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, 2021 to Dec 31, 2021

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
   Clint Beiermann, Assistant Cropping Systems Professor
6. Western Triangle Agricultural Research Center (WTARC) – Conrad
   Justin Vetch, Superintendent/Crop Scientist

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

II. Cereal Variety Performance Evaluations
   a. Hard Red & White Winter Wheat Trials
      i. Southcentral Montana off-station winter wheat variety performance evaluations – SARC
      ii. Dryland winter wheat variety performance trials in eastern Montana – EARC
      iii. Off-station winter wheat variety trial – NWARC
      iv. Northcentral Montana off-station winter wheat cultivar performance evaluations – NARC
      v. Off-Station winter wheat variety performance trials in central Montana – CARC

   b. Hard Red & White Spring Wheat Trials
      i. Southcentral Montana off-station spring wheat variety performance evaluations – SARC
      ii. Evaluation of spring wheat varieties under dryland conditions at three locations in eastern Montana – EARC
      iii. Off-station spring wheat variety trial in northwest Montana – NWARC
      iv. Northcentral Montana off-station spring wheat cultivar performance evaluations – NARC
      v. Off-station spring wheat variety performance trials in central Montana – CARC
      vi. Off-station spring wheat cultivar evaluations for the Western Golden Triangle area of Montana – WTARC
      vii. Off-station spring wheat acid soil performance evaluation – WTARC

   c. Soft White Wheat Trials (none this year)

   d. Durum Trials
      i. Northcentral Montana off-station spring durum cultivar performance evaluations – NARC
      ii. Evaluation of durum varieties under dryland conditions at three locations – EARC

   e. Spring Barley Trials
      i. Southcentral Montana spring barley variety performance evaluations – SARC
      ii. Dryland spring barley variety performance in eastern Montana – EARC
      iii. Off-station spring barley variety trials in northwest Montana –

NWARC

iv. Off-station barley variety performance trials in central Montana – CARC
v. Off-station spring barley cultivar evaluations for the Western Golden Triangle area of Montana – WTARC
vi. Off-station spring barley cultivar acid soil performance evaluation – WTARC

III. Alternative Crop Management (none this year)
IV. Crop Nutrient Management
    a. Winter wheat nitrogen management – NWARC

V. Disease Management (none this year)
VI. Insect Management (none this year)
VII. Weed Management (none this year)
VIII. 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, test weight, and protein are typically measured using Dickey-John grain analysis computers and 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 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 49 years (1972-2020) starting with a total award of $14,000 in 1972.

OVERALL BUDGET:

Category	Amount
Salary	$133,550
Benefits	43,050
Supplies/Expendables	17,000
Travel	6,500
Contracted Services	2,450
Repair/Maintenance	7,100
Communication	350
Grand Total	$210,000

Budget justification. The expenses listed below result from an accumulation of six individual Research Center budgets, which vary in their needs. Overall salary and benefits represent nearly 85% of the budget primarily used in part for Research Scientist or Research Associate salaries. A minor component of this is for temporary (summer) help salaries. Supplies are requested from NWARC, WTARC mostly for start-up of new faculty at those locations. EARC is also requesting $5000 in supplies. All of this is to cover costs of seed, fertilizer, bags, flags, and miscellaneous other items for conducting plot work. Repair and maintenance includes $2400 for wheel alignment and tires for a new tractor at SARC and another $2500 for repairs to a plot combine at WTARC with the remainder for minor equipment repairs at CARC and NWARC. Travel expenses total $6500 to cover cost of fuel, tires, and maintenance of equipment to haul equipment to and from off-station locations for plot management. Some travel expense is included for attending professional development meetings. Individual Research Center budgets can be obtained from OSP by request.