

Is starter fertilizer important in my corn program? Growers are commonly asking questions about their starter fertilizer program. The purpose of starter fertilizer is to enhance early nutrient uptake and growth. Starter fertilizer helps increase early plant growth along with increased root growth. Starter is most beneficial when crops are planted into cool wet soils in early spring. Reduced tillage conditions, earlier planting, and the goal of increasing corn yields continue to drive starter fertilizer use. Corn starter fertilizer plots from The Andersons Agronomic Land Lab near Tekonsha, MI have resulted in 10.51 and 10.46 Bu/ac yield increases when using a 2x2 starter fertilizer in comparison to no starter in 2003 and 2004, respectively.

Nitrogen is important in a starter fertilizer since cool soil temperatures reduce the rate of microbial release of the nitrogen from soil organic matter. In addition to nitrogen, phosphorus is a key component in a starter fertilizer because it is non-mobile in the soil and the availability is reduced with cool soil temperatures. Potassium is not as critical as N or P in a starter, but some response is likely when soil K levels are marginal. Zinc is also important in starter fertilizer under certain conditions. Conditions that favor zinc deficiency are; 1) high phosphorus soils, especially when combined with a high rate of P as a row starter, 2) cool, wet soil conditions, and 3) high pH or recently limed soils. Sulfur can also be applied in a starter band. Sulfur is very mobile in the soil; therefore a band application is very efficient.

When recommending rates of starter fertilizer to a grower, be sure to take into consideration the salt content in combination with the placement. High levels of potassium and nitrogen fertilizer salts can be injurious to emerging seedlings. The total amount of salts is equal to the amount of N and  $K_2O$  added together. For example, if 200 lb/ac of an 8-32-16 were being applied, that is equivalent to 48 lb salts (N+  $K_2O$ ) per acre. In a 2x2 placement, total salts should not exceed 70 to 100 lb/ac in a heavy soil. In a sandy soil salt rates should not exceed 30 to 50 lb/ac. Pop-up placement is where small amounts of starter fertilizer are placed with the seed. When using a pop-up fertilizer, salt rates should not exceed 8 lb/ac in a soil with an 8 CEC or higher and should not exceed 5 lb/ac in a soil with a 7 CEC or less. Consider using a low salt index fertilizer when using pop-up fertilizer.