

Starter Fertilizer 2.10.2009 03/24/09 9:53:03 AM

Starter Fertilizer 2.10.2009

What is starter fertilizer?

Starter fertilizer, sometimes referred to as "pop-up" fertilizer is a phosphate application that is close to the seed so that the roots can intercept it right away after germination. Many people automatically consider 10-34-0 as a starter fertilizer. However, there are many other options as well. For instance, 11-52-0 in a 2X2 band can be a very effective starter, especially on wheat.

What is the best placement of starter fertilizers?

Phosphate is immobile in the soil. Furthermore, our soils in our local area tend to be high pH, with lots of calcium and magnesium. Some of these areas also tend to have a lot of clay. These soil characteristics tie up phosphate. Therefore, placing phosphates near the roots makes it easier for the plant to find and take up, especially for small roots on germinating plants.

What does Phosphate do in the plant?

A plant is usually 0.1%-0.4% phosphate and Phosphate gets used for 3 major things in a plant:

- 1) Energy Transfer and storage- half of all the Phosphate in a plant gets used for this. It is in ATP, ADP, AMP and powers many of the reactions that happen in plants. Energy obtained through photosynthesis and metabolism of carbohydrates is stored in phosphate compounds for later use in growth and reproductive processes
- 2) P is an important structural part of Nucleic Acids, DNA/RNA,- an adequate supply of P early in the life of a plant is important in the development of its reproductive parts, such as seeds
- 3) P is part of membrane structures and adequate P nutrition in a plant is linked with greater straw strength

- If you notice below in this email, I cited the sources of information for this article. One of them happens to be the Text Book from my soils and fertilizers class that I took in college. I found a paragraph in there that I would like to quote:

"A good supply of P is associated with increased root growth. When soluble phosphate compounds are applied in a band, plant roots proliferate extensively in that area of treated soil. The greatly increased root proliferation should encourage extensive exploitation of the treated soil areas for nutrients and moisture. P is also associated with early maturity of crops, particularly grain crops. Ample P nutrition reduces the time required for grain ripening."

Why don't we see the same response from soybeans as we do the crops like sugarbeets, wheat, and corn?

Soybeans tend to be more sensitive to salts with the seed. However, they are also good scavengers of the soil. Soybeans do an excellent job of mining phosphate out of the soil, where a crop like corn would prefer to have the phosphate right with the seed so it doesn't have to search for it.

What is the best recommendation for starter fertilizer applications in this area?

20 lbs of Phosphate in furrow on corn

12 lbs on sugarbeets in furrow

- Make sure that you check with an agronomist about products that you are using with the seed to make sure the salts are an acceptable level to be with the seed.

How do I know how much phosphate is in a liquid fertilizer?

This is a really important question. Over the last few years there have been many questions about 10-34-0 replacements and it's important to understand what you are getting for your money compared to the old standard. There have been some claims by some products that there is an "efficiency factor" with that product and it is possible to reduce the amount of phosphate used. At this point in time, there is no concrete evidence to support that any product on the market can be used 100% of the time to reduce the amount of pounds of P needed in furrow for a starter fertilizer. On corn, I would always recommend that there is 20 lbs of P in furrow with the seed. That is equivalent to 5 gallons of 10-34-0. If you want to know how many pounds you are getting in a recommended rate of a starter fertilizer, these are the questions to ask:

- 1) How much does this product weigh per gallon? (10-34-0 weighs 11.65 lbs per gallon)
- 2) What is the analysis of the product? 10-34-0 (that means 10% Nitrogen; 34% Phosphate; 0% Potassium)
- 3) What is the recommended rate per acre? 5 gallons per acre

Formula for how much Phosphate you are getting per recommended rate:

Weight per gallon X recommended rate = lbs of total product applied per acre ; 11.65 lbs/gal X 5 gal/ac = 58.25 lbs

Lbs of total product applied per acre X percent Phosphate in analysis = how much P is applied; 58.25 lbs/ac X 0.34 (Phosphate in 10-34-0) = 19.8 lbs P applied/ac

The information in this article is from Dr. R. Jay Goos' Soil Science 322 class at NDSU and from the text book used in that class: Soil Fertility and Fertilizers, An Introduction to Nutrient Management, the 6th edition by John L. Havlin, James D. Beaton, Samuel L. Tisdale, and Werner L. Nelson; Copyright 1999 by Prentice Hall, Inc.