

PLANT NUTRITION TODAY

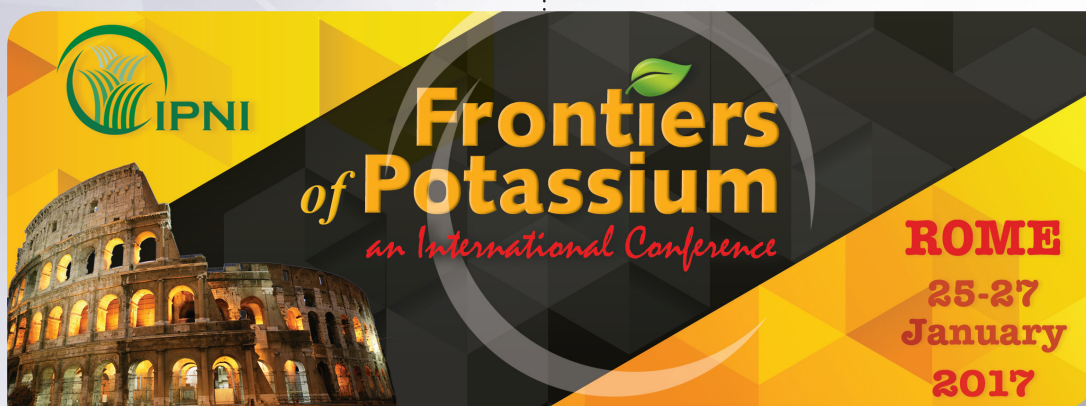
2016-17 ISSUE 4, NO. 1

POTASSIUM NEEDS TO ATTRACT MORE ATTENTION!

It's well understood that plants require the right combination of the 14 essential mineral nutrients to sustain their growth. However, it frequently seems like just a few of the nutrients get most of the attention due to their cost or their environmental impacts. Potassium (K) is too often overlooked as a key

► Right Source of Potassium

Although all potash fertilizers provide the same K nutrition to crops, they can significantly differ in the elements that accompany the K. In certain circumstances, it may be best to add or avoid applications of chloride, sulfate,



component in every successful farming operation. The upcoming *Frontiers of Potassium Science* conference will take a close look at all aspects of K behavior in soils and plants, and how to improve potash fertilizer management (www.Kfrontiers.org).

It is well known that when the soil K supply is limited, plants have reduced yields, poor quality, utilize water less efficiently, and are more susceptible to pest and disease damage. However, accurately predicting which soils require additional K and how crops will respond to added fertilizer is not simple. Through the framework of 4R Nutrient Stewardship (Right Source, Right Rate, Right Time, and Right Place), the conference will explore the science needed to improve K management.

nitrate, or magnesium in the fertilizer. Other non-agronomic factors, such as economics and field logistics also need to be considered.

► Right Rate of Potassium

Recommendations for K fertilizer are commonly made based on the results of soil testing. However, traditional soil testing does not always accurately predict the need for additional K, or it may recommend K fertilizer where no crop response occurs. There is a need for improved predictions on how much fertilizer K is required to support crop growth.

► Right Place for Potassium

Matching the placement of K in the soil with crop rooting patterns is essential for good plant nutrition.



Dr. Rob Mikkelsen
Director, North American Program
rmikkelsen@ipni.net



“Potassium is too often overlooked as a key component in every successful farming operation.”

Popular conservation tillage practices keep more crop residues and K fertilizer near the soil surface. During periods of drought, plant roots may not be able to access nutrients near the surface and deep placement of K may offer advantages.

► Right Time for Potassium

A major objective of 4R Nutrient Stewardship is to get as much of the applied K into the plant as possible. Accomplishing this includes knowing how the crop demand for K changes through the growing season. Uptake of K occurs when healthy roots are actively growing in soils that are not cold, acidic, compacted, or waterlogged.

► Potassium and Human Health

Potassium is known as a “shortfall nutrient” because many people do not receive an adequate supply in their food. Sufficient daily K consumption is essential for heart and bone health, and it also plays an important role in reducing the risk of stroke and heart diseases. Since K is not stored in the body, it must be regularly replaced by eating K-rich foods.

► Potassium and Crop Quality

Adequate K is essential for achieving both crop yield and quality. Potassium is primarily known for its role

in plant water relations, photosynthesis, assimilate transport and enzyme activation, all of which impact crop productivity. Among plant mineral nutrients, K stands out as having the strongest influence on quality attributes that determine fruit marketability, consumer preference, and the concentration of phytonutrients.

► Global Potassium Resources

Potassium mineral deposits are widely distributed around the world, with estimated global resources of about 250 billion tons. The production of K fertilizers is expected to increase with the on-going development of new mines in locations such as Africa, Russia, England, and Canada.

► Improving Pest Resistance with Potassium

Maintaining an adequate K supply is essential for boosting a plants ability to defend against a variety of stresses, including drought, disease, insects, temperature extremes, and waterlogging. A K-deficient plant has a variety of metabolic changes that make it less capable of dealing with adverse conditions.

Please visit <http://KFrontiers.org> to obtain all program and registration details, and to sign up for all pre- and post-conference updates.

Frontiers of Potassium Conference Speakers (Selected list)

Marta Alfaro, Instituto de Investigaciones Agropecuarias (INIA), Chile.

Michael Bell, University of Queensland, Australia.

Sylvie Brouder, Purdue University, USA.

Ismail Cakmak, Sabanci University, Turkey.

Heitor Cantarella, Agronomic Institute of Campinas, Brazil.

Paul Fixen, International Plant Nutrition Institute, USA.

David Franzen, North Dakota State University, USA.

Keith Goulding, Rothamsted Research, UK.

Philippe Hinsinger, UMR Eco&Soils, INRA-Montpellier SupAgro, France.

John Kovar, USDAARS, USA.

Kaushik Majumdar, International Plant Nutrition Institute, India.

Robert Mikkelsen, International Plant Nutrition Institute, USA.

Scott Murrell, International Plant Nutrition Institute, USA.

Steven Oosthuysen, HortResearch SA, SQM, South Africa.

Mike Rahm, The Mosaic Company, USA.

Michel Ransom, Kansas State University, USA.

Zed Rengel, The University of Western Australia, Australia.

Vinod Kumar Singh, Indian Agricultural Research Institute, India.

Michael Stone, Purdue University, USA.

Jeff Volenec, Purdue University, USA.

Connie Weaver, Purdue University, USA.

Philip White, James Hutton Institute, Scotland.



INTERNATIONAL
PLANT NUTRITION
INSTITUTE

3500 Parkway Lane, Suite 550, Peachtree Corners, GA 30092-2844 U.S.
Phone: 770-447-0335 | Fax: 770-448-0439 | www.ipni.net