



IPNI PROGRAM REVIEW

Potassium

Key Issues & Needs

A major responsibility of the Potassium (K) Program Director is to cooperate with government, university, NGO, and industry scientists to develop and implement evidence-based, sustainable, K fertilizer management approaches.

Within IPNI, the K Program Director works to seek synergies and appropriate coordination among activities of IPNI Regional Directors that pertain to K nutrition of crops.

Priority topics include:

- **Contributing** expertise and advice toward K balance measurements and soil fertility assessments
- **Improving** the effectiveness of K fertilizer recommendations
- **Facilitating** development of evidence showing the influence of K on improving the efficiency of water, land, and other nutrients
- **Helping** define the role of K fertility in soil health
- **Working** with IPNI scientists to develop educational materials that explain the appropriate science to those making K use decisions

TACTICAL PLAN highlights & priorities



4R Stewardship

Form, rate, time, and place are concepts that have resonated with scientists, policy makers, and farmers. The Potassium Program will continue to work with these concepts in the future to build on the successes the industry has had promoting them.

Nutrient Education

The 2017 Frontiers of Potassium Science Conference provided a wealth of information upon which further educational materials have been and are continuing to be developed, including webinars and other web content, conference presentations, proceedings papers, journal articles, and a book.

Improved Fertilizer Recommendations

The K Program will be actively seeking new approaches and technologies to improve the effectiveness of K fertilizer recommendations.

Closing Yield Gaps

The K Program will be assessing how much of the crop yield gap can be closed by better management of K in global cropping systems.

Enhancing Sustainability

Sustainable K management requires the replacement of K removed by crop harvest. Nutrient balance assessments such as NuGIS, initially developed for the U.S. but being adopted by other countries, will be an essential part of the Program for assessing the sustainability of K use.



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examples of IMPLEMENTING THE TACTICAL GOALS



K Frontiers Scientists

From left to right: Huo-yan Wang, Philip White, Michael Thompson, Ciro Rosolem, Sylvie Brouder, Michel Ransom, John Kovar, Jeff Volenec, Antonio Mallarino, Scott Murrell, Philippe Hinsinger, Keith Goulding, Paul Fixen, Mike Bell

Significant Partnerships:

The relationships forged by IPNI regional Directors and Deputy Directors have empowered the K Program Director to partner with top scientists from around the globe. These partnerships have been and will continue to be key to improving K recommendations in the future.

Educational Activities:

The K Program Director is working with the IPNI Vice President of Communications and other IPNI staff to edit and publish a book based on the content in the Frontiers of Potassium Science Conference. In addition, presentations from the conference and interviews with top scientists have been posted online. These materials provide important information that is being regionalized to different cropping systems, soils, and environments.

Engagement in Industry:

The K Program is being strategically built using the networks each IPNI scientist has developed in his or her regions. The *Global Maize Project* is one such network and important findings from sites around the world were summarized in a special issue of *Better Crops* this past year.

Changes in Nutrient Practices:

Concepts highlighted at the *Frontiers of Potassium Conference* are already starting to see implementation. An example is new K soil test interpretations for maize in North Dakota, USA that consider differences in soil mineralogy, which have made recommendations more accurate.

Leadership in Plant Nutrition Issues:

IPNI Regional Directors and Deputy Directors are working with the the Potassium Program Director to apply new concepts to regional conditions. The IPNI South Asia program held a special conference on potassium modeled after the Frontiers of Potassium Conference in Rome. Leaders in India, including government officials, discussed how to improve potassium crop nutrition in India.



EXAMPLES OF IPNI IMPACT

Building Awareness of the Need for Change

Potassium crop nutrition has been oversimplified. New evidence as well as older, rediscovered evidence is revealing that our fundamental understanding of how crops and soils interact has been much too simplistic and has likely led to inaccurate K recommendations and soil fertility assessments. Building on the information from the Frontiers of Potassium Conference in Rome, the IPNI South Asia Program held the regional K conference, "Advances in Potassium Research for Efficient Soil & Crop Management." Improvements in K fertilizer recommendations were needed in several areas:

- adjusting K recommendations to address conditions of moisture stress

- improving rates of K recommended for plantation and horticultural crops
- rectifying the negative K balance resulting from inadequate use of K fertilizer
- looking at the efficacy of in-country sources of K fertilizer
- how to use K to reduce the incidence and or severity of crop pests and diseases.

Although this list was developed for India, many of these needs cross political borders and are global.

Inaugural address for delegates of the International Conference on Advances in Potassium Research for Efficient Soil and Crop Management held at New Delhi, August, 2017.



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