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PHOSPHORUS PLACEMENT IN FORAGES LOOKS PROMISING

Top forage production depends on good fertilizer management, and proper placement is one of the tools of good fertilizer management. But placement options in forages are limited, or at least they have been.

Subsurface banding is usually the most effective way to apply immobile nutrients like phosphorus, especially in cereal crops. But, in established forage, broadcasting phosphorus is the only option. It's convenient and has worked well because some roots feed close to the soil surface, that is, if the surface is moist. However, when surface soils are dry, root activity is depressed and the phosphorus becomes stranded, limiting any yield response that might be expected.

Researchers have been evaluating subsurface application in forage stands for years with mixed results. Banding occasionally out-performs broadcasting, but not as often as might be expected. Mechanical damage to plant roots during the banding process frequently offsets the potential advantages of banding.

The key to successful banding in forages is the fertilizer opener. Recent studies, using a coulter-type disc opener show that banding can be a viable option for forage growers.

Subsurface banding was compared to surface broadcasting on an established alfalfa stand in central Alberta over a 5-year period. Phosphorus was applied annually for 5 years or an equivalent amount was applied as a single application at the beginning of the study. Banding outperformed broadcasting in nine of the 10 comparisons. The banding advantage averaged 836 pounds per acre per year for the annual phosphorus application and 660 pounds per acre per year for the single phosphorus application. Even at a low price for alfalfa of \$40 per ton, that's a benefit of \$13 to \$17 per acre...more than enough to cover the additional cost of the banding operation.

The success of subsurface banding depends on the banding equipment. "Hoe-type" implements can easily damage forage stands, causing injury to the superficial roots. Also, the furrow they leave helps dry out the soil. The coulter used in the above study cuts a very narrow slice through the soil, with minimal root disturbance.

Phosphorus fertilizer placed below the surface is immediately available to the root, and is usually placed in moist soil where roots are most active. Subsurface banding reduces the contact between phosphorus fertilizer and the soil, which decreases phosphorus fixation and leaves more phosphorus available for crop uptake.

Banding phosphorus can increase forage productivity in established stands, but care must be taken to minimize root disturbance.

Forage is an important crop and requires careful attention to fertilizer management and placement. Broadcasting has proven effective in the past, but banding looks promising for the future.

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