Enhanced efficiency fertilizers explained and evaluated

Summary: A new Montana State University Extension publication explains applications and performance of enhanced efficiency fertilizers.

8/24/09 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, 994-4602 or sara@montana.edu. Filename: **EEFrelease**

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From MSU News Service

BOZEMAN – The potential applications and performance of enhanced efficiency fertilizers for cropping systems in our region are explained in a new Montana State University Extension bulletin. “With the volatility in fertilizer prices and increasing environmental awareness, producers are asking about the effectiveness of new slow- and controlled release fertilizers,” said Clain Jones, Extension soil fertility specialist in the Department of Land Resources and Environmental Sciences at MSU. "The bulletin answers many of those questions."

According to Jones, the fertilizers are designed to decrease nutrient losses and increase nutrient availability to the crop. Some, such as polymer-coated urea, slowly release nitrogen and others alter soil reactions to decrease nutrient losses and protect seedlings from fertilizer damage. Urease inhibitors, for example, protect urea from volatilization, or evaporation, for a limited time so the urea can be incorporated or moved into the soil with adequate moisture.

“Polymer-coated urea can be used as fall pre-plant but is not recommended as the sole fertilizer in unincorporated spring broadcast applications. The nitrogen release may be too slow in our cool, dry climate, especially for small grains,” said Jones. However, polymer-coated urea may be suitable for cool season crops if blended with conventional fertilizers and has good potential to increase yield and quality of warm season, irrigated crops, such as corn, sugar beet and potato. "In our region," said Jones, "the big potential benefit of polymer-coated urea may be the ability to place more nitrogen with the seed in a single application."

Some enhanced efficiency fertilizers can spread out the amount of nitrogen released over the growing season, which should reduce plant stress and may result in better yield and quality. Jones is quick to acknowledge that using enhanced efficiency fertilizers will not increase crop yield or quality under all circumstances. “They will only increase yield if nutrients, not moisture, are limiting yield and nutrient losses or seedling damage are sufficient to reduce yield,” said Jones.

Jones recognizes that enhanced efficiency fertilizers must offer sufficient benefit to offset increased cost. Some benefits are not always tangible or directly measured by increased profit margin. For example, enhanced efficiency fertilizers may allow the producer to apply all the nutrients needed for the whole growing season in one application at seeding. This could reduce the costs and negative impacts of multiple passes on a field. Enhanced efficiency fertilizers also allow greater flexibility in application timing to minimize restrictions of wet fields, inclement weather or an already full spring workload.

The placement and timing of all fertilizer applications are important for their optimal performance (see MSU Extension Nutrient Management Module No. 11). Since enhanced efficiency fertilizers generally delay the release of nutrients, Jones stressed, “they must be applied sufficiently before peak crop demand to maximize yield.” Blended formulations and improved enhanced efficiency fertilizers should enable a closer match between fertilizer availability and crop demand, to increase yield, quality, and the producer’s bottom line with less loss to the environment. Given these potential benefits, the National Resources Conservation Service (NRCS) will be paying land owners to use certain enhanced efficiency fertilizers as part of the Conservation Stewardship Program.

For copies of the Extension bulletin about enhanced efficiency fertilizers, please refer to the Web at http://msuextension.org/publications/agandnaturalresources/EB0188.pdf. To find other Extension publications and ordering information, visit http://msuextension.org/publications.asp or call Extension Publications at (406) 994-3273.