Potassium Fellowship Program Request for Proposals Revised 3/11/2013

Over 50% of the world's food supply exists today because of the use of commercial fertilizers. By 2050, global demand for food is expected to increase by 70 to 100% and it is highly likely that its production will be even more dependent on fertilizers than it is today. The three nutrients most frequently limiting to crop production globally are nitrogen (N), phosphorus (P), and potassium (K). It is critically important that the science of how these nutrients can efficiently and effectively contribute to productivity in rapidly evolving cropping systems be advanced to meet the increased demand for agricultural products. Due to environmental aspects, significant research funding if often available on N, however, funding for production oriented P and K research is more difficult to acquire. Nutrient stewardship based on the 4Rs, application of the right nutrient source at the right rate, time and place, requires a balanced approach addressing the full complement of needed nutrients in systems focused on meeting economic, environmental and social goals. Therefore, P and K must be efficiently and effectively managed if N performance is to be optimized. Leading fertilizer manufactures have established the Phosphorus and Potassium Graduate Fellowship programs to help fill the need for additional P and K research. This request for proposals is part of the Potassium Fellowship Program.

Goals of the Potassium Fellowship Program

The program is a long-term commitment by the fertilizer industry to:

1) Establish research programs that will attract top students and additional funding for production oriented aspects of K research
2) Build human resources needed by the industry that are strong scientifically, knowledgeable about K as a plant nutrient, and understand how farms and the fertilizer industry function
3) Advance the science of K use in agriculture.

Funding and Donors

Individual fellowships are for a maximum of $70,000 per year for a maximum of four years. Fellowships cover the tuition, fees and stipend for the institution plus expenses associated with the research project proposed in response to the Fellowship Program RFP. Payment of indirect costs by the Potassium Fellowship Program cannot exceed 10% of the total amount. The fellowship program is supported by voluntary contributions from K fertilizer manufactures servicing the needs of the North American Corn Belt and Great Plains. Program donors are: **Agrium Inc., Intrepid Potash Inc., Mosaic Company, PotashCorp, and Simplot**.

Eligibility

Fellowships are awarded to individuals in the early stages of their graduate study or about to enter a graduate program in sciences relevant to plant nutrition and management of crop nutrients. Typical applicants would be seniors in a B.S. program who want to start a Ph.D. program, Master of Science candidates in their final year who want to pursue a Ph.D., or First year Ph.D. students. Eligible institutions must be degree granting and generally located within the Corn Belt or Great Plains of the U.S. or Canada. Exceptional applications from outside these regions will be considered.

Requirements of recipients and major professor:

- Completion of the proposed research and graduate degree by the Fellow
- Submission of annual progress reports and presentations at annual program review meetings
- Publication submitted for peer-review
- Article for the popular press (Better Crops or similar)
- Presentation at a national and a regional professional meeting
- One or more visits to donor facilities, events or job shadowing

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Research Topics Requested

Applicants are encouraged to submit creative research proposals addressing knowledge gaps or needed synthesis of existing knowledge that are important to the contribution of K in 4R Nutrient Stewardship. Proposals involving more than one institution are encouraged. The following are examples of potential topics provided to aid in understanding the kinds of proposals being requested and to stimulate thinking. These should not be perceived as limits to the topics being considered.

- New K soil testing methodology or calibration addressing changes in critical levels
- K nutrition of new genetic material, rhizosphere and root morphology implications for nutrient management of new corn hybrids
- Late season K uptake patterns with attention to what happens after physiological maturity in relation to environmental conditions and implications for biomass harvest
- Application of synchrotron radiation-based methods to investigations of K in soils, K sources, and implications to K management or soil testing
- Interactions of K with other nutrients in high yield systems, use in fertilizer recommendations, and impact on N efficiency and losses
- K management in high yield soybean systems with an emphasis on timing and placement of complete nutrient fertilization through the crop rotation

Application Requirements

Applicants should submit the following:

- The research proposal in response to this RFP. A suggested outline:
    - Title: Should be carefully worded to convey project focus but not exceed 15 words.
    - Location: Lead institution and location.
    - Personnel: Student, major professor, other cooperators if any; contact information.
    - Justification: A statement of justification should outline why the work is needed and how it might benefit agriculture. Briefly identify related research being conducted or recently completed. Discuss regional and/or national agronomic and economic implications.
    - Objectives: Briefly describe the project concluding with specific objectives.
    - Methods: Thoroughly outline the design of experiments including: treatments, reps, plot size if relevant, parameters to be measured, and proposed statistical analysis. Include site information, i.e. soil characteristics, climatic conditions to be monitored, planned soil analysis, cultural practices that will be employed, length of study, etc.
    - Budget: The total funding requested cannot exceed $70,000 per year as described on page one. If research costs are in excess of those allowed, the source of additional funding should be indicated.
- Electronic copy of transcripts of all college work, including cumulative and final grade average records (GPA or percentile).
- Brief description of any honors or awards received, employment, career goals, and other activities.
- Electronic copy of three letters of support, one of which should be from the major professor. Letters must be signed and written on official letterhead, and must include the phone number and e-mail address of the letter writer.

Applications are due **April 1, 2013;** Awards will be announced and funding available by June 1, 2013.
Applications should be emailed to:

Ms. Phyllis Pates, International Plant Nutrition Institute
2301 Research Park Way, Suite 126
Brookings, SD 57006 **ppates@ipni.net** 605-692-6280

For details online see http://info.ipni.net/KFELLOW