat varieties under no-till conditions near 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. Evaluation of regional spring wheat and durum yield trials. (EARC)

#### Hard Red and Hard White Winter Wheat Trials

- a. Off-station winter wheat variety performance trials in south central Montana. (SARC)
- b. Evaluation of agronomic performance of winter wheat varieties on fallow near Winifred, Montana. (CARC)

#### Hard Red and Hard White Spring Wheat Trials

- a. Off-station spring wheat variety performance trials in south central Montana. (SARC)
- b. Off-station spring wheat variety evaluations in the western Triangle area. (WTARC)
- c. Off-station spring wheat variety evaluations in eastern Montana. (EARC)

#### Durum Trials

- a. Off-station durum variety evaluations in eastern Montana. (EARC)
- b. Evaluation of agronomic performance of spring durum varieties near Moccasin, Montana. (CARC)

#### Spring Barley Trials

- a. Off-station spring barley variety performance trials in south central Montana. (SARC)
- b. Off-station barley variety evaluations in the western Triangle area. (WTARC)
- c. Evaluation of malt barley varieties under irrigated and dryland conditions. (EARC)

### **IV. Crop Fertility Investigations**

- a. Grain yield and quality response of new barley, spring wheat and winter wheat cultivars to nitrogen fertilizer. (WTARC)

### **V. Disease Management Investigations**

- a. Evaluation of winter wheat cultivars for susceptibility to foliar diseases. (NWARC)
- b. Evaluation of spring wheat cultivars for susceptibility to foliar diseases. (NWARC)
- c. Evaluation of 'Headline' fungicide in winter wheat. (NWARC)
- d. Fungicide evaluations in spring wheat. (NWARC)

**VI. Insect Management Investigations**

- a. Evaluation of winter wheat development lines for sawfly resistance and agronomic performance. (CARC)
- b. Evaluation of seed-blending sawfly resistant and susceptible winter wheat varieties for effect on sawfly damage levels and agronomic performance. (WTARC)

**VII. Weed Management Investigations**

- a. Evaluation of reduced rates of 'Achieve' for wild oat control. (NWARC)

**VIII. Other Agronomic Investigations**

- a. Evaluation of seed and fertilizer opener configurations for optimizing seed and fertilizer placement in simultaneous, single-pass operations with air drills under differing cropping systems. (NARC)
- b. Evaluation of post-harvest seed dormancy of newly released barley varieties relative to 'Harrington'. (CARC)
- c. Effect of planting date and seeding rate on dryland spring wheat and malt barley. (WTARC)

**IX. Uniform Statewide Small Grain Variety Investigations**

- a. Intrastate Winter Wheat Variety Evaluation
- b. Advanced Yield Spring Wheat Variety Evaluation
- c. Statewide Durum Variety Evaluation
- d. Intrastate Spring Barley 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. All results from these investigations will be available in CD format and will be posted to the web at <http://www.sarc.montana.edu/mwbc/> and via link at the Montana Wheat and Barley Committee website at <http://wbc.agr.state.mt.us/> .

**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	Off-Station Trials & Other Projects	Research Center Total
Central at Moccasin	\$ 18,000	\$ 18,000
Eastern at Sidney	18,000	18,000
Northern at Havre	18,000	18,000
Northwestern at Kalispell	18,000	18,000
Southern at Huntley	18,000	18,000
Western Triangle at Conrad	18,000	18,000
Totals	\$108,000	\$108,000