

Minnesota Wheat Research and Promotion Council

RESEARCH PROPOSAL GRANT APPLICATION

1. NAME AND ADDRESS OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE Name: Regents of the University of Minnesota Address: Sponsored Projects Administration 454 McNamara Alumni Center, 200 Oak Street SE Minneapolis, MN 55455-2070		
2. TITLE OF PROPOSAL Southern Minnesota Small Grains Research and Outreach		
3. PRINCIPAL INVESTIGATOR(S) Doug Holen PI# 2 Name: Jochum Wiersma PI# 3 Name: Diane DeWitte, Madeleine Smith and Jim Anderson PI# 2 Name: PI# 3 Name:	4. PI #1 BUSINESS ADDRESS UM Extension Regional Office – Morris WCROC 46352 State Hwy 329 Morris, MN 56267	
5. PROPOSED PROJECT DATES (calendar years) March 1, 2015 to December 31, 2015 <small>Note: Research Reports are Due November 15th of Each Year</small>	6. TOTAL PROJECT COST \$16,990	7. PI #1 PHONE NO. Office=320-589-1711 Cell=218-770-4396
8. RESEARCH OBJECTIVES: (List objectives to be accomplished by research grant) 1) Improve variety selection and document demonstrative performance 2) Alert producers to potential disease and pest problems while using sites as hands on learning environments 3) Develop best management practices specific to targeted regional agro-ecological zone Attach a 2-page detailed discussion of importance of the proposal to wheat profitability; how study complements previous research in area; procedures to be used; and competency of the research group in achieving research objectives. (Please keep the proposal concise, only 2 pages will be provided reviewers).		

Signature Of Principal Investigator <i>Daug Holm</i>	Date <i>1-22-15</i>	Phone Number <i>1-218-770-4396</i>
Signature Of Authorized Representative <i>K. J.</i>	Title <i>1/22/15</i>	Date <i>1/22/15</i>
Address Of Authorized Representative Kevin McKoskey, Sr. Associate Director, Office of Sponsored Projects Administration 450 McNamara Alumni Center, 200 Oak Street SE, Minneapolis, MN 55455-2070		Phone Number <i>612-624-5592</i>

Minnesota Wheat Research and Promotion Council
RESEARCH PROJECT PROPOSAL
(2-pages maximum)

Project Title:

Southern Minnesota Small Grains Research and Outreach

Importance of this project to the profitability of wheat producers:

Hard red spring, winter wheat, rye, barley, and oats have been grown in central and southern Minnesota for decades but not in large acreages. Often small grains were grown in these regions on poor soils for reasons other than pure bushel production such as livestock manure applications, cover crop for forage establishment, straw production, and mid season tiling projects. Producers in these regions are now incorporating more intense management systems to maximize yield and quality on their small grain acres with genetics, input products, and fertility systems on productive soils. The rising awareness of cover crops, crop rotation benefits, current economic markets and consecutive years with significant preventative plant acres in this half of the state have contributed to an increased awareness of the agronomic benefits and economic opportunities of small grains.

Nonetheless, producers do face added risks with small grain production as early season heat, late season heat and drought, and significant disease pressure can put the crop at risk and lower actual yields well below the attainable yields. Our goals are to assist southern small grains producers by outlining risk management strategies and identifying best practices to maximize yield and quality by:

- 1) Improve variety selection
- 2) Alert producers about potential disease and pest problems
- 3) Develop best management practices specific to their agro-ecological zone

To this end we propose to

1. Evaluate approx. 50 spring wheat cultivars for agronomic adaptation, grain yield and quality in southern MN environments.
2. Evaluate 24 winter wheat cultivars for agronomic adaptation, grain yield and quality in southern MN environments.
3. Evaluate 20 winter rye cultivars for agronomic adaptation, grain and forage yield and quality in southern MN environments.
4. Evaluate eight barley cultivars for agronomic adaptation and grain yield and quality in southern MN environment.
5. Co-locate with additional small grain agronomic research including seed treatments, plant populations, and fertility programs specific to central and southern Minnesota production systems (not funded through this grant).
6. Use these sites as sentinels for production pest problem identification and reporting.
7. Coordinate sites as workshop locations for summer field days.

We have worked with core groups of producers in Morris, Dawson, Litchfield, Mora, Benson, Kimball and Montgomery for the past nine seasons to elevate small grain production with winter meetings, summer workshops, and one on one consultation. Adding genetic and agronomic research in these areas continues to be requested from producers and is an impactful component in growing small grains successfully in these regions. We continue to see small market (specialty) developments with wheat, barley, oats and rye with specific end uses. Sites have also proven effective in the tracking of pest incidence and severity specifically highlighted by bacterial leaf streak, Fusarium head blight, leaf and stem rust, and cereal aphids used by university researchers to forward management criteria to industry and producers. Our goal is to ensure producers growing small grains and connected consultants/industry in these regions are doing so with the genetics and management practices essential to success.

Procedures:

We will continue working with established cooperating producers in the Montgomery, Kimball and Benson areas to host research sites. We have located a winter wheat and winter rye genetic evaluation at Montgomery and Kimball. Additionally, spring wheat, barley, and oats will be seeded at the three sites supplemented with agronomic studies examining seed treatments, fertility, and seeding rate studies. Plots will be experimental size (5X15ft) to minimize field variability and are replicated a minimum of 3 times using either a randomized complete block design or a split-plot design. Field preparations and some fertility are done by the cooperators with planting, weed control, data collection, and harvest completed by the research group. Sites will be used for summer instruction workshops and data incorporated into winter meetings and discussion. The performance data is integrated into the Minnesota Field Crops Trials bulletin that is published annually by the Minnesota Agricultural Experiment Station under the authority granted by the Hatch Act of 1887

to conduct performance trials on farm crops and interpret data to the public. Our long term goal is to ensure producers have the unbiased and much needed information for successfully growing small grains. Equipment will come from the Northwest Research and Outreach Center for planting and harvesting and spray/tilling equipment from Regional Extension Office in Morris.

Regional linkage to other research activities:

This project will be utilized by the U of MN/NDSU wheat scout survey program as a sentinel pest collection site with representation statewide. The variety evaluation component of these sites will allow data combinations with other southern MN locations that include Waseca, Morris, St. Paul, and Lamberton tied cooperatively to Jim Anderson's wheat breeding program. Efforts also link regionally to a statewide winter wheat genetic evaluation effort in addition to grain and forage winter rye genetic observations.

Research Group:

University of Minnesota = Doug Holen, Jochum Wiersma, Madeleine Smith, Diane DeWitt, and Jim Anderson
Cooperating Producers = Scott Lee of Benson, Dave Lochen of Kimball and Ron Pomije/Ruth Hoefs of LeCenter

Relationship to past projects:

Similar projects were funded in 2012, 2013, and a no cost extension granted in 2014. Products of past projects have been hundreds in attendance at winter and summer workshops, specific set of recommendations of varieties best suited for central/southern MN production with spring and winter wheat, and pest awareness with identification of best management practices. Data has been published statewide with specific efforts to distribute in these regions. Significant progress has been made in educating producers towards higher production expectations and a better understanding of yield and quality on farm results.

Estimate the budget requirements:

Primary costs include the establishment, maintenance, in season data collection, and harvest of three research sites as outlined.

- A. Technical: **\$1,092** for technician's time from NWROC in plot establishment, maintenance and harvest (45.5 hours @ \$24).
Undergraduate labor: **\$651** (62 hours @ \$10.50) for site maintenance and harvest.
- B. Fringe: \$287 for above listed personnel
- C. Nonexpendable Equipment: **\$2,600** to include equipment leases for planting, tilling, spraying, and harvesting.
 - Tractor lease \$500
 - Roto-tiller lease \$500
 - Pick up lease \$1,600Planter, sprayer, trailers, and combine are in kind contributions as equipment is secured
- D. Materials and Supplies: **\$1,150** for fertilizer, envelopes, flags/stakes, equipment fuel, seed treat, pesticides and seed.
- E. Travel: **\$8,210** mileage for site visits by four investigators, overnight stays and per diems.
 - 4 Equipment trips from NWROC for planting and harvesting (2976 miles @ \$2.00/loaded mile) \$5952
 - 8 Site travel from Fergus Falls for maintenance, data collection, field days, and observation (4,032 miles @ \$0.56/mile) \$2,258
- H. Other Direct Costs: **\$3,000**
 - \$1,500 for three summer field days including publicity and meals
 - \$1,500 for cooperator's (3) land and equipment use.

TOTAL BUDGET = \$16,990

List current or potential other funding sources for this project:

Nothing specific to this project but there are efficiencies combined by using undergraduate labor, leased equipment, and research technician already in place with other projects.

List your programs current and pending support:

**Pending: Minnesota Wheat Pest Scouting Survey
Minnesota Soybean Research and Tech Transfer**

References:

Producers Ken/Rom Pomiji, and Ruth Hoefs of LeCenter, John Gorres of DeGraff, Scott Lee of Benson, Dave Locken of Kimball, John Walkup of Campbell, Mark Shoening of Underwood, Don Bradow, Tom Jennen and Don Viger of Fergus Falls, and Bruce Brenden of Rothsay. Each of these has hosted on-farm small grain research with this group of investigators funded by Minnesota Wheat and found value in data collected and distributed. Contact information available upon request.

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RESEARCH PROJECT PROPOSAL BUDGET

PROJECT TITLE:			
Principal Investigator(s) / Project Directors(s)	Funds Requested For		
	Year 1 (2015)	Year 2 (2016)	Year 3 (2017)
A. Salaries and Wages	\$	\$	\$
1. Co-principal Investigator(s)			
2. Senior Associates			
3. Research Associates - Post Doctorate			
4. Other Professionals			
5. Graduate Students			
6. Prebaccalaureate Students	651		
7. Secretarial - Clerical			
8. Technical, Shop and Other	1,092		
B. Fringe Benefits	287		
C. Nonexpendable Equipment (Planting and harvesting equipment use)	2,600		
D. Materials and Supplies	1,150		
E. Travel	8,210		
F. Publication Costs			
G. Computer Costs			
H. All Other Direct Costs (Attach supporting data)	3,000		
TOTAL AMOUNT OF THIS REQUEST (per year)	\$ 16,909	\$	\$