



## **Sustainable Phosphorus Management for Future Food Security**

### **An Interdisciplinary Workshop**

organized by Caroline Gutjahr and Christian Folberth

**THURSDAY, 9 June**

#### **Session 1: *Opening Session***

9:30 – 10:15 Caroline Gutjahr, Christian Folberth  
*Welcome address and thematic introduction*

10:15 – 11:00 Emanuel Frossard (ETH Zürich, Switzerland)  
*Phosphate in agro-ecosystems*

11:00 – 11:30 Coffee break

#### **Session 2: *Mechanisms of phosphate acquisition and starvation resistance in plants***

11:30 – 12:15 Laurent Nussaume (CEA-CNRS-Université Aix Marseille, France)  
*Mechanisms of Pi uptake in *Arabidopsis thaliana**

12:15 – 13:00 Matthias Wissuwa (JIRCAS, Tsukuba, Japan)  
*Improving phosphorus efficiency in rice: A breeding strategy targeting complementary efficiency mechanisms*

13:00 – 14:00 Lunch break

#### **Session 3: *Role of microbes in phosphate availability***

14:00 – 14:45 Iver Jakobsen (University of Copenhagen, Denmark)  
*The role of mycorrhizas in sustainable phosphorus management*

14:45 – 15:30 Marie Spohn (University of Bayreuth, Germany)  
*Microbial phosphorus mobilization in soil*

15:30 – 16:00 Coffee break

#### **Session 4: Management options for optimizing phosphate use in agriculture**

- 16:00 – 16:45 Klaus Wimmers (Leibniz Institute for Farm Animal Biology, Germany)  
*Opportunities to improve phosphorus efficiency of monogastrics*
- 16:45 – 17:30 Rastislav Skalský (IIASA, Laxenburg, Austria)  
*Modelling the response of crop systems to imbalanced N:P fertilization with Global Gridded Crop Models*
- 17:30 – 18:00 Break

#### **Evening lecture**

- 18:00 – 19:00 Roland Scholz (Danube University Krems, Austria and IGB, Germany)  
*Why do we face so many fallacies, biases, and dilemmas in (sustainable) phosphorus management?*
- 19:30 Conference Dinner (speakers and organizers)

#### **FRIDAY, 10 June**

#### **Session 5: Agricultural phosphate fluxes to environment and society**

- 9:30 – 10:15 Phil Haygarth (University of Lancaster, UK)  
*Understanding and managing fluxes of phosphorus from agricultural soil to freshwater*
- 10:15 – 11:00 Christian Folberth (LMU Munich, Germany)  
*Global flows of phosphorus from the field to human consumption*
- 11:00 – 11:30 Coffee break

#### **Session 6: Legal and ethical aspects of phosphate governance and human nutrition**

- 11:30 – 12:15 Felix Ekardt (University of Rostock, Germany)  
*Phosphorus Governance: Integrated solutions for various environmental problems*
- 12:15 – 13:00 Shauna Downs (Columbia University, USA)  
*Sustainable Diets: what are they and will they deliver for food security?*
- 13:00 – 14:00 Lunch break

#### **Session 7: Managing phosphorus sustainably on a European scale**

- 14:00 – 14:45 Kimo van Dijk (University of Wageningen, The Netherlands)  
*Past, present and future phosphorus use and management in Europe*
- 14:45 – 15:30 Final discussion