

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

**TITLE:** Assessing agronomic practices to advance cereal production in Montana

**TIME PERIOD:** Jan 1, 2019 to Dec 31, 2019

**PERSONNEL:** Research Scientists at the following AES Research Centers:

1. Southern Agricultural Research Center (SARC) - Huntley  
Kent A. McVay, Extension Crop Scientist & Coordinator
2. Northern Agricultural Research Center (NARC) - Havre  
Peggy Lamb, Crop Scientist
3. Central Agricultural Research Center (CARC) - Moccasin  
Jed Eberly, Soil Microbiologist
4. Eastern Agricultural Research Center (EARC) - Sidney  
Chengci Chen, Superintendent/Crop Scientist
5. Northwestern Agricultural Research Center (NWARC) - Kalispell  
Jessica Torrion, Superintendent/Crop Physiologist
6. Western Triangle Ag Research Center (WTARC) - Conrad  
Gadi V.P. Reddy, Entomologist

**COOPERATORS:** Research Scientists, Research Associates, Assistants, Technicians and Farm Managers at each research center. County Extension agents, 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 state of Montana.
2. To evaluate the potential fit of other materials, concepts and techniques with various cropping systems employed for cereal crop production.

**BACKGROUND AND JUSTIFICATION:**

Montana agricultural producers are always looking for the development and implementation of new and/or refined materials and methods for enhanced economic efficiency in cereal crop production. This project is designed to provide answers on these issues to producers across the many regions of the state.

## PROJECTS:

- I. Cropping System Investigations
  - a. Spring grain performance following various cover crop mixes in southcentral Montana – SARC
  - b. Evaluation of spring wheat under dryland recrop conditions – EARC
  - c. Evaluation of durum under dryland recrop conditions – EARC
  - d. Evaluation of barley under dryland recrop conditions – EARC
- II. Cereal Grain Variety Performance Evaluations
  - a. Hard Red & White Winter Wheat Trials
    - i. Off-station winter wheat variety performance trials in south central Montana – SARC
    - ii. North central Montana off-station winter wheat cultivar performance evaluations – NARC
    - iii. Off-station winter wheat cultivar evaluations for the Western Golden Triangle area of Montana – WTARC
    - iv. Off-Station winter wheat variety performance trials in Central Montana – CARC
    - v. Evaluation of Experimental Winter Wheat Lines for Stripe Rust Resistance – NWARC
  - b. Hard Red & White Spring Wheat Trials
    - i. Off-station spring wheat variety performance trials in south central Montana – SARC
    - ii. North central Montana off-station spring wheat cultivar performance evaluations – NARC
    - iii. Off-station spring wheat cultivar evaluations for the Western Golden Triangle area of Montana – WTARC
    - iv. Off-station spring wheat variety performance trials in Central Montana – CARC
    - v. Spring wheat off-station nursery – NWARC
    - vi. Evaluation of spring wheat varieties under dryland conditions at four off-station sites – EARC
  - c. Soft White Wheat Trials (none this year)
  - d. Durum Trials
    - i. North central Montana off-station spring durum cultivar performance evaluations – NARC.
    - ii. Durum cultivar evaluations for the Western Golden Triangle area of Montana – WTARC
    - iii. Evaluation of durum varieties under dryland conditions at four off-station sites – EARC
  - e. Spring Barley Trials

- i. Off-station spring barley variety performance trials in south central Montana – SARC
  - ii. Off-station spring barley cultivar evaluations for the Western Golden Triangle area of Montana – WTARC
  - iii. Spring barley off-station variety performance trials in Central Montana – CARC
- III. Cereal Forage Variety Performance Evaluations
  - a. Winter cereal forage cultivar evaluations for the Western Golden Triangle area of Montana – WTARC
  - b. Winter cereal forage cultivar evaluations – NWARC
- IV. Alternative Crop Management (none this year)
- V. Crop Nutrient Management (none this year)
- VI. Disease Management (none this year)
- VII. Insect Management (none this year)
- VIII. Weed Management (none this year)
- IX. Other studies (none this year)

#### **PROCEDURES:**

All projects are replicated either three or four times in randomized designs appropriate to each location. All reported grain yields and protein are corrected to a uniform moisture level as reported in the results table for each project. Grain moisture and test weight are typically measured using Dickey-John moisture meters. Grain protein is determined using either Perten or Foss NIR technology.

#### **APPLICATION AND RESULTS:**

Results are available to the Montana crop producer as well as to the scientific community. All results from these investigations will be available in CD format by request and can be found on the web at the Southern Agricultural Research Center website (<http://www.sarc.montana.edu/>) as well as at the Montana Wheat and Barley Committee website (<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:**

Extramural support for research on variety evaluations is difficult to obtain. By funding this project MWBC helps us build long-term evaluations over multiple environments. The resultant data sets and documented trends can then be used

to justify more elaborate grant proposals that can gain attraction from other funding sources.

#### **INCREASED COMPETITIVENESS DUE TO THIS FUNDING:**

Much of the research associated with this project is conducted off-station on cooperating producer's farms. Evaluating crop performance in diverse environments provides data to help producers make management decisions in cropping systems, variety selection, crop nutrition, and crop pest management as well as in general agronomics.

#### **NUMBER OF YEARS MWBC HAS FUNDED THIS PROJECT:**

This Joint Research Center project has been funded by MWBC for 47 years (1972-2018) starting with a total award of \$14,000 in 1972.

#### **OVERALL BUDGET:**

<b>Category</b>	<b>Amount</b>
Salary	\$138,900
Benefits	46,080
Supplies/Expendables	14,520
Travel	5,000
Contracted Services	2,500
Repair/Maintenance	3,000
<b>Grand Total</b>	<b>\$210,000</b>

**Budget justification.** This budget is a cumulative summary of six research centers including Eastern, Northern, Western Triangle, Northwestern, Central, and Southern Agricultural Research Center. Expenses are estimated for the period Jan 1, 2019 through Dec 31, 2019. The majority of this budget, \$184,980 goes to personnel including summer help, classified, and professional for salaries and benefits. Approximately \$14,000 is included for supplies and expendables to cover the costs of fertilizer, herbicides, bags, etc. Another \$3,000 is included for repair and maintenance of equipment. Travel amounts to \$5,000. The remainder is for contracted services for sample analysis. Individual station budgets can be obtained from OSP upon request.