



Minnesota Wheat Research and Promotion Council

RESEARCH PROPOSAL GRANT APPLICATION

1. NAME AND ADDRESS OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE Name: North Dakota State University Address: Office of Sponsored Programs Administration Dept #4000 PO Box 6050, Fargo, ND 58108-6050		
2. TITLE OF PROPOSAL Strategies for meeting N requirements of wheat with new fertilizers and fertilizer additives		
3. PRINCIPAL INVESTIGATOR(S) Joel Ransom PI# 2 Name: PI# 3 Name:	4. PI #1 BUSINESS ADDRESS NDSU Department of Plant Sciences NDSU Dept. 7670, 166 Loftsgard Hall PO Box 6050 Fargo, ND 58108-6050	
5. PROPOSED PROJECT DATES (calendar years) 2014 and 2015 Note: Research Reports are Due November 15th of Each Year	6. TOTAL PROJECT COST \$26,140 year 1, \$26,140 year 2, \$52,280 total for 2 years	7. PI #1 PHONE NO. 701-231-7405
8. RESEARCH OBJECTIVES: (List objectives to be accomplished by research grant) 1) To evaluate the value of nitrogen stabilizing technologies on nitrogen efficiency when applied in the fall. 2) To determine the amount of ESN that can safely be placed with spring wheat seed. 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 	Date 10/31/2013	Phone Number 701-231-7405
Signature Of Authorized Representative 	Title Assistant Director, Sponsored Programs Administration	Date 11-7-13
Address Of Authorized Representative Amy Scott, Sponsored Programs Administration NDSU Dept. 4000 P.O. Box 6050 Fargo, ND 58108-6050		Phone Number 701-231-8045

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(2-pages maximum)

Project Title: Strategies for meeting N requirements of wheat with new fertilizers and fertilizer additives

Importance of this project to the profitability of wheat producers: Nitrogen fertilizer is the single most expensive input used in wheat production. Moreover, the price of nitrogen relative to the market value of wheat has recently increased dramatically. Losses of N have been substantial during recent wet years due to leaching and denitrification, particularly in the RRV region. The wet weather can also affect the ability to enter the field in the spring to apply nitrogen, often slowing down an already delayed process of planting. This project may offer ways to enhance nitrogen use efficiency and allow for greater flexibility in the timing of nitrogen application by using newer nitrogen fertilizers and fertilizer additives. Improving N use efficiency and applying N in a timely manner relative to planting has the potential of increasing farmers' profits and reducing environmental concerns

Procedures: As part of this project there will be two basic experiments established. The first will address issues of fertilizing winter wheat. With winter wheat it is not possible to broadcast and incorporate a fertilizer in the spring. ESN, applied in the fall in winter wheat, therefore, may have a place in winter wheat production as this source of N can be applied at planting and because of its slow initial release, be available the following spring when the winter wheat plants are in greatest need. The treatments for the winter wheat trial will consist of two dates of N application (at planting and when soils temperatures are below 50 degrees), two fertilizer types (urea and ESN), two rates (recommended and 50% of recommended). There will also be treatments that will compare combinations of ESN and urea to ESN and urea alone and split applications compared to all the fertilizer in the fall or all in the spring at green up.

The spring wheat experiment will also include fall applications of nitrogen, compared to spring and will include comparisons like: ESN in the fall (all fall applications will be after the soil temperature has declined below 50 degrees) to urea in the fall; part ESN part urea compared to all ESN in the fall and in the spring, ESN in the fall compared to urea plus Instant in the fall. We will also investigate the safety of ESN when added close to the seed. We will collect data on plant emergence, yield and protein.

Regional linkages to other research activities: There will be close collaboration with the team conducting on-farm research in MN.

List current or potential other funding sources for this project: The ND Wheat Commission could be a potential donor.

Research Group: Joel Ransom (extension agronomist), Chad DePlazes (research specialist), Russ Severson (MN On-farm research coordinator).

Relationship to past projects: We have just concluded a large project that looked at nitrogen use efficiency in spring wheat. We used some of the same fertilizers/additives that will be included in this project, but there were no fall applications in the previous work.

Estimate the budget requirements:

- A. *Salaries and Wages Other Professional* – We request funding to cover stipend for a graduate student who will lead this research project.
Salaries and Wages Prebaccalaureate Students – Funds are requested to cover the cost of 200 hours of student labor (@\$10 per hour). These students will help with the soil sampling and in preparing seed and fertilizers and in processing the samples after harvest.
- B. *Fringe Benefits* – Fringe rate will be 3% for the graduate student and 10% for the student workers.
- D. *Materials and Supplies* – In year one \$2,000 is requested to be used in field supplies (tags, bags, fuel for equipment, etc.), replacement parts and repairs of equipment, oil and fuel for equipment, and partial funding for equipment that might be needed (i.e. replacement of trailers, seed cleaners that are used in this research).

- E. *Travel* – Funds are requested to cover the cost of travel to and from the field (~500 miles at \$0.67 per mile) and partial funding for the graduate student to travel to a professional meeting (i.e. ASA meeting at ~\$1,330 including meals, hotels and airfare).

- H. *All Other Direct Costs - Purchase of Service* – Funds are requested to cover the cost of soil analysis at a commercial lab. We estimate that we will analyze 200 samples in year one and 200 samples in years two and three. The current rate is \$12 per sample.

References:

Franzen, D.W. 2007. Nitrogen (N) Recommendations for Spring Wheat and Durum. NDSU Extension Service.

Kaiser, D. A. Sims, and J. Wiersma. 2010. Efficient N fertilization of wheat grown in Minnesota – final report. AFREC Project, 2008-2010. Can be viewed at <http://www.mda.state.mn.us/en/chemicals/fertilizers/afrec/researchprojects/~media/Files/chemicals/afrec/reports/wheatnitrogenfert.ashx>

**Minnesota Wheat Research and Promotion Council
RESEARCH PROPOSAL BUDGET**

PROJECT TITLE:			
Principal Investigator(s) / Project Directors(s)	Funds Requested For		
	Year 1 (2014)	Year 2 (2015)	Year 3 (2016)
A. Salaries and Wages	\$	\$	\$
1. Co-principal Investigator(s)			
2. Senior Associates			
3. Research Associates - Post Doctorate			
4. Other Professionals			
5. Graduate Students	18,000	18,000	
6. Prebaccalaureate Students	2,000	2,000	
7. Secretarial - Clerical			
8. Technical, Shop and Other			
B. Fringe Benefits @ 3% and 10%	740	740	
C. Nonexpendable Equipment (Planting and harvesting equipment use)			
D. Materials and Supplies	2,000	2,000	
E. Travel	1,000	1,000	
F. Publication Costs			
G. Computer Costs			
H. All Other Direct Costs (Attach supporting data)	2,400	2,400	
TOTAL AMOUNT OF THIS REQUEST (per year)	\$26,140	\$26,140	