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STARTER FERTILIZER: CONSIDERATIONS FOR CORN FOLLOWING CORN

Corn following corn is on the rise. Compared to corn following soybean, corn following corn will be planted in heavier residue cover. Crop residues act as an insulating layer over the soil surface. In the spring, soils with higher residue can be slower to warm up.

Soils under no-till are more dense near the surface than tilled soils. This higher density can make soils slower to dry as well as slower to warm.

Cooler, wetter soils slow down the mineralization of N and P from the soil. They also slow the rate of corn root and shoot development.

Starter fertilizers can boost corn growth early in the season. Early in its development, corn has roots that grow down and to the side, at approximately a 45-degree angle. Nutrients placed 2 in. to the side and 2 in. below the seed are well placed for access by the young root system. Such placement is the standard against which all other starter placements are measured. It usually provides greater chances of yield response than other placement options as well as greater responses when they do occur.

Nitrogen and P work together. Starter formulations that contain the NH_4^+ form of N can increase P uptake by the corn plant. This happens because when the plant takes up NH_4^+, the soil right around the root becomes more acid than the surrounding soil. This more acid environment enhances P availability. The synergistic effect of NH_4^+-N and P occurs only when the two nutrients are banded together. A band of NH_4^+-N separated from a band of P does not enhance P uptake.

Both N and P proliferate roots. This means when the root system finds a concentrated area of these nutrients, more root branching will take place, and a larger proportion of the root system will be in the band of nutrients.

The N and P in starter fertilizer count as a part of the total amount of these nutrients applied for corn. It is important to include them to ensure the total rates applied match those recommended.

Starter fertilizer is very efficiently used. Because of its excellent positional availability early in the season, efficiency of use can be higher than other placement methods. It is important to remember, however, that corn needs both a concentrated zone of nutrients early in the season as well as nutrients more distributed through the rooting zone to maximize yield.

—TSM—

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Abbreviations in this article: N = nitrogen; P = phosphorus; NH_4^+ = ammonium.