

News Column

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In-furrow starter fertilizers for wheat

Wheat is considered a highly responsive crop to starter fertilizers, particularly phosphorus (P) and nitrogen (N). Application of P as starter fertilizer can be an effective method for part or all the P needs. Wheat plants typically show a significant increase in fall tillers and better root development with the use of starter fertilizer (phosphorus and nitrogen). Winterkill can also be reduced with the use of starter fertilizers, particularly in low P testing soils.

Phosphorus fertilizer application can be done through the drill with the seed. This would be either in addition to, or instead of, any preplant P applications depending on soil test and recommended application rate. The use of dry fertilizer sources with air seeders can be a very popular and practical option, however, other P sources (including liquid) are agronomically equivalent and decisions should be based on cost and adaptability for each operation.

When applying fertilizer with the seed, nitrogen and potassium (K₂O) rates should be limited to avoid potential toxicity to the seedling. When placing starter fertilizer in direct contact with wheat seed, producers should use the following guidelines in Table 1. (No urea-based N should be applied with the seed in any row spacing or soil type.)

Table 1. Suggested maximum rates of fertilizer to apply directly with the wheat seed

	Pounds N + K ₂ O (No urea containing fertilizers)	
Row Spacing (inches)	Medium to Fine Textured Soils	Sandy or Dry Soils
15	16	11
10	24	17
6-8	30	21

Air seeders that place the starter fertilizer and seed in a band an inch or two wide, rather than a narrow seed slot, provide some margin of safety because the concentration of the fertilizer and seed is lower in these diffuse bands. In this scenario, adding a little extra N fertilizer to the starter is less likely to injure the seed - but it is still a risk.

What about blending dry 18-46-0 (DAP) or 11-52-0 (MAP) directly with the seed in the hopper? Will the N in these products hurt the seed? The N in these fertilizer products is in the ammonium-N form, not the

urea-N form, and is much less likely to injure the wheat seed, even though it is in direct seed contact. As for rates, guidelines provided in the table above should be used. If DAP or MAP is mixed with the seed, the mixture can safely be left in the seed hopper overnight without injuring the seed or gumming up the works.

Although the response of wheat to these starter fertilizer products is primarily from the P, the small amount of N that is present in DAP, MAP, or 10-34-0 may also be important in some cases. If no preplant N was applied, and the soil has little or no carryover N from the previous crop, then the N from these fertilizer products could benefit the wheat, in addition to the P.

Dual-placement of N and P (anhydrous ammonia or UAN plus 10-34-0 applied in the same band below the soil surface) is a fertilizer application method usually used in preplant applications. Ammonium-N has long been known to increase P uptake by crops, and dual-placement can be very effective. Sometimes, producers will use this method at planting time, trying to position the band to the side of each row of wheat seed. Use caution, however.

If adequate separation of fertilizer and seed is accomplished, this is a good method of application that fits into many farmers' overall no-till system. If adequate separation of the ammonia/UAN and seed is not accomplished, wheat germination/stand establishment can be affected.

Information provided by Dorivar Ruiz Diaz, K-State Extension Nutrient Management Specialist