nutrient stewardship

THIS ARTICLE IS ABOUT...

RIGHT SOURCE RIGHT RATE RIGHT TIME RIGHT PLACE

Highlights

- Regularly scheduled K applications are often a practical approach to managing soil test K variability
- Suggestions for Monitoring K in the Soil-Crop System

Keep an Eye on Potassium

In much of the Corn Belt, native soil K supplies are insufficient for crop growth. In the eastern Corn Belt, a common practice is to use fertilizer to build soil test K up to a level that will not limit crop development and yield, then maintain that level with application rates that are equal to crop removal. Historically, when economic conditions worsen, some farmers have used rates less than those required to build and/or maintain soil supplies or such applications have been omitted entirely.

The regularly scheduled K applications in this fertilization system are often used as a practical approach to managing the variability in soil test K, both across the field as well as over time. When these applications are omitted, variability in soil K supplies becomes more apparent and needs to be monitored closely, to ensure levels at various places within the field do not become yield limiting.

Suggestions for Monitoring K in the Soil-Crop System

Cutting back on K for short term economic reasons reinforces the need to monitor crop K nutritional status more closely, especially given the greater variability that is expected to result. The following are some tips:

- Sample at the same time of year. This helps take out some of the seasonal variability. Switching from fall to spring sampling can introduce significant changes from one sampling period to the next.
- Ensure samples are representative and composed of enough cores. This may require some strategizing. If areas of the field have been inexplicably variable from one year to the next, increasing the number of cores going into those samples may help stabilize some of the variation over time.
- Find a quality lab and stick with it. Staying with the same lab removes the lab to lab variability from the overall year to year variation.
- Find ways to control depth of sampling to ensure consistency. Adding stops to the probe or creating marks are possibilities.

- Keep track of nutrient additions and removals to calculate nutrient budgets. When additions exceed removals, soil test levels are expected to build. When removal exceeds additions, levels are expected to decline.
- Consider setting up some monitoring areas. Places to start are on soils that have been changing in unpredictable ways. Samples of these areas should be taken every year to gain a better understanding of soil test K dynamics. Keeping additional information on these areas, such as moisture conditions at sampling and nutrient budgets, may provide some further insights into the primary causes of variability.
- Scout fields to look for visible signs of nutrient deficiency. In both corn and soybean, deficient plants will typically begin to show yellowed tissue along the edges of lower, older leaves first. If the deficiency persists, more affected leaves will appear at progressively higher positions on the plant.

Soil test K is known to be variable, both across the field and over years. For this reason, it requires more careful management and a greater attention to detail, especially when regularly scheduled K applications are reduced or omitted. Doing a good job of monitoring K soil fertility is a good investment of time and resources to ensure crops are capable of yielding their full potential.

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The information presented here is mostly general and conceptual. For more specific information regarding safe rates of in-furrow fertilization for specific crops and conditions, one should refer to university extension resources, and/or consult a knowledgeable and experienced crop advisor or industry professional. Also, an Excel decision support tool is available online. Visit the IPNI website ***www.ipni.net/toolbox.***

Source Material

Murrell, Dr. T. Scott, "Keep an Eye on Potassium this Season,"

International Plant Nutrition Institute INSIGHTS, April 2009, **www.ipni.net**