



Frontiers of Potassium

an International Conference

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Selecting the **RIGHT POTASSIUM TIME**

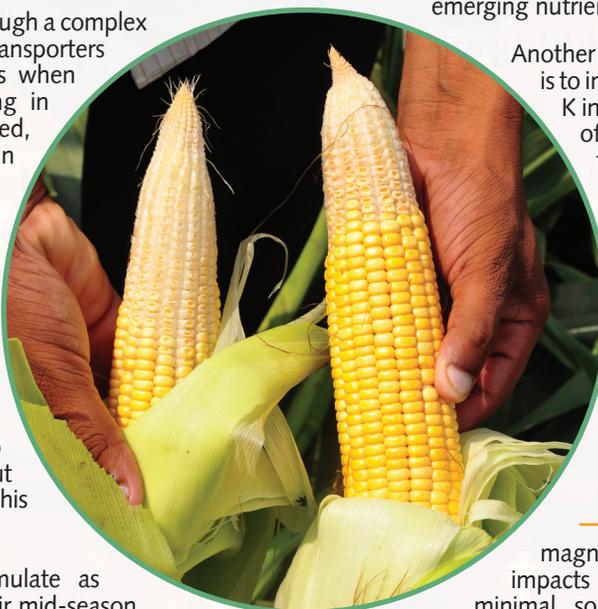
Improved procedures for selecting the most appropriate time of K fertilization will be one of many topics discussed at the January 2017 Frontiers of Potassium Science Conference (kfrontiers.org).

An important session during the upcoming Frontiers of Potassium Science Conference will focus on the right time to apply K fertilizer. The timing of K fertilizer has not been widely studied. Most often, a larger, basal application is made to meet the needs of one or more crops, but is this the most effective way to apply K?

Plants take up K into their roots through a complex network of high and low-affinity transporters and channels. Uptake of K occurs when healthy roots are actively growing in soils that are not cold, compacted, or waterlogged. Any shortage in K uptake impacts the plant tops, but also causes roots to become stunted and inefficient.

A major objective of 4R Nutrient Stewardship is to get as much of the applied K into the plant as possible. This is important when short-term returns to investments in K fertilizer are needed. A key piece of information is how crop demand for K changes throughout the season and how to meet this demand.

For example, sugar beets accumulate as much as 8 kg K/ha/day during their mid-season growth period. High-yielding potatoes accumulate up to 15 kg K/ha/day during their peak demand period. For almonds, most K uptake occurs early in the growing season. In some situations, the release of K into the soil solution is not rapid enough to meet these peak demand periods and temporary K deficiencies occur. The application of K fertilizer should be well in advance of these peak demand periods in order to avoid a reduction in growth and development.



The timing of K fertilizer application is often scheduled to coincide with other field operations. For example, it may be applied some months ahead of planting if other field activities are occurring or when planting beds are formed. Fertilizer K is commonly applied prior to planting, following planting, or even as a foliar spray during the growing season to treat emerging nutrient deficiencies.

Another objective of 4R Nutrient Stewardship is to increase the amount of plant-available K in soil. This requires larger applications of K that have lasting effects. But soil fertility is not easily built in all soils, and some soils are more at risk for K loss than others.

Applied K fertilizer does not generally leach rapidly below the root zone with rain or irrigation water in most soils, but there is relatively little information on the

Lack of grain filling in maize due to inadequate soil K supply during the growth season.

magnitude of K losses. The environmental impacts to air and water from K loss are minimal, so they have not been well studied. Knowing the extent of K loss is important to help farmers keep applied K in the soil and available for crop uptake.

Determining the right time for K fertilization requires an understanding of soil factors, root dynamics, and crop demand. The interactions of these factors will be discussed in detail at the upcoming Frontiers of K Science Conference.



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