

# Phosphorus 2014

## PHOSPHORE 2014 - Organisation of the 5th International Symposium on Phosphorus Dynamics in the Soil-Plant Continuum (ISP5) and the 4th Sustainable Phosphorus Summit (SPS4)

### ABSTRACT

**Keywords :** Developing the plant of the future, Quality

**Year :** 2012

**Project number :** 1202-019

**Type of funding :** AAP OS

**Project type :** AAP

**Research units in the network :** BPMP CEE-M LBE

**Start date :** 2013-07-01

**End date :** 2014-10-31

**Flagship project :** no

**Project leader :** Philippe Hinsinger

**Project leader's institution :** INRA-INRAE

**Project leader's RU :** ECO&SOLS

**Budget allocated :** 57616 €

**Total budget allocated ( including co-financing ) :** 57616 €

**Funding :** Labex

### GOAL

Phosphorus is a major concern and challenge for science, given the constraints of its low availability, especially in Mediterranean and tropical soils, and because of the risks associated to its negative impacts on the environment and because of the non renewable nature of the resource of phosphate rocks at the global scale. The objective was to organize two international conferences subsequently in Montpellier in order to cover these major questions: PSP5 (<http://psp5-2014.cirad.fr>), the 5th of a series of international symposia entitled so far "Phosphorus Dynamics in the Soil-Plant Continuum" and initiated at Beijing (China) in 2000, was thereby happening for the first time in Europe, with the following name "Phosphorus in Soils and Plants", and with the following central theme: "Facing Phosphorus Scarcity"). SPS 2014, the 4th Sustainable Phosphorus Summit (<http://psp5-2014.cirad.fr>), a series initiated in 2010, by Dana Cordell (University of Sydney), involving the GPRI (Global Phosphorus Research Initiative), which managed to raise the awareness of the global scientific community and that of our societies about the global challenges related to phosphorus (see the Blueprint finalized during the last Summit in 2012 at Sydney: Blueprint for Global Phosphorus Security). Finally, another major objective was to organize a Young Scientist Workshop, Séminaire Jeunes Chercheurs (Young Scientist Workshop) with the purpose to gather about forty young scientists from developing, emerging and developed countries, in order to prepare together an oral presentation on the major challenges and bottlenecks in research on phosphorus, this talk being presented at SPS 2014

### ACTION

The PHOSPHORUS Week 2014 was made of three international events: PSP5 occurred from 26th to 29th August 2014, and gathered 276 participants from about forty countries. SPS 2014 occurred from 1st to

3rd September 2014, and gathered 208 participants coming from 40 different countries. Finally, YSW, the Young Scientist Workshop, took place in between, on 31st August 2014, and involved 42 young scientists, half from developing or emerging countries and the other half from developed countries. These two international conferences, through their format made of plenary sessions, stimulated exchanges among scientist originating from largely different disciplines : agronomy, agroecology, soil biogeochemistry, plant systems biology, ecology, microbial ecology, economical sciences for PSP5, but also other sectors of political and social sciences, environmental sciences and process engineering in the case of SPS 2014, thereby covering all the dimensions of the cycle and uses of phosphorus, beyond the case of the agricultural sector. These events also involved different types of stakeholders, in the political and economical sectors, in agri-business, biotechnologies, waste water treatment technologies, etc... The Young Scientist Workshop made it possible, thanks to the input of Yorck Van Korff as mentor, and of a selection of keynote speakers and members of the organizing committees, to develop an efficient group dynamics, which thereby managed to elaborate a talk that was much appreciated by the audience of SPS 2014.

## RESULTS

The inefficacy of use of phosphorus (P) in agroecosystems, and all along the P cycle (from the mine to the consumers' plates), is a major issue for which the agriculture / environment and nature / societies interactions are especially at stake. Given the finite dimension of phosphate rock reserves, and the difficulty of access to P fertilizers for the poor farmers of developing countries, while the agricultures in developed and emerging countries like China keep on wasting P, new solutions must be found at various levels: □in the field of plant genetics, in order to improve P acquisition and utilization in plants and crops; □in the field of cropping and production systems, in order to implement ecological intensification strategies and minimizing the waste of P and its losses through erosion; in the field of P recycling strategies, through the optimization of the techniques for P recovery from wastes and in order to minimize losses at the very end of the P utilisation chain;□in the area of societies, the geopolitical tensions that characterize the global phosphate rock reserves need to be better studied and handled, as well as the issues related to our food systems and their dynamics. A global governance of P resources is definitely needed, requiring in the first place further communication and education of the public, in order to raise public awareness and responsibilities of individuals to deal with this P issues. This is starting to happen in Europe, through the activities of the 'European Sustainable Phosphorus Platform'.

## PERSPECTIVES

Special issues of the refereed journals Plant and Soil, Nutrient Cycling in Agroecosystems and a Research Topic of Frontiers in Nutrition and Environmental Sustainability are under preparation. PSP6 will be hosted by Erik Smolders and Roel Merckx at KUL, Leuven (Belgium) in 2018, while the 5th SPS will be hosted by FuSuo Zhang at CAU, Beijing (China) in 2016, with the additional objective to associate the GPNM, Global Partnership for Nutrient Management.