

MAXIMIZE YOUR WHEAT YIELDS NEXT YEAR AND APPLY PHOSPHATE

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Phosphate is a nutrient often overlooked in the production of wheat. Phosphorous plays a crucial role in increasing yields as well as improving the efficiency of other nutrients such as nitrogen.

The International Plant Nutrition Institute found that phosphorous plays a key role in photosynthesis, energy storage and transfer, respiration, cell division, and other plant processes. In addition, phosphorous helps roots and young seedlings develop more rapidly, it improves winter hardiness, promotes early and uniform heading, hastens crop maturity, is vital to seed formation and quality and can improve water use efficiency (Agri-Brief: Phosphate Fertilizer is Critical for Maximizing Wheat Yields).

Wheat that lacks a good supply of phosphorus will be stunted, have poor root growth, and few tillers. Researchers in Montana found that phosphorus is responsible for 75 percent of adventitious root development. Adventitious roots grow because of each new tiller added and are the dominate root structure in wheat. Phosphorous is also critical for the development of the first two tillers that a wheat seedling grows and are critical to the plants yield potential (Agri-Brief: Phosphate Fertilizer is Critical for Maximizing Wheat Yields).

According to the University of Nebraska, wheat responds to applied phosphorous more than any other major grain crop including corn, grain sorghum, and soybeans. Indications of wheat lacking a good phosphorous source are areas of green wheat among mature golden wheat. The best indication of phosphate levels is through soil sampling. Ideally, you should pull samples 0-8 inches deep and a minimum of 15 cores from the field (Blumenthal & Sander, 2002).

Phosphate fertilizers can be applied in several ways prior to or at wheat drilling. Phosphate can be applied directly with the seed, broadcast and incorporated prior to seeding, or dual placement using 10-34-0 and anhydrous ammonia. A producer should exercise caution when applying phosphate directly with seed so that nitrogen levels do not exceed 15 to 20 lbs. of N per acre. Nebraska research suggests that dual placement or seed applied phosphate will yield similar efficiencies. When phosphate is applied as a broadcast treatment only 10-30 percent is utilized by the wheat that year. The remaining phosphate shows up as residual phosphate the next year, however only 25% of it is typically found on a soil test (Blumenthal & Sander, 2002).

Garden City Co-op, Inc. offers several phosphate sources for wheat. 11-52-0 (MAP) and 18-46-0 (DAP) are typically used for broadcast treatments that will be incorporated prior to planting. 10-34-0 is a common starter fertilizer as well as 11-52-0. 100 lbs. of 11-52-0 per acre will provide the wheat plant 52 lbs. of P and 11 lbs. of N, which is a safe nitrogen level. Last year we offered a new product called US1340D. This dry phosphate source can be broadcast applied, mixed with wheat seed, or applied separately as a starter. The benefit of US1340D is that you get a source of nitrogen, phosphate, sulfur,

and zinc all in one pill. The analysis is 13-40-0-7S-1Zn and is typically applied at a rate of 100 lbs. per acre.

This spring we were able to observe firsthand the effects of phosphate in wheat. An accidental side by side was found in a local producer's field that was using US1340D as a starter. One of the passes through the field did not have any phosphate applied to it and was found to have less tillers and head counts compared to the wheat that received the phosphate application.



No phosphate at planting.



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Works Cited

Agri-Brief: Phosphate Fertilizer is Critical for Maximizing Wheat Yields. (n.d.). Retrieved July 7, 2011, from International Plant Nutrition Institute:
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