



Sustainable Phosphorus Management for Future Food Security
An Interdisciplinary Workshop

organized by Caroline Gutjahr and Christian Folberth

THURSDAY, 9 June

Session 1: *Opening Session* (Chair: Christian Folberth)

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*
(Chair: Caroline Gutjahr)

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* (Chair: Peter Muth)

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

14:45 – 15:30 Christian Folberth (LMU Munich, Germany)
Global flows of phosphorus from the field to human consumption

15:30 – 16:00 Coffee break

Session 4: *Management options for optimizing phosphate use in agriculture*
(Chair: Sabine von Tucher)

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 Reception

Evening lecture (Chair: Caroline Gutjahr)

18:15 – 19:30 Roland Scholz (Danube University Krems, Austria and IGB, Germany)
Why do we face so many fallacies, biases, and dilemmas in (sustainable) phosphorus management?

20:00 Conference Dinner (speakers and organizers)

FRIDAY, 10 June

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

(Chair: Michael Jedelhauser)

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 Bernhard Geissler (Danube University Krems)
Developments and Efficiency Considerations in Phosphate Rock Mining

11:00 – 11:30 Coffee break

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

(Chair: Henrike Rau)

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*

(Chair: Christian Folberth)

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