FOR ADMINISTRATIVE USE
Minnesota Wheat Research and Promotion Council

Program Area Code **Proposal Code**

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
1301 12th Ave North
Fargo, ND 58102-0000

2. TITLE OF PROPOSAL
2025 Hard Red Spring Wheat Regional Quality Survey

3. PRINCIPAL INVESTIGATOR(S)	**4. PI #1 BUSINESS ADDRESS**
Dr. Shahidul Islam	North Dakota State University Department of Plant Sciences NDSU, 1360 Albrecht Blvd Fargo, ND 58102-0000
PI # 2 Name:	
PI # 3 Name:	

5. PROPOSED PROJECT DATES (calendar years)	**6. TOTAL PROJECT COST**	**7. PI #1 PHONE NO.**
01/01/2025 to 12/31/2025 Note: Research Reports are Due November 15th of Each Year	$16,368	701 318 9823

8. RESEARCH OBJECTIVES: (List objectives to be accomplished by research grant)
Annual survey of Hard Red Spring (HRS) wheat grown in the Northern Great Plain states. The survey encompasses sample collection, analysis, and reporting important wheat quality attributes useful for marketing the crop. The range of environmental diversity, cultivars and agronomic practices results in a range of quality attributes and assessment of important marketing attributes of wheat entering into the commercial market channels.

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**	**Phone Number**
	10/30/2024	701 318 9823
Signature of Authorized Representative	**Title**	**Date**
Amy B. Scott Digitally signed by Amy B. Scott Date: 2024.11.04 22:27:35 -06'00'	Assistant Director, Sponsored Programs Administration	
Address of Authorized Representative 1301 12th Avenue North Fargo, ND 58102-0000		**Date** 701-231-8045

Minnesota Wheat Research and Promotion Council
RESEARCH PROPOSAL GRANT APPLICATION

Project Title: 2025 Hard Red Spring Wheat Regional Quality Survey

Introduction:

Wheat quality is defined by the properties and characteristics that meet or contribute to the needs of food manufacturers in producing marketable end products. However, American millers and bakers often have different perceptions and requirements compared to their international counterparts. For growers, wheat quality is defined by attributes that maximize economic return. Therefore, the concept of quality varies depending on market demands, and it is ultimately the end user who determines the value associated with a specific quality standard. Since the early 1960s, the North Dakota State University Department of Plant Sciences has conducted annual surveys of hard red spring (HRS) and durum wheat grown in North Dakota. These surveys involve the collection, analysis, and reporting of key wheat quality attributes that are critical for marketing the crop. Recognizing that other Northern Great Plains states produce approximately 40% of the region's HRS wheat, the 1980 and subsequent surveys have expanded to include the four Northern Plains states, which account for 90% of HRS and durum wheat production in the U.S. More recently, HRS wheat grown in the three states of the Pacific Northwest (PNW) has been incorporated into the survey, extending the coverage to approximately 95% of total U.S. production. The diverse environmental conditions, cultivars, and agronomic practices across these regions result in a wide range of wheat quality attributes. Expanding the survey to encompass the entire Northern Great Plains and PNW growing regions enables a comprehensive assessment of key marketing attributes for HRS and durum wheat entering commercial market channels.

Sample Collection:

Samples of hard red spring and durum wheats grown in the Upper Great Plains are collected from the four-state region. The number of samples collected from each county is proportional to its wheat production; higher production areas yield more samples. In counties with lower production, a minimum of two samples are collected, while in high-producing counties, up to fifteen samples are collected. Every effort is made to ensure that the samples accurately represent the quality and condition of grain available to the commercial market in each area. The sample collection will be conducted under contract by the North Dakota Agricultural Statistics Services (NASS), based in Fargo, ND. NASS will collect samples from North Dakota, Minnesota, Montana, and parts of South Dakota.

Quality Tests:

Approximately sixty percent of the HRS wheat samples collected are graded by a federally licensed grain inspector. These same samples are also analyzed for key quality parameters, including protein content, falling number, test weight, and thousand kernel weight. From these data, estimations of quality distributions within the wheat crop are generated.

To further assess the quality, samples from each of the eighteen hard red spring wheat crop reporting areas (CRA's) will be composited by combining equal portions of the individual samples collected. Comprehensive analyses will be conducted on these composite samples to provide a thorough evaluation of wheat quality. Analytical procedures for HRS wheat include test weight, falling number, size distribution, protein content, ash content, thousand-kernel weight, and grade. Milling performance is also evaluated, including milling yields, flour ash, protein content, gluten content, solvent retention capacity, starch damage, and viscosity. Dough strength of the HRS wheat crop will be assessed using the Farinograph, Alveograph, and Extensograph. For end-product performance, the bread model system (100 g pup loaves) will be used to evaluate baking characteristics such as water absorption, bread loaf volume, crumb and crust color, symmetry, grain structure, and texture properties.

Data Analysis and Reporting:

The data collected from the assays will be presented in three formats. First, the arithmetic means of the assay results will be displayed as distribution histograms. Second, data from the composite samples representing each crop reporting area (CRA) will be reported as the average assay values for each respective CRA. Finally, statewide and regional averages will be calculated, weighted according to the most recent five-year production averages, to ensure a representative assessment of wheat quality.

Protein Ranges:
Wheat samples representing three protein ranges—less than 13.5%, 13.5% to 14.5%, and greater than 14.5% (on a 12% moisture basis)—will be prepared from the existing sample population for each of the two HRS wheat export regions. Comprehensive analyses of wheat, flour, and bread baking performance will be conducted on these protein-range samples. The results of these analyses will be presented in additional tables within the published bulletin.

Weekly Updates:
Weekly summary reports of the analytical data collected during harvest and sample analysis will be provided. These reports will highlight wheat quality based on export regions. Updates will be sent via email to supporting agencies every Friday morning throughout the harvest and wheat sample evaluation periods.

Printed Reports:
Reports summarizing the findings will be submitted to U.S. Wheat Associates for inclusion in their international wheat marketing brochure. Bulletins detailing the results from the four-state region will be published for distribution, primarily by the sponsoring agencies. Approximately 4,100 copies of the HRS report and 2,800 copies of the Durum report will be printed. Additionally, the data will be made available electronically on the North Dakota Wheat Commission website. The crop quality report will be distributed as follows:

	HRS	Durum
Plant Sciences	150	150
North Dakota Wheat Commission	500	550
Minnesota	50	5
Montana	150	140
South Dakota	50	5
Domestic	1500	850
International	1500	850
NCI	100	150
ND Ag Statistics	100	100

Additional or fewer copies can be provided as necessary.

Budget Justification:
Dr. Shahidul Islam, an Assistant Professor in the Department of Plant Sciences at NDSU, serves as the primary project director for this proposal. A total of $5,040 will be allocated to cover part of the salary for a Research Specialist in the Wheat Quality Program, who will be responsible for executing the tasks associated with this project. The salary includes a 4% increase from the previous year, in line with NDSU's recent salary adjustments. Fringe benefits are calculated at a rate of 47%. Additionally, $8,000 is requested to cover sample collection and operational costs, which include laboratory materials and supplies such as chemicals and glassware. The increase in operational costs is primarily due to a rise in sample collection expenses charged by the subcontractor, the National Agricultural Statistics Service. To ensure continued certification and proficiency in testing as approved by AACC, wheat quality analytical equipment requires annual maintenance, calibration, and repairs. A total of $960 has been allocated for these maintenance costs.

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RESEARCH PROJECT PROPOSAL BUDGET

Project Title: 2025 Hard Red Spring Wheat Regional Quality Survey			
Principal Investigator(s) / Project Director(s) Dr. Shahidul Islam	Funds Requested For		
	Year 1 (2025)	Year 2 (2026)	Year 3 (2027)
	$	$	$
A. Salaries and Wages			
1. Co-principal Investigator(s)			
2. Senior Associates			
3. Research Associates – Post Doctorate			
4. Other Professionals (Res Spec./Food Tech.)	5,040		
5. Graduate Students			
6. Pre-baccalaureate Students			
7. Secretarial - Clerical			
8. Technical, Shop and Other			
B. Fringe Benefits @ 47%	2,368		
C. Consulting and Professional Services			
D. Supplies and Services	8,000		
E. Travel			
F. Sub-Contracts			
G. Repairs & Maintenance	960		
H. Rentals & Lease			
I. Other Expenses			
TOTAL AMOUNT OF THIS REQUEST (per year)	$ 16,368	$	$