

**Letter of Intent**

**Sponsor:** MN Wheat Research & Promotion Council

**Title:** 2026 Hard Red Spring Wheat Regional Quality Survey

<b>Proposed Performance Period:</b>	01/01/2026 - 12/31/2026
<b>NDSU Proposal Reference #:</b>	NOV0025052
<b>NDSU Principal Investigator:</b>	Md Shahidul Islam
<b>Department:</b>	AES Plant Science
<b>PI email address:</b>	shahidul.islam.1@ndsu.edu
<b>Direct Cost:</b>	\$17,029
<b>Indirect Cost:</b>	\$0
<b>Total Requested US Dollars:</b>	\$17,029.00
<b>Committed Cost Share in US Dollars:</b>	\$0.00

This proposal has been institutionally reviewed and approved by the appropriate administrative and programmatic officials. Should this proposal be selected for funding, NDSU reserves the right to negotiate an award with terms and conditions that are appropriate for a public institution of higher education and consistent with NDSU's policies.

NDSU's institutional administrative information is available at [https://www.ndsu.edu/research/for\\_researchers/proposal\\_development/institutional\\_information/](https://www.ndsu.edu/research/for_researchers/proposal_development/institutional_information/)

NDSU UEI Number: EZ4WPGRE1RD5

NDSU EIN Number: 45-6002439

Any award that results from this application should be in the legal name of North Dakota State University and emailed to [ndsu.research@ndsu.edu](mailto:ndsu.research@ndsu.edu). Please call 701.231.8045 if further assistance is required. For technical questions, please contact NDSU's PI.

Sincerely,



Award & Budget Officer

# Minnesota Wheat Research and Promotion Council

## RESEARCH PROPOSAL GRANT APPLICATION

**Project Title:** 2026 Hard Red Spring Wheat Regional Quality Survey

### Introduction

Wheat quality comprises the properties and characteristics that enable food manufacturers to produce marketable end products. Perceptions of quality, however, differ among stakeholders: U.S. millers and bakers often prioritize attributes that vary from those valued by international buyers, while growers focus on traits that maximize economic return. Ultimately, market demand defines quality, and end users determine the value of specific standards.

Since the early 1960s, the North Dakota State University (NDSU) Department of Plant Sciences has conducted annual surveys of hard red spring (HRS) and durum wheat grown in North Dakota. These surveys collect, analyze, and report on key quality attributes critical for marketing. Recognizing that neighboring Northern Great Plains states produce a substantial share of the HRS crop, the survey expanded in 1980 and thereafter to include four Northern Plains states, which together account for about 90% of U.S. HRS and durum production. More recently, the survey incorporated HRS wheat from the three Pacific Northwest (PNW) states, extending coverage to roughly 95% of total U.S. production. Because environments, cultivars, and agronomic practices differ widely across these regions, quality attributes vary accordingly. Expanding coverage enables a comprehensive assessment of marketing-relevant traits for HRS and durum entering commercial channels.

### Sample Collection

HRS and durum samples from the Upper Great Plains are collected across the four-state region. County-level sampling is proportional to production: low-production counties contribute at least two samples, while high-production counties contribute up to fifteen. This approach is designed to represent the quality and condition of grain available to commerce in each area. Collection will be performed under contract by the North Dakota Agricultural Statistics Service (NASS) in Fargo, ND, covering North Dakota, Minnesota, Montana, and parts of South Dakota.

### Quality Tests

Approximately 60% of collected HRS samples are graded by a federally licensed grain inspector. These samples are also analyzed for core parameters, including protein content, falling number, test weight, and thousand-kernel weight (TKW). These data are used to estimate quality distributions across the crop.

To further characterize quality, samples within each of the eighteen crop reporting areas (CRAs) for HRS wheat will be composited by combining equal portions of individual samples. Comprehensive analyses will then be conducted on each composite.

Analytical procedures for HRS wheat include test weight, falling number, size distribution, protein, ash, TKW, and grade. Milling performance will be evaluated through milling yield, flour ash, protein, gluten, solvent retention capacity (SRC), starch damage, and viscosity. Dough strength will be assessed with the Farinograph, Alveograph, and Extensograph. End-product performance will be measured using a 100-g pup-loaf bread system, capturing water absorption, loaf volume, crumb and crust color, symmetry, grain structure, and texture.

## Data Analysis and Reporting

Results will be presented in three formats:

1. Distribution histograms of assay arithmetic means;
2. CRA-level averages from the composite samples; and
3. Statewide and regional averages weighted by the most recent five-year production data to ensure representative assessments.

### *Protein Ranges*

For each of the two HRS export regions, samples will be grouped into three protein ranges on a 12% moisture basis: <13.5%, 13.5–14.5%, and >14.5%. Wheat, flour, and bread-baking performance will be evaluated for each range, and results will be reported in additional tables within the published bulletin.

### **Weekly Updates**

Weekly summary reports will be provided during harvest and sample analysis, highlighting wheat quality by export region. Updates will be emailed to supporting agencies every Friday morning throughout these periods.

### **Printed Reports**

Findings will be submitted to U.S. Wheat Associates for inclusion in its international marketing brochure. Bulletins summarizing the four-state region will be published for distribution primarily by sponsoring agencies. Approximately 4,100 copies of the HRS report and 2,800 copies of the Durum report will be printed. All data will also be made available electronically on the North Dakota Wheat Commission website.

### **The crop quality report will be distributed as follows:**

	<u>HRS</u>	<u>Durum</u>
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, Assistant Professor in the Department of Plant Sciences at NDSU, will serve as the project’s principal investigator. A total of \$5,190 is requested to partially support the salary of a Research Specialist in the Wheat Quality Program, who will carry out the project’s technical tasks. This amount reflects a 3% increase over the previous year, consistent with NDSU’s recent salary adjustments. Fringe benefits are calculated at 47%.

A total of \$8,400 is requested for sample collection and operational costs, including laboratory materials and supplies (e.g., chemicals and glassware). The increase in these costs is primarily due to higher sample collection fees charged by the National Agricultural Statistics Service, the project’s subcontractor.

To maintain AACC-approved certification and testing proficiency, wheat quality analytical equipment requires annual maintenance, calibration, and occasional repairs. Accordingly, \$1,000 is allocated for these maintenance expenses.

**BUDGET TABLE**

<b>Project Title: 2026 Hard Red Spring Wheat Regional Quality Survey</b>			
Principal Investigator(s) / Project Director(s) Dr. Shahidul Islam	Funds Requested For		
	Year 1 (2026)	Year 2 (2027)	Year 3 (2028)
	\$	\$	\$
A. Salaries and Wages			
1. Co-principal Investigator(s)			
2. Senior Associates			
3. Research Associates – Post Doctorate			
4. Other Professionals (Res Spec./Food Tech.)	5,190		
5. Graduate Students			
6. Pre-baccalaureate Students			
7. Secretarial - Clerical			
8. Technical, Shop and Other			
B. Fringe Benefits @ 47%	2,439		
C. Consulting and Professional Services			
D. Supplies and Services	8,400		
E. Travel			
F. Sub-Contracts			
G. Repairs & Maintenance	1,000		
H. Rentals & Lease			
I. Other Expenses			
<b>TOTAL AMOUNT OF THIS REQUEST (per year)</b>	<b>\$ 17,029</b>	<b>\$</b>	<b>\$</b>