Minnesota Wheat Research and Promotion Council
FULL RESEARCH PROPOSAL TEMPLATE
For Crop Year 2026 (01/01/2026 to 12/31/2026)

Project Title: Growing the Next Generation: Minnesota 4-H Small Grains Education Initiative
Principal Investigator (PI): Brian McNeill, Extension Educator, Minnesota 4-H STEM and Agri-Science Director
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Project period: *Calendar year 2026* **Estimated cost:** *$15,000*

Minnesota 4-H will develop and deliver a small grains education program reaching 300+ youth statewide in 2026 as part of our successful 4-H Plant & Soil Science Initiative. Building on proven programming that currently engages nearly 1,500 Minnesota youth annually, this initiative introduces young people to wheat production, agronomy, and grain science through hands-on learning. Youth will explore wheat from field to table through grain identification, germination trials, milling experiments, nutrition science, and county fair exhibits. By engaging youth in grades 5-13 with real-world wheat production, this program builds agricultural literacy and develops the next generation of wheat farmers, agronomists, grain buyers, millers, and informed consumers who understand and value Minnesota wheat.

Background and importance:
Minnesota's wheat industry faces a critical challenge: an aging farmer population and limited youth engagement with small grains production. While Minnesota 4-H successfully engages nearly 1,500 youth annually in crop science through partnerships with Minnesota Corn, Minnesota Soybean, and a USDA-NIFA grant, small grains remain notably underrepresented in our programming.

Our track record proves we deliver results: 48,751 youth reached across all 87 counties in 2024 with 75% retention. Our Crop Scouting Competition attracts 65-70 youth annually, and our 'Science Sprouts' virtual program reaches 100+ youth monthly. We're ready to bring this energy to wheat education. This proposal directly impacts wheat profitability in three ways:

1. *Workforce Development: Minnesota needs the next generation of wheat farmers, agronomists, grain elevator operators, and crop consultants. Our model works—4-H agriculture participants are twice as likely to pursue leadership roles and show significantly higher retention in agriculture careers. A 2023 parent said it best: "Thank you for giving my kids this opportunity… they are showing interest in my farm and my crops for the first time." We need to create that spark for wheat.*
2. *Agricultural Literacy: Non-farm youth represent 60% of Minnesota's population yet have limited understanding of wheat production. By teaching 300+ youth wheat's journey from kernel to kitchen, we build informed consumers who understand the value of Minnesota wheat and modern grain production's complexity.*
3. *Market Development: Youth who understand wheat nutrition, food science, and grain quality become advocates for whole grains and Minnesota-grown products. County fair exhibits reach 1,000+ additional family and community members, multiplying impact statewide.*

Research methods:
A Small Grains Education Initiative would deliver programming through four integrated components:

- ***Component 1: Small Grains Discovery Curriculum (Year-round)***
  Develop and distribute age-appropriate educational kits for 150 youth exploring wheat science:
  - *Grain Detectives: Youth examine wheat, oats, barley, or rye samples using magnifiers to identify characteristics and learn end-use products*
  - *Kernel to Kitchen: Hands-on milling of wheat kernels into flour using simple tools; discussion of whole vs. refined grains*
  - *Watch Them Grow: Germination trials in classrooms tracking wheat growth, measuring variables like water and light exposure*
  - *Weather & Wheat: Climate impact studies using Minnesota weather data to understand optimal growing conditions*
  - *Nutrition Science: Comparing nutrition labels, identifying whole grains, and testing for starch content*
- ***Component 2: County Fair Exhibit Support (Summer/Fall 2026)***
  Provide resources and recognition for youth creating wheat-focused exhibits:

    - *Educational posters: "Journey of Wheat from Field to Table," "What Happens to Straw After Harvest?"*
    - *Hands-on displays: grain identification boards, milling demonstrations, nutrition comparisons*
    - *Engineering projects: youth-designed "mini threshers" demonstrating grain separation*
    - *Artistic exhibits: grain mosaics and educational art connecting agriculture and creativity*
    - *Recognition awards at Minnesota State Fair for outstanding small grains projects*
- ***Component 3: 4-H Small Grains Field Day (Summer 2026)***
  Host a specialized 4-H field day at a U of M research center bringing 40+ youth together to:
    - *Tour wheat research plots and learn about variety development*
    - *Meet wheat farmers and grain buyers to discuss markets and quality standards*
    - *Practice grain grading and quality assessment*
    - *Explore wheat crop scouting: weed, insect, and disease identification*
    - *Learn about career pathways in wheat production, agronomy, and grain handling*
- ***Component 4: Virtual Learning Series (Monthly, Jan-Dec 2026)***
  Expand our successful Science Sprouts model with wheat-specific programming:
    - *Monthly 45-minute virtual sessions for 30-40 youth featuring Minnesota wheat farmers*
    - *Hands-on challenges delivered by mail (wheat seeds, grain samples, experiments)*
    - *Topics include: wheat varieties grown in Minnesota, wheat markets and pricing, wheat foods around the world, sustainable wheat production*
- *All activities align with Minnesota K-12 Academic Standards in Science, emphasizing hands-on experimentation, data collection, and real-world application.*

Timeline for completion:
4-H Plant & Soil Science is an ongoing priority. This investment supports programming delivery during calendar year 2026.

Impact sharing:
- *County Fair Exhibits: 1,000+ fairgoers view youth wheat education displays across Minnesota*
- *Minnesota State Fair: Outstanding small grains projects showcased in 4-H Building (100,000+ annual visitors)*
- *Extension Publications: Downloadable curriculum resources at 4h.umn.edu for educators and families statewide*
- *Social Media: Youth activities and farmer partnerships shared via Minnesota 4-H platforms (12,000+ followers)*
- *Agriculture Ambassador Program: 20 Minnesota 4-H Ag Ambassadors incorporate wheat education into 300+ hours of community presentations*
- *Industry Events: Program outcomes presented at Minnesota Wheat Growers Association meetings and Minnesota Crop Production Retailers events*
- *Minnesota Wheat Newsletter: Participant stories and program highlights featured*

Potential collaborators:
Minnesota wheat farmers (field day hosts, virtual guest speakers), University of Minnesota wheat researchers and agronomists, local grain elevators and wheat buyers, Minnesota Wheat Growers Association members, University of Minnesota Extension educators, Minnesota FFA agricultural educators

Sources of additional funding:
An investment by Minnesota Wheat would provide a margin of excellence that transforms basic programming into high-impact youth experiences. Minnesota 4-H relies on donors and investors to support programmatic funding. Your support directly funds educational materials, field experiences, county fair exhibits, and hands-on learning opportunities engaging Minnesota youth with wheat production. Without donor and investor partnerships, our programs cannot deliver the experiential learning that creates lasting impact and builds the next generation of wheat industry leaders.
- *UMN Extension core funding (Committed/ongoing) – Extension 4-H youth development educators' salaries and benefits are supported through a partnership of federal, state, and local/county dollars. This base covers personnel costs but provides limited resources for direct programming expenses.*
- *Minnesota Corn & Minnesota Soybean (Committed 2025; Requested 2026) – Supports 4-H Plant Science programming including crop scouting competition, summer internships, education delivery, and 'Science Sprouts' virtual series.*
- *Minnesota Farm Bureau (Committed 2026) – Supports the 4-H Agriculture Ambassador youth leadership program, a team of 4-H'ers who help deliver our Plant & Soil Science programming.*

Proposed budget:

- ***Educational Materials & Kits: $4,500***
  - *250 small grains discovery kits (seeds, grain samples, magnifiers, supplies): $3,500*
  - *County fair exhibit support materials (poster boards, display supplies): $1,000*

- ***Small Grains Field Day: $3,500***
  - *Venue rental and setup: $800*
  - *Materials and supplies: $700*
  - *Speaker honorariums (farmers, industry experts): $1,000*
  - *Participant meals/snacks: $1,000*

- ***Virtual Learning Series: $2,000***
  - *Technology and curriculum development costs: $500*
  - *Monthly mail-out challenge supplies (12 sessions × 40 youth): $1,200*
  - *Farmer guest speaker honorariums: $300*

- ***Program Staff & Coordination: $3,500***
  - *Curriculum development (20 hours @ $50/hr): $1,000*
  - *Program coordination and volunteer training (30 hours @ $50/hr): $1,500*
  - *Evaluation and reporting (20 hours @ $50/hr): $1,000*

- ***Awards & Recognition: $1,000***
  - *Minnesota State Fair exhibit awards and ribbons: $600*
  - *Participant certificates and recognition: $400*

- ***Travel & Outreach: $500***
  - *Staff travel to county programs and field day: $500*

This budget represents our best estimation of how we would design and execute a Minnesota 4-H Plant and Soil Science initiative focused on wheat farming, related sciences, and career pathways available to young people in this industry. Youth and family participation may surpass our projections in some areas and lag in others -- that's the nature of educational programming. We would use an investment from Minnesota Wheat to its highest and best use, creating the most impactful programming possible while maintaining flexibility to adapt spending as opportunities and needs emerge throughout the year. Our commitment is delivering exceptional youth experiences that advance wheat industry workforce development, not rigid adherence to predetermined line items.

Jan-Feb: Curriculum development; kit design; recruit farmer partners
Mar-Apr: Launch virtual series; distribute educational kits to county programs
May-Jun: Monthly virtual sessions; provide county fair exhibit resources
Jul: Host Small Grains Field Day; support youth preparing fair exhibits
Aug-Sep: County and State Fair season; recognize outstanding exhibits
Oct-Nov: Final virtual sessions; compile impact data
Dec: Complete final report with participation numbers and outcomes