New Extension Publication on Practices to Increase Wheat Grain Protein

Summary: A new Montana State University Extension publication presents management practices to help producers boost wheat grain protein.

5/14/12 Contact: Clain Jones (406) 994-6076 or clainj@montana.edu
To: News-dailies, News-weeklies, AgMedia, News-local, News-tv, News-radio, MSU-All-News, News-internal, NatResourcesNonmedia, Producers, Web. From Sara Adlington, (406) 994-4602
Filename: GrainProteinPractices

Web: Ag, Extension
Database: University/College of Agriculture, LRES, Extension

From MSU News Service

BOZEMAN – Agricultural scientists with Montana State University Extension are encouraging farmers to consider techniques that can increase wheat grain protein, which can be a financial boost to producers.

MSU Extension recently published a bulletin entitled "Practices to Increase Wheat Grain Protein," which presents crop and fertilizer management practices that can increase grain protein without sacrificing yield. The bulletin was co-authored by Clain Jones, an Extension soil fertility specialist and Kathrin Olson-Rutz, a research associate, both in the Department of Land Resources and Environmental Sciences.

Growing wheat with high grain protein begins with selecting the appropriate variety and providing enough nutrient resources to meet the wheat's requirements for growth and grain yield, according to the Extension bulletin. If resources are sufficient to meet yield goals, then providing adequate available nitrogen may be the most important management factor to produce high grain protein.

"Using cultural practices or adding other nutrients to increase yield without adding additional nitrogen can reduce rather than increase protein through a dilution effect," Jones said.

The bulletin also asserts that applying all the nitrogen required for high yield and grain protein before or at seeding is a risky practice.

"The nitrogen may end up in the air or well water rather than in the wheat," Jones said.

In low rainfall years with relatively low yields, excess nitrogen applied early will not get used.

Residual soil nitrate can then become fertilizer dollars lost to leaching if followed by a wet winter and spring. In irrigated production, applying all the necessary nitrogen early in the season can produce excess vegetation rather than grain yield or protein.

The Extension bulletin suggests producers consider in-season nitrogen fertilization to adjust nitrogen rates in a high-yielding year.

Growers can determine whether an in-season application has a good chance of increasing protein by measuring flag-leaf nitrogen concentration, chlorophyll, or evaluating crop health through aerial photographs.

Protein may get the highest boost with nitrogen applied at flowering. However, Jones stressed that the ability to incorporate fertilizer applied anytime between boot and shortly after flowering, with potential rainfall, is more important than timing the application exactly at flowering.

"In dryland production, nitrogen applied late-season is nitrogen and money potentially lost if there is insufficient rainfall after application to move the fertilizer into the soil and allow plant uptake of added nitrogen," Jones said.

Producers are encouraged to always use application methods that maximize nitrogen use efficiency, especially by minimizing ammonia loss to the atmosphere.

The decision to apply mid- to late-season nitrogen to increase protein should be based on a number of factors: The ability to apply nitrogen without severely damaging the crop, the potential protein response to late-season nitrogen, and whether protein discounts are sufficiently high to justify the cost. Jones acknowledged that producers have little or no control over the latter two items.

These and other considerations are discussed in the publication, which is currently available online and printed copies will be available from MSU Extension Publications (www.msuextension.org/store).

For this and other soil fertility publications, visit Jones' webpage at http://landresources.montana.edu/soilfertility/publications.html or call Extension Publications at (406) 994-3273 for more information.