



# Frontiers of Potassium

*an International Conference*

**ROME**  
**25-27**  
**January**  
**2017**



## Selecting the **RIGHT POTASSIUM RATE**

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

An important theme of the upcoming Frontiers of Potassium Science Conference is selecting the right application rate of K fertilizer. This topic is too frequently overlooked as other plant nutrients often have more serious potential environmental impacts and economic priorities. International experts will be gathered at the conference to review how to improve K fertilizer recommendations.

The importance of an adequate K supply in plant nutrition is well known. Potassium has an essential role in supporting many metabolic functions, improving the quality of harvested crops, facilitating N<sub>2</sub> fixation, and helping protect plants from a variety of pests and stresses.



Recommendations for K fertilizer are commonly made based on the results of soil testing. However, there are occurrences where traditional soil testing fails to accurately predict the need for additional K, or current techniques may recommend K fertilizer where no crop response occurs following fertilization.

### *K response research for maize in Uruguay.*

Important discussion at the upcoming K Frontiers Conference will be focused on how to improve recommendations on how much fertilizer K is required to support crop growth. This includes topics such as:

#### ▶ **K Budgets:**

One useful approach for selecting the right application rate is to apply K fertilizer equivalent to the amount removed in the harvested portion of the crop. The amount of K removed during harvest depends on the crop, but many high-yielding crops remove hundreds of kg K/ha annually. Removing crop residues from the

field further hastens the depletion of soil K. It is not always feasible to apply rates of K fertilizer equivalent to crop removal, which leads to a gradual depletion of the native nutrient supply.

#### ▶ **Soil Testing:**

Soils have traditionally been analyzed in the laboratory by drying, grinding, and chemical extraction to predict the amount of K that will be accessible for plant uptake. New research suggests that extraction of K from moist soil samples may improve the precision of soil K assessments for some soils. Cation exchange resins are an alternative that have become routine in some parts of the world for determining the amount of plant-available K in soils.

#### ▶ **Soil Differences:**

The concentration of soluble K in soil needed to satisfy crop demands differs depending on factors such as soil texture and mineralogy. The presence of certain minerals can move a portion of the added K into the clay interlayer, making it initially unavailable to plants; however, under the right conditions, it can be released and made available again. Some coarse-textured soils contain minerals that provide a surprisingly adequate supply of K to plants. The conference will discuss these and other soil mineralogy issues.

#### ▶ **The Value of K in Crop Residue:**

Organic crop residue remaining in the field following harvest usually contains significant amounts of K that will be recycled back to the soil. The rate of this release relative to the timing of soil fertility assessments has not been well researched, but new studies are providing needed insights.

#### ▶ **Crop-specific K Recommendations:**

Improved understanding of how plant roots grow and develop provides opportunity to improve fertilizer K recommendations. Crops differ in their ability to extract K from the soil and they also have varying periods of peak K demand during the growing season.



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