



Spring 2003, No. 1

PUTTING PHOSPHORUS IN ITS PLACE

Concern for clean water has led many to believe that producers simply must reduce phosphorus use. In some areas it's true. Phosphorus in the wrong place—in excess concentration in streams, rivers, and lakes—can lead to algal blooms, bad odor, and even toxic compounds. But phosphorus is also an essential nutrient for growing crops. To grow crops without harming water, phosphorus must be put in the right place.

The right place to put phosphorus is in soil that doesn't have enough. Soil testing identifies where crops need it most. Across North America, the percentage of soils testing medium or less within a state or province ranges widely, from 15 to 86%. Even in regions intensive in livestock and poultry, 15 to as much as 50% of the soils test medium or lower. Those soils—as long as they are productive and not highly erodible—are always a good place to put phosphorus. That's where phosphorus helps increase crop yield and produce more organic matter and ground cover to conserve the soil.

Soils testing higher than medium can sometimes be the right place for phosphorus, too. Some crops, like potatoes, respond even in these soils. Nutrient sources such as manure, that contribute more to the soil than just phosphorus, can benefit these soils and build up their productivity. The organic matter and micronutrients they add contribute a lasting benefit. In large parts of the field not susceptible to erosion and runoff, the build-up doesn't put water quality at risk either.

The right place to put phosphorus is close to the plant roots that need it. Phosphorus isn't very mobile in the soil. Many crops, especially corn, have a special need for phosphorus early in the growing season. With or near the seed is a good place for phosphorus. Applying it in bands below the soil surface reduces the risk of phosphorus moving to water by surface runoff.

The right place to put phosphorus is in a cropping system geared to higher yields. Phosphorus enrichment gives a seedling greater potential, which can only be attained when everything else is managed to avoid limitations. High yields remove more phosphorus from the soil, and the removal must eventually be replaced.

The right place for phosphorus is where it contributes to crop quality. Phosphorus improves crop quality in many ways...it lowers grain drying expenses, raises sugar content in many fruits and vegetables, and increases the size and cooking quality of potatoes. It improves the kernel size and density of wheat. It reduces low temperature breakdown of apples during storage. For these and many more reasons, growers have long known the importance of phosphorus in achieving quality.

There are wrong places to put phosphorus, too. To minimize impacts on water quality, growers need to avoid putting soluble forms of phosphorus on the surface of runoff-susceptible soils, especially during the critical periods—late fall and early spring in most areas. **But even today—yes, even in 2003—there are still many right places to put phosphorus.**

—TWB—

For more information, contact Dr. Tom Bruulsema, Eastern Canada and Northeast U.S. Director, PPI, 18 Maplewood Drive, Guelph, Ontario N1G 1L8, Canada. Phone: (519) 821-5519. E-mail: tbruulsema@ppi-ppic.org.