Plan For Phosphorus And Potassium Fertilization

URBANA, ILL.

With a promising harvest under way, it's a good time to replenish fields with phosphorus and potassium, said Fabian Fernandez, University of Illinois Extension specialist in soil fertility and plant nutrition.

"High fertilizer prices for a few years were followed by a wet fall and late harvest last year," Fernandez said. "This resulted in many fields not receiving all the phosphorus and potassium needed to maintain optimum test levels. Since many fields have already been harvested and soil conditions are ideal for tillage or to drive equipment over the field, now's a great time to plan for phosphorus and potassium applications."

Fernandez said how phosphorus and potassium are applied does not matter as long as you apply it so test levels are adequate for crop production.

For farmers interested in strip-till this fall, Fernandez recommends waiting until at least the middle of October to avoid heavy rains that can flatten the berm created during the tillage operation.

Applying phosphorus and potassium annually or biennially is debatable. U of I research indicates that as long as needed fertilizer is applied, there is no yield benefit hinging on whether the application is done every year or every other year.

"However, we have seen that for biennial applications it is better to apply fertilizer before the corn crop and have soybean as a residual feeder," he said. "Research has shown that having corn in the second year after fertilization can cause yield reductions, especially in no-till systems. Conversely, soybean yields were not affected in response to the time of fertilization. Even if a biennial application results in time saving and one less pass over the field, if your experience tells you that your soil does not build up, I would suggest always applying on an annual basis."

Both fall and spring applications have proven to be effective alternatives to provide nutrients to the crop and there is no agronomic difference in terms of one timing being better at increasing nutrient availability relative to the other.

"Fall is normally the preferred time since typically there is more time and equipment available in the fall than during the planting season in the spring," Fernandez said. "Also, soil compaction is less of a concern when driving heavy equipment loaded with fertilizer in the fall because soil is typically drier than in the spring, and phosphorus and potassium applications combined with tillage operations are more feasible in the fall."

One potential drawback for fall applications is the fact that the nitrogen accompanying phosphorus in di-ammonium phosphate (DAP, 18-46-0) and mono-ammonium phosphate (MAP, 11-52-0) is more susceptible to loss even if applied late in the fall. However, the amount of nitrogen present in these applications is not very high and the benefits of a fall application typically outweigh the potential for any small nitrogen losses.

If phosphorus and potassium are at adequate levels, there is no need to make any significant change in the short term when going into a rotation with more corn.

For farmers planning to make a long-term commitment to more corn, remember that overall corn can remove more phosphorus and less potassium than soybean. Thus, fertilization plans should be adjusted accordingly.

Finally, Fernandez said that before deciding placement method and when and how much to apply, the single most important thing to know is the test level of the soil. To find out, there is no substitute to a regular (every four years) soil sampling program. Δ