

**International PhD Course on*****Advances in Agricultural Water Productivity Assessment and  
Improvement in Irrigation Schemes*****October 03 – 09, 2009****Asian Institute of Technology, Bangkok**

Organised by

University of Copenhagen and Asian Institute of Technology,  
under the auspices and sponsorship of  
The International Research School of Water Resources (FIVA)  
and The Danish Water Forum (DWF).

**Background and Objective.**

Agriculture is the major water user in many basins, with eg., irrigated lowland rice receiving about 40% of the global irrigation water equivalent to 25% of total freshwater withdrawals. Improved management of water resources in agricultural operations is therefore a basic requirement for coping with water scarcity at basin, community and farm levels. Over the past 50 years, the productivity of water used in agriculture has more than doubled, mainly as a result of increasing crop yields. However, agriculture is now under pressure to increase food production under increasing competition for water from other users (urban and industry, environment), necessitating that the water productivity be improved under increasingly limited water supplies (“more crop at less drops”). Irrigation modernisation programmes need to address this issue and identify and implement appropriate technical solutions and operational practices. The challenge calls for capacity building to promote an approach integrating agronomic, water engineering and institutional measures at various scales of the water use system and socio-political hierarchy, within the context of an overall enabling political and institutional framework.

The **objective** of the course is to introduce PhD-students, engaged in research related to agricultural land and water resources management, to recent advances in water productivity assessments, water saving irrigation practices and tools for irrigation system performance assessment and improvements. The emphasis is on wetland rice based systems and on the MASSCOTE methodology recently developed by the FAO for evaluating performance, diagnosing constraints and opportunities and developing a coherent modernization strategy in medium and large irrigation canal systems.



FACULTY OF LIFE SCIENCES  
UNIVERSITY OF COPENHAGEN

## The PhD course

This initiative has two integrated elements: A 5-day PhD Course followed by a 2-day Regional Workshop for irrigation scientists, practitioners and PhD students.

The **PhD Course** is an excellent opportunity for PhD students of natural and social sciences and engineering, involved in a PhD programme related to land and water resources management, to enhance their knowledge about recent advances in concepts, analytical methodologies and options for improving agricultural water productivity and irrigation management at field, scheme and catchment scales, especially in the context of rice-based irrigation schemes. Furthermore, the course will promote networking among PhD students and a wider regional perspective of the PhD programmes concerned. The course will emphasise on two interrelated sub-themes: (i) water accounting and productivity, and (ii) irrigation modernization. The case of wetland rice and wetland rice-based irrigation schemes will be covered in depth, given the importance of rice-based production systems for food security, water use and ecosystem-services in South and South-East Asia.

The course will combine theoretical lectures by international experts with case studies and field visits to irrigation schemes in the Bangkok Plain of the Chao Phraya basin known to be a closed basin. Course materials will *inter alia* be drawn from the Land and Water Development Division of the FAO and from the now nearly completed global Comprehensive Assessment of Water Management in Agriculture (CA; IWMI), which has evaluated the benefits, costs, and impacts of the past 50 years of water development, the water management challenges of today and potential solutions.

## Course Plan

| day | content   |
|-----|---|
| 0   | Arrival; registration and course intro in evening   |
| 1   | Irrigation challenges, irrigation and drainage system characteristics, water accounting and productivity, and performance assessment and improvement plans; MASSCOTE and RAP. |
| 2   | Rice water management and water productivity; water balances, response to water deficits and water saving irrigation strategies.<br>Introduction to field trip                |
| 3   | Field Trip, irrigation scheme in Chao Phraya basin  |
| 4   | Follow-up on field trip: group work on RAP indicators and MASSCOTE; Service oriented management of irrigation systems   |
| 5   | Policy and governance issues<br>Finalization of group work, presentations and synthesis; closing of course  |
| 6   | 1 <sup>st</sup> day of the Regional Workshop on Water Saving Irrigation Practices at Field, Scheme and Basin levels   |
| 7   | 2 <sup>nd</sup> day of workshop   |
| 8   | Departure   |

The PhD-course will include participation in a 2-day **Regional Workshop** for irrigation scientists and practitioners on *Water Saving Irrigation Practices at Field, Scheme and Basin levels*. The workshop will review experiences and explore the issues, opportunities and constraints with the objective of identifying knowledge gaps and fostering international collaboration on research, education and development among the workshop participants. The main target is rice-based irrigation schemes, linking surface water and groundwater and integrating institutional, agronomic and engineering issues across scales to identify and operationalise improved practices. The invited workshop participants - in addition to the PhD students and course instructors - are anticipated to come from the S- and SE-Asia Region, AIT and from relevant Danish research environments.

### **Organizers**

Dr Jens Raunsø Jensen ([jrj@life.ku.dk](mailto:jrj@life.ku.dk)) and Dr Mukand S. Babel ([msbabel@ait.ac.th](mailto:msbabel@ait.ac.th)).

### **Key lecturers**

Mr Thierry Facon (FAO), Dr T P Tuong (IRRI), and other experts being identified.

### **Participants**

Students applying should have a background in natural or social sciences or engineering and work on a land and water management related topic in their PhD research.

### **Credit points**

The 125 hours of total workload of the course, comprising of preparatory reading and activities during the course, corresponds to 5 ECTS. A course diploma will be issued upon satisfactory completion of the course.

### **Materials**

Notes and copies of reference materials will be provided before and during the course.

### **Registration and admission**

Application and Registration on FIVA's website: [www.fiva.dk](http://www.fiva.dk)

**Deadline:** 16<sup>th</sup> August 2009. PhD-students are given first priority but relevant post-graduates and professionals may be considered too, subject to course limitations and on a self-paying basis. When applying, students are requested to provide a brief description of their research and a letter of recommendation from their research supervisor.

### **Course fee**

The course is free for PhD students, with all the local expenses including transport, accommodation at AIT Centre, per diem, materials and tuition covered by FIVA and DWF.

### **Travel costs**

Students affiliated with FIVA (and therefore enrolled in a Danish University) are requested to cover the international travel expenses from own funding. There is a limited number of scholarships available for regional PhD-students to cover their full cost of participation.

### **Further information**

Please contact the course organizers or the Course Secretary Mr Aldrin Rivas ([rivas@ait.ac.th](mailto:rivas@ait.ac.th) , phone 02-524-6599 or 085-211-7500).