



# Frontiers of Potassium

*an International Conference*

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## Selecting the **RIGHT POTASSIUM PLACEMENT**

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

Potassium (K) fertilizer is applied in many ways. It may be broadcast or sprayed on the soil surface then either worked in or not with tillage implements, placed below the soil surface at various depths and distances from plants, or sprayed on crop leaves. The "right" placement depends upon many factors. Ongoing scientific investigations continue to improve our knowledge about where best to place K. We highlight examples of important insights.

When plant organs that have a high K demand develop rapidly, foliar applications of K can be beneficial. As an example, the roots of cotton plants acquire the needed K to support plant growth. However, the boll develops rapidly and its high demand for K can outpace what the plant is able to transfer to it. Leaves near the boll are quickly depleted of K. When a solution containing K is sprayed on the leaves, at least part of the shortfall can be made up, improving the quantity of cotton lint produced.

How well the crop rooting pattern matches the distribution of K in the soil impacts how much K the plant is able to get. Popular conservation tillage practices keep more crop residues at the surface, reducing soil erosion; however, they also result in greater concentrations of K remaining near the soil surface instead of deeper. While not an issue when soils are moist, K can become limiting when the soil surface dries out. Plant roots grow deeper to find the water, below where the K is most abundant. This mismatch

can result in K deficiency. Applying K deeper in the soil can improve K availability to the plant under these conditions. Such improvements have been demonstrated for a variety of crops.

Matching K supply to water supply in the soil is a strategy used when crops are irrigated. For instance, farmers growing apples or almonds may band K where the soil is wetted with irrigation, or they might inject K into the irrigation water, a technique termed "fertigation."

Where other nutrients are located also determine how much of the K the plant roots access. Nitrogen (N) and phosphorus (P) are known to stimulate root branching, causing a greater proportion of the root system to grow where they are concentrated. Applying K in the same band as N or P increases the likelihood that the branching root system will access K too.

Placement of K appears to be less critical as the overall K supply in the soil increases.

In more arid regions, soil K supplies tend to be naturally higher than in more temperate regions. Soil K supplies can also be built up

through fertilizer and manure additions.

These few examples illustrate some of the many considerations for proper placement of K; however, there are many more, and science has much yet to discover. Potassium placement is one of the important themes of the Frontiers of Potassium conference.



IPNI PHOTO - E. FRANCISCO

*Aerial picture showing strips of missed application of KCl in a soybean field with sandy texture and low K concentration.*



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