

# ***REPORT***

**MEETING of COST 869**

**Mitigation options for nutrient reduction  
in surface water and groundwaters**

**29 Sept. - 1 Oct. 2010**

*Location: University of Seville - Seville, Spain*

***Working Group 1 - Topic of the meeting:***

**Phosphorus mobilization and modeling at the field and catchment scales -  
dealing with uncertainty across the transfer continuum**

**Combined with:**

**6th International Phosphorus Workshop (IPW6)**

**27 Sept. - 1 Oct. 2010**

***Local organizer***

**Antonio Delgado**

***Co-organizers***

**Phil Haygarth, Iggy Litaor & Wim Chardon**

***Report edited by Wim Chardon***

## AGENDA

### Program of the 6th International Phosphorus Workshop and the Workshop of WG1 of COST 869. Seville, Spain, 26 September - 1 October 2010

The meeting was organized with sessions on the following topics :	<b>oral / posters</b>
- General keynotes	4 / 0
- Global phosphorus flows	4 / 0
- Phosphorus dynamics and cycling	20 / 27
- Phosphorus in water bodies	9 / 4
- Phosphorus mobilization and modeling at the field and catchment scales (Joint Session IPW6 - COST 869)	29 / 16
- Monitoring phosphorus loss	4 / 7
- Mitigation options	13 / 2
<b>total</b>	<b>83 / 56</b>

#### General keynote presentations

- Antonio Delgado - Spain  
Introduction to keynote speakers
- John Ryan - Syria - *Keynote presentation*  
Management of phosphorus in the low-input agricultural systems of the West Asia and North Africa region
- Claude Plassard - France - *Keynote presentation*  
Phosphorus bioavailability - nothing but a rhizosphere story
- Jerry Lemunyon - USA - *Keynote presentation*  
Using a field-scale index to assess phosphorus loss from an agricultural environment

#### Session: Global phosphorus flows - oral

- Paul Withers - UK - *Keynote presentation*  
Global phosphorus fluxes and the threat to food security
- Thomas Nesme - France  
A modeling approach to estimate P flows and balance at country scale: a case study for France
- Bert Smit, Jantine van Middelkoop - The Netherlands  
Phosphorus flows in the Netherlands: options for a more sustainable use
- Marc Stutter - UK  
An inventory of UK soil phosphorus and the implications for sustainable food production

#### Session: Phosphorus dynamics and cycling - oral

- Emmanuel Frossard - Switzerland - *Keynote presentation*  
Soil organic phosphorus dynamics - pools, actors and processes
- Joakim Ahlgren - Sweden  
Identification and quantification of organic phosphorus forms in soils from fertility experiments
- Juan Antelo - Spain  
Phosphate and arsenate adsorption on iron mineral surfaces
- Jeremy Darilek, Biao Huang - China  
Effect of moisture conditions in rice paddies on phosphorus fractionation in agriculture soils of developing regions of China
- Sara De Bolle - Belgium  
Evolution of the phosphate saturation degree and its distribution with depth in acid sandy soils in Flanders
- Faruk Djodjic - Sweden  
Dynamics of easily soluble and plant available phosphorus in relation to soil phosphorus status and fertilization rate

- Ann Kristin Eriksson - Sweden  
Phosphorus in agricultural soils around the Baltic Sea - Comparisons of laboratory methods as indices for phosphorus leaching to waters
- Javier Erro - Spain  
Development and validation of new fertilizers of high bioavailability and reduced nutrient losses: 'Rhizosphere controlled fertilizers (RCF)'
- Jose Garcia-Mina - Spain  
Characterization of organo-metal-phosphate complexes. Development of new superphosphates: organic-complexed superphosphate (CSP)
- Lisa Heiberg - Denmark  
Phosphate sorption in anoxic soils - as influenced by the degree of Fe(III)oxide reduction
- Peter Leinweber - Germany  
Advances in phosphorus speciation in environmental samples by synchrotron-based X-ray Absorption Near-Edge Spectroscopy
- Daniel Leitner - Austria  
A dynamic model describing phosphate uptake of oilseed rape growing in rhizotrons
- Dwi Retno Lukiwati - Indonesia  
Production and nutrient uptake improvement of sweet corn by organic-inorganic fertilizers and AMF inoculation
- Dwi Retno Lukiwati - Indonesia  
Response of *Zea mays* to the residual effect of phosphorus fertilizers in latosolic soil
- Eva Oburger - Austria  
Effect of pH and soil P content on phosphate solubilization mechanisms by different organic acids in soil
- Malorie Renneson - Belgium  
Effect of parent materials and land use on soil phosphorus characteristics in Southern Belgium
- Gitte Rubaek - Denmark  
The Olsen soil P test - trends in time, certainty and sources of variation
- Jakob Santner - Austria  
Chemical imaging of dissolved phosphorus reveals complex P dynamics in the rhizosphere of *Brassica napus*
- Federica Tamburini - Switzerland  
Oxygen isotopes in phosphate: Can it work in the soil/plant system?
- Noura Ziadi - Canada  
Anion exchange resin membranes to assess soil P status following organic and mineral fertilizers in eastern Canada

### **Session: Phosphorus dynamics and cycling - posters**

- Barbara Cade-Menun - Canada  
Phosphorus under long-term and short-term no-till in a wheat-pea rotation with five P fertilization rates
- Julie Campbell, Phil Jordan - Ireland  
Comparative soil P changes following nutrient management planning
- Antonio Delgado - Spain  
Estimation of critical Olsen P values in reclaimed marsh soils from southwestern Spain
- Raniero Della Peruta - Switzerland  
Modeling long-term phosphorus and trace metal accumulation in Swiss agricultural soil
- Paolo Demaria, Emmanuel Frossard - Switzerland  
Soil properties and phosphorus isotopic exchangeability in agricultural temperate soils
- Ana Maria Dodocioiu, Romulus Mocanu - Romania  
The long-term evolution of phosphates from the Cambic Chernozem at Ards Caracal - Romania
- David Fanguero - Portugal  
Effect of slurry acidification on phosphorous fractionation after soil application
- Rita Ferreira, M. Roboredo - Portugal  
Evaluation of soil test methods for the estimation of plant available phosphorus in soils derived from volcanic material
- Gyorgy Füleky - Hungary  
Recovery of sorbed fertilizer phosphorus by three water extraction methods

- Michał Gasiorek - Poland  
Phosphorus status in intensively used soils in Krakow
- Camilla Giovannini, Jose M. Garcia-Mina - Italy/Spain  
Organic-complexed superphosphate (CSP) and soil biological properties
- Carmo Horta - Portugal  
Soil phosphorus evaluation: correlation between the Olsen and ammonium lactate extraction methods in Portuguese acid soils
- Carmo Horta - Portugal  
Phosphate desorption in Luvisols and Solonetz from a Mediterranean region
- Lars Jensen, Jakob Magid - Denmark  
The long-term P and K depletion trial at Taastrup, Denmark
- Camilla Lemming - Denmark  
Phosphorus fertilization of maize seedlings using side-band injected animal slurry
- Jakob Magid - Denmark  
CRUCIAL: a long-term field trial to assess waste recycling impacts on environment and production system integrity
- Paul Milham, Warwick Dougherty - Australia  
Phosphate sorption by acidic soils
- Claudio Perez - Spain  
Modeling phosphate adsorption on a Brazilian Oxisol
- Verena Pfahler - Switzerland  
Effects of plant uptake on the d-18O signature of phosphate
- Emilia Rivero - Argentina  
Spatial variability of phosphorus and its relationship with some of the chemical properties of soils in Argentina Republic
- Marta Roboredo - Portugal  
Using the anion exchange membranes to determine the phosphorus desorption of two distinct soils
- Alexander Shevtsov - Russia  
Influence of different types of nitrogen fertilizers on barley's phosphorus uptake and phosphorus content in barley's tissues
- Laetitia Six - Belgium  
Combining organic and inorganic amendments to improve maize growth and phosphorus availability in phosphorus deficient soils in Kenya
- Elke Vandamme - Belgium  
Phosphorus-efficient soybean germplasm as an entry point to soil fertility improvement in Western Kenya
- Christoff Van Moorlegem - Belgium  
Comparison of colorimetric analysis, ion chromatography, ICP and DGT for model phosphorus solutions and natural water samples
- Noura Ziadi - Canada  
Soil P status under conventional and no-tillage systems in a long-term corn-soybean rotation conducted in eastern Canada
- Noura Ziadi - Canada  
Soil P status following annual paper mill biosolids application in eastern Canada

### **Session: Phosphorus in water bodies - oral**

- Ken Irvine - Ireland - *Keynote presentation*  
Phosphorus dynamics and impact in water bodies-standing on the shoulders of giants
- Tegan Darch - UK  
Phosphorus dynamics in buffer strip soils
- Jeroen de Klein - The Netherlands  
Setting critical values for phosphorus loading in ditches and streams with an ecological model
- Petri Ekholm - Finland  
Should we focus only on P load when aiming to reduce eutrophication in a P-limited aquatic system?

- Judith Hinger, Brian Kronvang - Denmark  
Riparian buffers of small streams have larger phosphorus mobilization potentials than adjacent farmland in Eastern Denmark
- Charlotte Kjaergaard - Denmark  
Predicting phosphorus release following wetland restoration
- Brian Kronvang - Denmark  
Bank erosion as a phosphorus source in a Danish river basin
- Douglas Smith - USA  
Alternatives to tile risers for managing farmed depressions
- Eva Walpersdorf, Hans Christian B. Hansen - Denmark  
Do iron(II) phosphates control phosphate solubility in anoxic soils and sediments?

### **Session: Phosphorus in water bodies - posters**

- Barbara Cade-Menun - Canada  
Phosphorus characterization in freshwater lake sediments using <sup>31</sup>P NMR spectroscopy
- Maria Luz Iglesias - Spain  
Evaluation of phosphorus sediment remobilization in the Anllons River (NW Spain) using pH-stat kinetic leaching procedures
- Phil Jordan - Ireland  
Observations from high resolution nutrient monitoring in rivers
- Mari Raty - Finland  
Seasonal and spatial changes in easily soluble P in buffer zones under different management practices in Finland

### **Joint Session IPW6 - COST 869 WG1:**

#### **Phosphorus mobilization and modeling at the field and catchment scales - oral**

- Elisabetta Barberis - Italy - *Keynote presentation*  
Phosphorus mobilization at plot and field scale
- Wim Chardon - The Netherlands  
Introduction to COST 869
- Teresa Borda, Elisabetta Barberis - Italy  
Processes involving phosphorus accumulation and losses in undisturbed soil columns
- Barbara Cade-Menun - Canada  
Characterizing dissolved and particulate phosphorus in snowmelt runoff from cattle winter bale-grazing sites
- Faruk Djodjic - Sweden  
Modeling nitrogen and phosphorus transport in a small agricultural stream in Eastern Sweden
- Warwick Dougherty - Australia  
Prediction of runoff P concentration on diverse soils using routine soil P tests
- Bettina Eichler-Lobermann - Germany  
Effects of P fertilizing practices on soil P pools - temporal variations within a ten-year field experiment
- Peter Vadas - USA - *Keynote presentation*  
Modeling field-scale phosphorus transfer: model strengths and weaknesses, gaps in knowledge, and the role for scientists
- Csilla Farkas - Norway  
Process-based modeling of phosphorus losses from an agricultural dominated catchment in S-E Norway
- Chantal Gascuel-Odoux - France  
Inter-comparison of suspended sediment and phosphorus fluxes and concentrations on two agricultural headwater catchments
- Andreas Gericke - Germany  
Sediment delivery - Limitations of empirical models in Bavaria
- Nadia Glaesner - Denmark  
Mobilization of slurry injected phosphorus during sequential irrigation and drainage cycles compared to continuous irrigation

- Gert-Jan Noij - The Netherlands  
Ranking high P load risk fields in a lowland plain for mitigation measures
- Leszek Hejduk - Poland  
Daily fluctuation of phosphorus and nitrogen concentration based on automatic measurements
- Pia Kynkaanniemi - Sweden  
Horse paddock as a hot spot for P leaching in a small Swedish catchment
- Hanna Larsson - Sweden  
Sensitivity analysis of the modified ICECREAM model to improve parameterization for Swedish conditions
- Shijie Li, Philip Jordan - Ireland  
Phosphorus release and retention in Irish agricultural drainage ditches: a bed sediment P fractionation and EPCO study
- Annika Lindvall - Sweden  
The influence of soil and manure variables on phosphorus leaching from Swedish agricultural soils
- Iggy Litaor - Israel  
Assessment of phosphorus fertilizing practices in altered wetland soils using uncertainty analysis
- Jian Liu - Sweden  
Identification of processes controlling phosphorus leaching from a long-term field experiment using the ICECREAM model
- Yiannis Panagopoulos - Greece  
Multi-objective optimization for the allocation of cost-effective BMPs at the watershed scale
- Paul Scholefield - UK  
Spatial patterns of phosphorus in the Ribble and Wyre catchments, a source to sea approach
- Oscar Schoumans - The Netherlands  
A new methodology to estimate Phosphorus LEAching from Soils to the Environment (PLEASE)
- Christian Stamm - Switzerland  
Critical source areas - empirical evidence and consequences for implementation
- Laura Turnbull, Richard Brazier - USA/UK  
Monitoring and modeling phosphorus dynamics during runoff events over a transition from semi-arid grassland to shrubland
- Barbro Ulen - Sweden  
Phosphorus mobilisation and risk assessments in a small agricultural catchment with heavy clay soil
- Caroline van der Salm - The Netherlands  
Predicting phosphorus losses with the model PLEASE on a local and regional scale in Denmark and the Netherlands
- Mats Wallin - UK  
Uncertainty analysis of the FyrisNP model for source apportionment of phosphorus and nitrogen in catchments
- Hubert Tunney - Ireland  
Phosphorus concentration in overland flow from grassland field plots

**Joint Session IPW6 - COST 869 WG1:**

**Phosphorus mobilization and modeling at the field and catchment scales - posters**

- Daniela Dana - Romania  
Phosphorus fertilisation in Romania
- Farida Dechmi - Spain  
Adaptation of the Phosphorus Index to irrigated areas in the middle Ebro Basin. Las Filadas watershed case study (Huesca, Spain)
- Isabel Diaz, Antonio Delgado - Spain  
Spatial distribution of soil phosphorus and implications for catchment-scale predictions of losses in South Spain
- Isabel Diaz, Antonio Delgado - Spain  
Phosphorus loss and forms in overland flow from two representative catchments from southern Spain
- Dominique Gartner - Switzerland  
Regional assessment of phosphorus and trace metal accumulation in Swiss agricultural top soils due to manure application

- Maria Luz Iglesias - Spain  
Phosphorus transfer across boundaries: From basin soils to river bed sediments
- Karin Johannesson - Sweden  
Clay-bound phosphorus retention in wetlands - a catchment comparison
- Phil Jordan - Ireland  
A model to predict soil P depletion to achieve agronomic and environmental objectives
- Anders Lindsjo - Sweden  
Pedotransfer functions to estimate mineral phosphorous fractions and dynamics in Swedish agricultural soils
- Frank Schmieder - Sweden  
Modeling the effect of buffer strips on surface losses of particulate phosphorus
- Ahmed Skhiri, Farida Dechmi - Spain  
Impact of farming practices on phosphorus transport in an irrigated watershed in the middle Ebro Basin (Spain)
- Maria Soare, Daniela Dana - Romania  
The influence of nitrogen chemical sources from foliar fertilizers on P mobility in sunflower plant
- Johan Stromqvist - Sweden  
Modelling of hydrology and phosphorus losses in catchments - the importance of spatial and temporal scale
- Katie Tedd, Catherine Coxon - Ireland  
Meeting EU Water Framework Directive groundwater quality objectives: the challenge posed by phosphorus in western Irish karst aquifers
- Karin Tonderski - Sweden  
Oxygen isotopes in phosphate as a tracer for sources and pathways of catchment P in stream water
- David Wall - Ireland  
Soil phosphorus management in agricultural catchments in Ireland

#### **Session: Monitoring phosphorus loss - oral**

- Lucy Burkitt, Warwick Dougherty - Australia  
Phosphorus runoff risk from different fertilizer strategies using rainfall simulation and Bayesian modeling
- Marta Garcia Albacete - Spain  
Risk assessment of biowaste application in agriculture: runoff phosphorus loss with simulated rainfall
- Kim Mack - UK  
Monitoring phosphorus loads from headwater grassland catchments in the South West of England
- Ana Moreno Lamarca - Spain  
Influence of soil management on phosphorus losses in olive orchards at the hillslope scale

#### **Session: Monitoring phosphorus loss - posters**

- Barbara Cade-Menun - Canada  
A concurrent time and depth assessment of soil and leachate phosphorus in poultry manure-amended soil columns
- Pierre Castillon - France  
Contribution of P supply to P losses from fields
- Warwick Dougherty - Australia  
Magnitude and duration of the 'incidental' fertilizer effect is influenced by soil P buffering properties
- Daniel Fiala - Czech Republic  
Variability of phosphorus load from agricultural land in Part I: baseflow condition
- Charlotte Kjaergaard - Denmark  
Autumn tillage increases phosphorus leaching from fine textured soils
- Debbie McConnell - UK  
The effect of slurry application technique on phosphorus loss in overland flow

Kristian Persson - Sweden

Calculation of phosphorus losses from Swedish agricultural land in 1995 and 2005

**Session: Mitigation options - oral**

Rory Maguire - USA - *Keynote presentation*

Moving towards manure phosphorus mass balance in watersheds through pyrolysis to biochar

Hans Estrup Andersen - Denmark

A web-based P index as a mitigation planning tool

Patricia Chambers - Denmark

Defining phosphorus concentrations to prevent eutrophication of Canadian agricultural streams

Jessica Coad - Australia

Reducing/omitting phosphorus fertiliser inputs to reduce Australian dairy pasture soil phosphorous concentrations

Clare Deasy - UK

Evaluation of constructed wetlands as mitigation options for phosphorus and sediment within UK agriculture

Arne Joelsson - Sweden

The Aquarius approach on mitigation of phosphorus losses

Joshua M. McGrath - USA

In-situ treatment of agricultural drainage water using industrial by-products phosphorus sorbing materials

Alice Melland - Ireland

The Agricultural Catchments Programme; an environmental and socio-economic evaluation of the Nitrates Directive National Action Programme in Ireland

Wim Chardon - The Netherlands - *Keynote presentation*

Mitigation options implementation: from science to agricultural policy

Philip Moore - USA

Reducing phosphorus runoff from biosolids with water treatment residuals

Ignatius Noij - The Netherlands

Effectiveness of unfertilized buffer strips in the Netherlands: field study results

Gitte Rubaek - Denmark

Adapting agricultural practice to minimize P leaching

Martyn Silgram - UK

Reducing risks associated with autumn wheeling of winter cereals

**Session: Mitigation options - posters**

Helena Andersson - Sweden

The importance of subsoil properties for P leaching and selection of effective mitigation strategies

Romulus Mocanu - Romania

Mitigation options of soil phosphorus losses by using organic-mineral fertilizers on slope soils from Romania



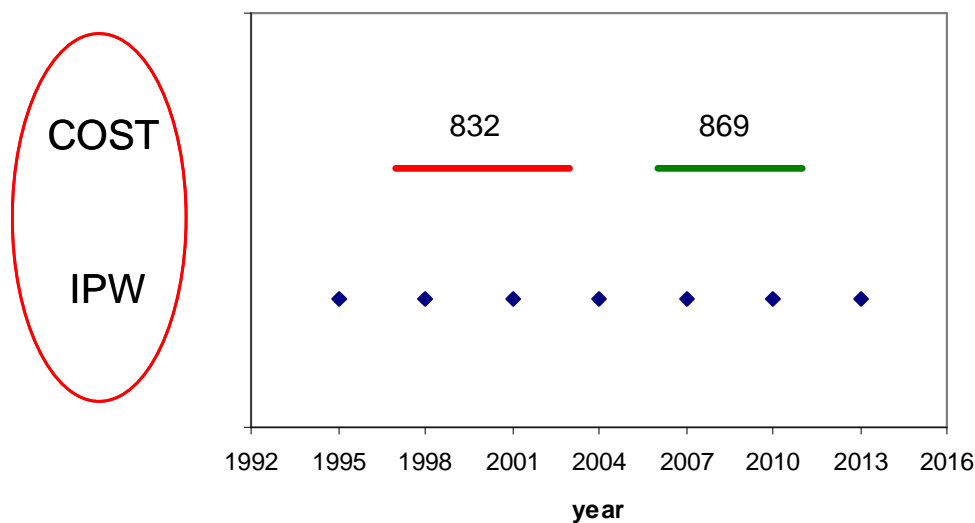
**Participants IPW6 and Workshop WG1, COST 869. Seville, Spain, 26 Sept. - 1 Oct. 2010**

Abbes Mizane	Algeria	Moshe Shenker	Israel
Emilia Teresa Rivero	Argentina	Elisabetta Barberis	Italy
Jessica Coad	Australia	Teresa Borda	Italy
Warwick Dougherty	Australia	Antonio Leone	Italy
Daniel Leitner	Austria	Fabio Recanatesi	Italy
Eva Oburger	Austria	Anne Falkøgaard	Norway
Jakob Santner	Austria	Csilla Farkas	Norway
Sara de Bolle	Belgium	Svein Skoien	Norway
Georges Hofman	Belgium	Michał Gąsiorek	Poland
Malorie Renneson	Belgium	Leszek Hejduk	Poland
Laetitia Six	Belgium	Carmo Horta	Portugal
Christoff van Moorlegem	Belgium	Marta Roboredo	Portugal
Elke Vandamme	Belgium	David Figueiro	Portugal
Barbara Cade-Menun	Canada	Daniela Dana	Romania
Patricia Chambers	Canada	Romulus Mocanu	Romania
Noura Ziadi	Canada	Maria Soare	Romania
Biao Huang	China	Tatiana Grebennikova	Russia
Daniel Fiala	Czech Rep.	Alexander Shevtsov	Russia
Hans Estrup Andersen	Denmark	Jaroslav Antal	Slovakia
Nadia Glæsner	Denmark	Juan Antelo Martínez	Spain
Line Block Hansen	Denmark	Eusebio Carmona	Spain
Hans Christian Bruun Hansen	Denmark	Farida Dechmi	Spain
Lisa Heiberg	Denmark	Antonio Delgado	Spain
Charlotte Kjærgaard	Denmark	Javier Erro	Spain
Brian Kronvang	Denmark	Marta García Albacete	Spain
Camilla Lemming	Denmark	José María García-Mina	Spain
Gry Lyngsie	Denmark	María Luz Iglesias	Spain
Jacob Magid	Denmark	Ana Moreno Lamarca	Spain
Gitte Rubæk	Denmark	Claudio Pérez	Spain
Petri Ekholm	Finland	José Manuel Quintero	Spain
Mari Rätty	Finland	Ahmed Ben Halima Skhiri	Spain
Risto Uusitalo	Finland	José Torrent	Spain
Pierre Castillon	France	Ana Villa	Spain
Chantal Gascuel-Odoux	France	Antonio Sánchez Rodríguez	Spain
Thomas Nesme	France	Cinta Cazador Ruiz	Spain (press)
Claude Plassard	France	Pablo del Campo Novales	Spain (press)
Bettina Eichler-Löbermann	Germany	João Castro Pinto	Spain (press)
Andreas Gericke	Germany	Joakim Ahlgren	Sweden
Peter Leinweber	Germany	Helena Andersson	Sweden
Yiannis Panagopoulos	Greece	Helena Aronsson	Sweden
György Füleky	Hungary	Lars Bergström	Sweden
Dwi Retno Lukiwati	Indonesia	Karin Blombäck	Sweden
Catherine Coxon	Ireland	Faruk Djodjic	Sweden
Ken Irvine	Ireland	Ann Kristin Eriksson	Sweden
Phil Jordan	Ireland	Anuschka Heeb	Sweden
Alice Melland	Ireland	Arne Joelsson	Sweden
Hubert Tunney	Ireland	Karin Johannesson	Sweden
David P. Wall	Ireland	Holger Johnsson	Sweden
Iggy Litaor	Israel	Katarina Kyllmar	Sweden

Pia Kynkäänniemi	Sweden	Richard Brazier	UK
Peter Larsson	Sweden	Tegan Darch	UK
Hanna Larsson	Sweden	Clare Deasy	UK
Anders Lindsjö	Sweden	Phil Haygarth	UK
Annika Lindvall	Sweden	Jannine Jonczyk	UK
Jian Liu	Sweden	Shijie Li	UK
Hampus Markensten	Sweden	Kim Mack	UK
Kristina Mårtensson	Sweden	John Quinton	UK
Kristian Persson	Sweden	Will Roberts	UK
Frank Schmieder	Sweden	Paul Scholefield	UK
Johan Strömqvist	Sweden	Martyn Silgram	UK
Jonas Svensson	Sweden	Marc Stutter	UK
Karin Tonderski	Sweden	Paul Withers	UK
Barbro Ulén	Sweden	Ting Zhang	UK
Mats Wallin	Sweden	Julie Campbell	UK - N. Ireland
Raniero Della Peruta	Switzerland	Debbie McConnell	UK - N. Ireland
Emmanuel Frossard	Switzerland	Frank J. Coale	USA
Dominique Gartner	Switzerland	Jerry Lemunyon	USA
Astrid Oberson	Switzerland	Rory Maguire	USA
Verena Pfahler	Switzerland	Joshua McGrath	USA
Christian Stamm	Switzerland	Philip A. Moore, Jr.	USA
Federica Tamburini	Switzerland	Douglas R. Smith	USA
John Ryan	Syria	Peter Vadas	USA
Wim Chardon	The Netherlands		
Jeroen de Klein	The Netherlands		
Gert-Jan Noij	The Netherlands		
Oscar Schoumans	The Netherlands		
Albert Smit	The Netherlands		
Caroline van der Salm	The Netherlands		
Jantine van Middelkoop	The Netherlands		

## General

Both meetings were attended in total by 149 persons (plus 3 journalists) from 31 countries. This includes 19 persons from 9 countries that are not part of COST 869: Algeria, Argentina, Australia, Canada, China, Indonesia, Russia, Syria and USA. As shown in the figure below, there is a parallel history of the series of International Phosphorus Workshops (IPW1 -- IPW6, held every 3 years within Europe since 1995) and both COST Actions on N and P loss from agriculture (832 and 869). The idea of applying for a COST action was presented during the first IPW in 1995. This application was successful, and the first meeting of COST 832 was held adjacent to IPW2. Also, IPW3, IPW4 and IPW5 were organized by two COST 869 Working Group chairs and by the MC chair; and IPW1, IPW2 and IPW6 by MC members of COST 832 or 869. Thus, the combination of COST and IPW maintains a strong (European) research network on nutrient loss from agriculture.



*Parallel history of COST Actions 832 and 869 and the series of International Phosphorus Workshops.*

It was therefore decided to organize part of IPW6 in cooperation with an MC meeting, and a workshop of Working Group 1 of COST 869. Before the meeting started a presentation about COST was given by the Action chair. The theme of the joint session was "Phosphorus mobilization and modeling at the field and catchment scales". During the session 29 oral presentations were given, and 16 poster were presented. Besides, 6 of the 10 keynote speakers of IPW6 / WG1 are active COST members, and their attendance was reimbursed from the COST 869 budget. Nevertheless, in total only 30 out of the 149 scientists attending the combined meeting could be reimbursed by COST, so the impact of the WG1 workshop was strongly enlarged by the combined organization.

During the full meeting there were 83 oral contributions in total, of which 10 invited, and 56 posters were presented. Unfortunately, due to a strike a field trip could not take place, but the social program was a good compensation.

The meeting has led to 2 STSMs, of two female PhD students from Sweden visiting a female PhD student in England.

All abstracts, and the majority of all presentations were made available via the website of COST 869.

At this moment a special issues with scientific publications is in preparation for the journal *Soil Use and Management*. The costs of the issue will be paid jointly by the organizers of IPW6 and by COST 869.