

**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, 2010 to June 30, 2011

PERSONNEL: Research scientists at the following AES Research Centers:

1. Northern Agricultural Research Center (NARC) - Havre
 - a. Gregg R. Carlson, Sup't/Crop Scientist & Co-Coordinator
2. Southern Agricultural Research Center (SARC) - Huntley
 - a. Kent A. McVay, Crop Scientist & Co-Coordinator
3. Central Agricultural Research Center (CARC) - Moccasin
 - a. David M. Wichman, Superintendent/Crop Scientist
4. Eastern Agricultural Research Center (EARC) - Sidney
 - a. Jerald W. Bergman, Superintendent/Crop Scientist
 - b. Joyce L. Eckhoff, Crop Scientist
5. Northwestern Agricultural Research Center (NWARC) - Kalispell
 - a. Robert N. Stougaard, Interim Sup't/Weed Scientist
6. Western Triangle Ag Research Center (WTARC) - Conrad
 - a. Grant D. Jackson, Interim Sup't/Soil Scientist

COOPERATORS: Research Associates, Assistants and Technicians at the above research centers; and cooperating producers hosting off-station research trials on farms across Montana.

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, no-till and crop/fallow 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. Cereal grain cultivar performance under no-till continuous cropping in central Montana off-station trials. (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 uniform 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. Off-station winter wheat cultivar performance on fallow in central Montana. (CARC)
- c. Off-station winter wheat variety evaluations in the western Triangle area. (WTARC)

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 cultivar performance on fallow in central Montana. (CARC)
- c. Off-station spring wheat variety evaluations in the western Triangle

- area. (WTARC)
- d. Off-station spring wheat variety evaluations in eastern Montana. (EARC)

Soft White Wheat Trials

- a. Soft white spring wheat evaluations in northwestern Montana. (NWARC)

Durum Trials

- a. Off-station durum variety evaluations in eastern Montana. (EARC)

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)
- d. Off-station barley variety performance in northwestern Montana. (NWARC)

IV. Crop Fertility Investigations

- a. Evaluation of spring cereal grain yield response to over-seeding on soil injected with tractor exhaust. (CARC)

V. Insect Management Investigations

- a. Evaluation of seed-blending sawfly resistant and susceptible spring wheat varieties for effect on sawfly damage levels and agronomic performance. (WTARC)

VI. Weed Management Investigations

- a. Evaluation of wild oat herbicides in spring wheat. (NWARC)

VII. 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 cereal cultivars and

- advanced lines. (CARC)
- c. Effect of planting date and seeding rate on dryland spring wheat and malt barley. (WTARC)
- d. Effect of dormant planting of winter barley, winter wheat, spring barley and spring wheat. (WTARC)
- e. Effect of plant growth regulators in spring wheat. (NWARC)

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 a link at the Montana Wheat and Barley Committee website under "Producers, Ag Resources & Links" at <http://wbc.agr.mt.gov/>

CURRENT or PENDING BUDGETARY SUPPORT:

All projects included herein are partially supported by MAES funding to include scientist salaries. Projects included herein are not supported by other grants.

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.

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.

NUMBER OF YEARS MWBC HAS FUNDED THIS PROJECT:

This Joint Research Center project has been funded by MWBC for 38 crop years

(1972-2009) at various levels of total award beginning with \$14,000 in 1972.

OVERALL BUDGET: (Individual Budgets by Research Center are attached)

Research Center	Off-Station Trials & Other Projects	Research Center Total
Central at Moccasin	\$ 22,000	\$ 22,000
Eastern at Sidney	22,000	22,000
Northern at Havre	22,000	22,000
Northwestern at Kalispell	22,000	22,000
Southern at Huntley	22,000	22,000
Western Triangle at Conrad	22,000	22,000
Totals	\$132,000	\$132,000