ICID News 2010/2
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Managing water for sustainable agriculture
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Message from the President

Dear Friends,

I write to you having just recently returned from a very informative and highly positive visit to China courtesy of the Chinese National Committee (CNCID). I was accompanied by Vice President Hon. Karim Shiati, Chair of the Asian Regional Working Group, and our visit was facilitated by Vice President Hon. Gao Zhanyi. The Minister of Water Resources, The Director and staff of the Institute of Water Resources and Hydropower Research, and the President and members of CNCID were most hospitable and ensured that our visit was fruitful. In addition to formal meetings and presentations in Beijing, we had the opportunity to visit the Shijin Irrigation District in Hebei province, as well as the 2010 World Expo in Shanghai.

President with Minister of Water Resources, China

Minister of Water Resources Chen Li welcomed us and gave a formal presentation on the priorities of the Ministry. He emphasized that China places enormous importance on irrigation and drainage throughout the country and to the reform of the sector, through the introduction of new water savings technologies, implementation of rehabilitation and maintenance projects, introduction of water laws, empowerment of water users associations and formation water districts, and training of water managers and technicians. From our field visit to the Shijin Irrigation District, it is very clear that China is making significant financial investments in irrigation and drinking water supply in its rural areas. As Minister Chen Li remarked: *China feeds 21% of the world's population with 9% of the world's land area and 6% of the world's water resources*. No mean feat at all.

China's leadership in irrigation and water management for food security is exemplary, and gave me an opportunity to bring the Minister up to date on ICID's recent contributions to water for food security. The Minister reiterated China's support for ICID. He stressed the important role of ICID in light of the global challenges in food security, water scarcity, environmental management, and access to water by rural communities. The Minister went further by indicating that China will support a reincarnation of IPTRID, and will take the lead by providing the space and resources for an IPTRID research and training center in Beijing. As a first step in the process, CNCID and ICID will jointly host a one week international workshop and study tour on advanced technologies for water savings in Beijing in May 2011. More details will be forthcoming on the ICID website once the dates are confirmed.

I am very pleased to have China's help to shape a new ICID led IPTRID, because together with the support of Iran and other National Committees, we will have a more client driven organization working collectively to solve the problems of our ICID member countries. I hope that a few other National Committees will come on board by the time of our upcoming IEC in Yogyakarta.

I also had the pleasure to visit Spain and India a few months ago and to meet with members of the ICID family in both countries. Vice President Hon. Ortiz was particularly helpful during my visit to Spain to deliver a keynote address at an international symposium in Murcia. More details of my talk can be found in this newsletter. The issues of water scarcity and aridity loomed large on the minds of all in both countries. India's work on community water harvesting and Spain's use of advanced water savings technologies, high tech water monitoring systems, widespread drip irrigation and plasticulture are leading edge. Our National Committees can benefit from the experiences of both countries.

It is evident that ICID has an excellent reputation in its member countries, and Governments are looking to ICID for leadership in water management for food security, and in shaping the debate on reinvestment in irrigation and drainage. I urge you to help us continue building ICID as a powerful and respected global think tank which leaders will turn to for advice and support.

Yours truly,

Chandra A. Madramootoo
President

International Commission on Irrigation and Drainage (ICID) was established in 1950 as a scientific, technical and voluntary not-for-profit non-governmental international organization. The ICID News is published quarterly by ICID Central Office, New Delhi, India.

IN THIS ISSUE

Managing the Soil Water Environment to Meet Growing Food Demands

President Chandra Madramootoo was invited to deliver a Keynote Speech at the 3rd International Symposium on 'Soil Water Measurement using Capacitance, Impedance and Time Domain Transmission' held at Murcia, Spain in April, 2010. President touched upon the key issues in doubling the global food production in coming 25 years and the role of new technologies in increasing irrigation efficiencies. He took stock of the sate-of-the-art of the traditional and modern methods of soil moisture monitoring and research challenges in managing soil moisture from point to complex heterogeneous system. An excerpt:

The present world food shortage affects over one billion people. The need to provide food for undernourished and further increase in population will require doubling food production in the next 25 years. Globally, some 71% of the world's fresh water resources are diverted to agriculture, which are considered to be too much by the public opinion. Some countries like Egypt uses even about 88% of Nile's water flows, others in the Aral Sea basin use 99% of Amu Darya and Syr Darya river waters.

To reach self sufficiency in food production agriculture water scarcity in a scarce water environment is posing difficulty. Research to find and develop, more efficient, water conserving and less energy consuming irrigation methods, wherever possible, should be continued. Given the competition for water, the challenge in the future will be to increase irrigation efficiency and reduce water use in irrigated agriculture.

But even under strict water saving policies, surface, ground and other non-conventional water resources are frequently not enough to match the irrigation needs and irrigation managers need to consider the water stored in the soil as another additional source in managing an irrigation scheme. Towards this objective, since long, researchers have studied the water stored in the soil root zone and have developed tools to measure the soil moisture using improved technology. From the simple field sampling and oven drying, to tensiometers, neutron probes and other traditional techniques to the modern use of capacitance and impedance probes or time domain transmission techniques one is able to give an accurate data.

Notwithstanding the prevalence of these tools and technology in collection of soil moisture data, its use in practical irrigation scheduling has not become widespread. Calibration of sensors, deciding the best sites to install sensors to get crucial information and the best measures to manage water scarcity are still some of the challenges to the scientific community.

For the proceedings of the 3rd Symposium, please contact Dr. Ioan Calton Paltineaunu, President, PALTIN International Inc., USA, E-mail: ioan@paltin.com

Integrated Approach to Real Time Monitoring of Water Quantity and Quality

Real-time soil water profile into the root zone of crops measurement still remains the least known parameter into the integral water balance calculations at local, regional, continental and global scales, with direct implications on judicious use of water and soil resources for adequate and efficient food and fiber production, as well as for responsible environmental protection measures. Current model simulation (rainfall, ET, run-off, etc.) derived soil water reserves show a general picture, which must be verified and correlated to the real-time soil water profile measurement in order to offer accurate data for local agricultural management decisions. The same is true for the current and future remote sensing technologies of soil water profile measurement at different space/time scales.

Increased challenges for good quality water resources use are forcing irrigated agricultural production as well as landscape irrigation to use alternative low quality water sources (reclaimed water, etc.) with direct implications on soils, crops, atmosphere, surface and ground water resources protection. A new integrated approach of real-time monitoring of water quantity and quality (EC, pH, DO and temperature) from the irrigation source, to soil water profile, bellow root zone leaching, ground water wells and runoff to surface water resources is imperative.

Due to the new developments in research and technology as well as future opportunities in developing multi-parameter sensors (soil water, temperature and conductivity), a reevaluation of the real-time capacitance, impedance and TDT based sensors frequency variation with soil water, soil temperature and soil electrical conductivity, at the same location of measurement, is necessary.

Increased public and independent research and technology efforts to standardize the laboratory calibration methods and techniques of dielectric constant based soil moisture sensors, along with manufacturers bench testing and authorized soil moisture sensors testing organizations, as well as individual efforts for detailed field calibration methods under different types of soils, are welcome.

(Source: http://www.soil-water.net)

Sustainable Development of Tidal Areas: South Korea Sets an Example

The Saemangeum Seawall, located on the southwest coast of the Korean peninsula, is the world's longest man-made dyke measuring 33 kilometers. The Korean President Lee Myung Bak officially opened the Seawall for public on 27 April 2010. The project will create a large area of farm land and a fresh water reservoir. The ceremony was attended by high profile officials, politicians, and delegates from the countries around the world. Secretary General M. Gopalakrishnan was invited by the Korean National Committee (KCID) to participate in the ceremony. A brief:

Korean President Lee Myung Bak at the completion ceremony of Saemangeum Seawall

The Republic of Korea's Ministry for Food, Agriculture, Forestry and Fisheries (MIFAFF) had an impressive ceremony to mark the opening of the Saemangeum Seawall on 27 April 2010. The mega project holds great significance as a breakthrough in South Korea's construction technology. It runs between two headlands, and separates the Yellow Sea and the former Saemangeum estuary. Along with 2.37 million workers per year, a total of 2.9 trillion won (US$ 2.6 billion) was injected into the construction of the world's longest seawall. With the construction of the seawall, the transport distance between Gunsan and Buan will be reduced more than 50 kilometers, thus shortening travel time by nearly one hour to 30 minutes.

The interior area of Saemangeum Seawall will be the focus in the coming decades. Plans are on the anvil for multifunctional land use and necessary construction is being launched. According to the finalized comprehensive action plan for Saemangeum, announced in January, the interior area of 28,300 hectares (two-thirds the size of Seoul) will be divided into eight sites, including industrial, tourism, leisure and international business. The Saemangeum provides eco-friendly and hi-tech land for agriculture, industry and tourism. The arable land will be used for the production of high quality grain, hi-tech garden products, floriculture, and agriculture that will create a high-technology production base for crop exports. The Korea Rural Community Corporation (KRC), which hosts the KCID, will undertake refurbishing of agricultural infrastructure such as farm land re-plotting and irrigation development by developing reclaimed land into useful farm land. The KRC will also support establishment of large scale agricultural and fishery companies.

The striking economic impacts of the projects are quite impressive. It has been estimated that a total of 48,000 people have benefited from the employment effects from the seawall's completion. In the case of the construction work that started last year to promote an industrial complex and expected to create 95,000 jobs. A sum of 2.2818 trillion won in direct investment by 2018 is likely, according to the Project Office of Saemangeum Free Economic Zone (SFEZ) at the Korea Rural Community Corporation (KRC). Its production generating effect could be 4.9 trillion won. Also, jobs for 210,000 people, along with the economic stimulus impact, worth 33 trillion won, are foreseen when the industrial complex and nearby tourist complex launch full-fledged production.

Inputs from KCID based on original script on Saemangeum by Byung-ho Kim, Jin-joo Park - Yoojung Lee / edited by Soyoung Chung; the article is supplemented by Secretary General Gopalakrishnan. Photos: KCID / SG, ICID.

ICID Contribution to Tidal Area Development

The coastal zone comprises only 3% of the earth's surface, but contains a disproportionately high amount of its assets. Coastal zones accommodate 60% of the world's population, which is set to increase to 80% by 2050. Tidal areas include all those coastal areas where the tidal processes are capable of affecting man's activity or of being influenced by man. Tidal areas differ greatly depending on their location, geo-physical conditions, climate, tidal range and cultural differences.

In tidal areas, fresh water is needed to reclaim saline land for agriculture, to irrigate new agricultural land, to create and maintain fresh water lakes, etc. The quality of fresh water resources is threatened by both, non-point source pollution by intensive agriculture, and point-source pollution by untreated waste water from industries and households and salt water intrusion.

ICID launched the Working Group on Sustainable Development of Tidal Areas (WG-SDTA) in 2001 to address issues related to the sustainable development of tidal areas. The mandate of the WG-SDTA is - to collect information about the natural environment in tidal areas around the world; to identify sustainable development and conservation options in the tidal areas; and to find a balance between the preservation and development of tidal areas. The Group is chaired by Prof. Dr. Park, Sang-Hyun (Korea).

The Group is in the process of bringing out a Handbook based on case studies of historically significantly monumental tidal reclamation projects from member countries, in particular China, Chinese Taipei, Germany, India, Indonesia, Japan, Korea, Malaysia, the Netherlands and UK.

Secretary General with Office Bearers of KCID

Re-engaging Agricultural Water Management (AWM) in Africa

Agricultural Water Partnership (AgWa)'s Partners meeting was held on 23-24 March 2010 at Tunis, Tunisia. The objectives of the meeting were to forge strong connections with the operationalization of CAADP Pillar I, to contribute to the finalization of the AgWA workplan 2010-2011, and the transition of the governance of AgWA from its current interim arrangements. President Hon. Peter Lee (UK) and Dr. Adama Sangare, President, Mali National Committee (AMID) participated representing ICID in the meeting. A brief report:

AgWA is a partnership of African and international organizations with a common interest to support re-engagement in Agricultural Water Management (AWM) in Africa. The demand for concerted support has been raised by a strong and recent momentum in implementing Comprehensive African Agriculture Development Plan (CAADP). Taking stock of the current fragmentation of the sector, the main partners (AfDB, IFAD, FAO, NEAPD, ICID, IMAWESA, IWMI, WB) launched the Agricultural Water for Africa (AgWA) Partnership that was officially endorsed by the Africa Ministerial Conference in Sirte in December 2008. AgWA is building close linkages with international and regional partnerships and with sub-regional partnerships such ARID, SARIA and IMAWESA. The overall objective of the AgWA Partnership is to increase food production, generate wealth, and contribute towards achieving MDG 1 by supporting countries, national and international organizations, and donors to re-engage in Agricultural Water Management (AWM) for Africa.

To achieve these overall objectives, AgWA has identified four priorities for developing irrigation in Africa, including advocacy; resource mobilization; knowledge sharing; and donor harmonization. AgWA provides a platform for delivering comprehensive support to agricultural water in Africa and will promote renewed interest and re-engagement in agricultural water among policy decision makers. More specifically, AgWA aims to: scale up investments and ensure a more reliable, broad based and sustained flow of funds for agricultural water; promote analytical work and support sectoral strategies in the field of agricultural water; promote knowledge sharing, dissemination and capacity strengthening, and initiate innovative business lines in support to scaling up investments in agricultural water; and promote regional integration, coordination and partnerships, and empowerment of national and regional stakeholders.

Participants were introduced to progress in the activation of AgWA and recent developments under CAADP, and on advancing the AgWA Workplan and governance. The main decisions taken during the meeting were:

Dr. Adama Sangare, President, Mali National Committee speaking at the meeting

- AgWA become an 'Expert Pool' in support of CAADP implementation, while also retaining a degree of autonomy,
- AgWA workplan should Identify firm activities by the end of 2010 composed of already-financed actions by partners, with further elaboration founded on specific deliverables,
- Establishment of an Oversight Committee and a continuation of Interim Secretariat arrangements until the end of 2010, and
- For 2010, activities are financed through Partner contributions and through seed funds under the Multi-Donor Water Partnership Programs of the AfDB and World Bank.

The meeting was hosted by the African Development Bank and attended by 36 participants. The meeting was co-chaired by Mr. Mbogo Futakamba, Ministry of Water and Irrigation, and Secretary General of the Tanzanian National Committee (TANCID).

A draft work plan (2010-11) based on the recommendations made at the meeting has been prepared. ICID is identified to contribute to the AgWA activities through its knowledge sharing component.

Potential Contribution of ICID to AgWa

The ICID stands for "managing water for sustainable agriculture" and in 2007 declared a "Preference for Africa", relevant to the AgWa objectives.

- ICID is committed to support AgWa, and has common interest in-advocacy and knowledge sharing in AWM and strengthening AWM networks in Africa.
- ICID's Preference for Africa is manifested by its relationship with the two regional associations of Africa: ARID and SARIA, which extends the ICID network in Africa well beyond that defined by formally active countries.
- ICID's promotion of "broad-based" national committees each constituted according to the countries' wishes provides a flexible model for bringing together the various interests in AWM in each country, facilitated by a regional and international context that could now include AgWa's activities.
- ICID has an active Africa Regional Working Group and Task Force on LDCs in Africa, a Special Team on Lake Chad Basin, and upcoming regional conferences that can contribute to the advocacy and exchange of knowledge components of AgWa.
- ICID workbodies with African involvement can focus on- Global climate change and agricultural water management, on-farm irrigation, use of poor quality water for irrigation, water management in water stressed regions, modernization of irrigation services, technology and research uptake and exchange, and financing water for agriculture etc.
- ICID recognises that countries outside Africa have much to contribute to the AgWa objectives (most notably China, Brazil, and India) and encourages them through their national committees to do so. ICID's WatSave Awards, top-ten technologies and support for IPTRID all contain strong advocacy for Africa's achievements and future needs.

(Source: Pres. Hon. Peter Lee)

Raised Bed and Furrow Irrigation Layout Enhances Water Saving

Prof. Dr. Rai Niaz Ahmad, Chairman, Irrigation and Drainage Department, and Director, Water Management Research Centre, University of Agriculture, Faisalabad, Pakistan, has designed and developed an innovative 'Bed Seeder' to prepare raised bed and furrows and also for sowing wheat, rice, maize, and cotton seeds. Layouts prepared using this machine could achieve up to 50% saving in irrigation water and up to 25% increase in crop yields compared to traditional flood irrigation layout. The 'Bed Seeder' has become popular among Pakistani farmers. Prof. Ahmad received ICID Watsave Technology Award 2009 for his innovative water saving contribution. A brief:

Pakistan is facing severe water shortage and needs to replace its conventional irrigation methods with water saving on-farm irrigation systems. In many countries, broad bed and furrow layout has become popular to irrigate row crops like wheat, rice, corn, cotton. Using this layout it is possible to achieve high field application efficiency, increased crop yields, better weed control, improved fertilizer use efficiency and also less crop lodging. However, preparing such a layout using traditional equipments is a labour-intensive and time consuming activity. Dr.Rai Niaz Ahmad at the Water Management Research Centre (WMRC), Faislabad, Pakistan took up this challenge and designed and developed a 'Bed Seeder' to prepare fields with broad based ridges and furrows faster and in a precise manner. The machine carries out the bed formation, seed sowing and fertiliser application simultaneously. In general, it takes about 30 minutes to complete the entire operation on one hectare of land depending upon the size of the field.

Bed Seeder Operation

The machine is operated by a tractor and develops two beds and three furrows in a single run. Four rows of seeds are sown on one bed. A buffer strip is created at the center of each bed. A furrow for irrigation separates each bed. The machine develops two rows on both sides of the furrow. Each furrow irrigates about 20 cm adjacent bed strip on its both sides. The center to center distance between two beds is kept as 90 cm while the bed width is kept as 60 cm. The machine has adjustable furrow opener, which enables developing a variable size of furrow, as per requirement. The machine has an adjustable planer to level the bed top for facilitating the precise planting. One can also adjust the depth of sowing. Like other planting machines 'Bed Seeder' has the provision of fertilizer application along with sowing of seeds on the bed. This ensures adequate availability of nutrition to seeds besides saving in fertilizer.

Dr. Rai Niaz Ahmad receiving WatSave award at the hands of President Prof. Madramootoo at New Delhi

Field Performance

Results of the extensive field trials have shown that the layout prepared using the machine not only saves up to 50% irrigation water but also increases yield of crops in comparison with traditional flood irrigation method used in Pakistan (see Figure). Broad based ridges and furrow layout is also found to be useful for planting rice seedlings. The machine has been tested on farmers' field in Punjab Province. The cost of the machine is about US$ 1000. Acknowledging the benefits of the 'Bed Seeder' the Ministry of Food, Agriculture and Livestock has been promoting its manufacturing by the local industry and making available the machine to farmers at subsidized (50%) cost.

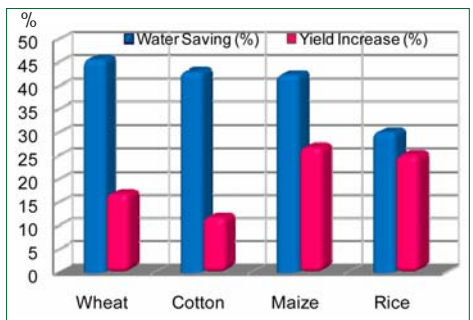
The raised bed and furrow technology has great potential for its adoption and achieve water savings in Pakistan. For example, if the entire wheat irrigated area of 8.4 million ha is shifted to raised bed layout, an increase of 3.6 million tons of wheat grain production can be achieved from the same area besides bringing in additional 3.8 million ha under wheat crop from the saved water.

For further details of the innovation, please access http://www.icid.org/index_e.html

Prof. Dr. Rai Niaz Ahmad can be contacted at <niazrai@yahoo.com>.

A Bed Seeder

Wheat grown on raised bed and furrow layout prepared by the Bed Seeder



Percentage water saving and increase in crop yields obtained in the raised bed and furrow layout compared to traditional flood irrigation method

Challenges in Groundwater Irrigation in South Asia

Groundwater resource is an important source of water for agriculture and domestic uses and has been playing an increasingly important role in the economic development of many countries. However, throughout the world, significant numbers of aquifers are being drawn upon at a rate that exceeds the natural recharge. To address several contemporary issues of groundwater development and management, with an emphasis on Indian situation, a special session was held at New Delhi in December 2009 alongside the 60th IEC meeting. The main objective of the session was to highlight the strategies being adopted to address emergent groundwater issues and to share and learn from others experiences for its sustainable management. A brief:

In some Asian countries like China, Bangladesh, India, Pakistan, and Nepal, the groundwater irrigation has been booming and becoming significant from livelihood of millions of farmers and food security viewpoints. The share of population depending on groundwater is generally much higher in the Asian region than the global average. Key indicators of groundwater use in some selected countries are shown in the Table. Overexploitation of available resources without due regard to the replenishing capacity of aquifers, degradation of groundwater quality due to natural and anthropogenic contaminations, lack of integrated use of available resources are among the major problems facing the groundwater resources in South Asia. Our understanding of aquifer yields is limited by their complex interactions with surface water and connections between numerous aquifers. The anticipated impact of climate change is likely to further exacerbate the global groundwater resources availability scenario in the not so distant future. The main challenge is proper understating of dynamics of groundwater flow under different hydro-geological conditions in space and time. Scientific development and management of groundwater is need of the hour to avert any future crisis.

Groundwater Use in Selected Countries

Country	Annual groundwater use (km^3)	No. of Agricultural Groundwater Structures (million)	Average extraction/ structure (m^3/year)	Population dependent directly or indirectly on groundwater irrigation (%)
India	210	19	7900	55-60
Pakistan	55	0.5	90000	60-65
China	105	3.5	21500	22-25
Iran	29	0.5	58000	12-18
Mexico	29	0.07	414285	5-6
USA	100	0.2	500,000	<1-2

(Source: Shah T., IWMI)

Recommendations

The following recommendations emerged from the deliberations in the special session.

- There is an urgent need for coordinated efforts by various Governments and non-governmental agencies, civil society organizations and the stakeholders for evolving implementable plans for effective management of groundwater in the country.

- Factors responsible for the imbalances in groundwater utilization in parts of the country, in terms of technical and socio-economic considerations should also be taken into consideration while formulating any comprehensive water resources management initiatives.
- There is an urgent need to shift the focus from supply side to demand side management to deal with problems related to water scarcity.
- Mobilization of civil society and the community for action on natural resource management and conservation for rural uplift is vital for saving the environment and bringing prosperity to the rural communities. Community management of groundwater resources needs to be encouraged through piloting, replication and scaling up of promising ideas.
- In view of the increasing importance of community participation in demand management of groundwater, Government agencies should act as facilitators of groundwater related information instead of being mere technical experts.
- National policy should be formulated for protection of natural recharge sites of confined aquifers and more recharge schemes should be implemented in such areas for augmentation of groundwater resources.
- A comprehensive framework for integrated management of water resources needs to be formulated in predominantly agricultural areas.

Addressing Overexploitation of Groundwater in India

India is the largest user of groundwater in the world. It uses an estimated 230 km^3 of groundwater every year – more than a quarter of the global total. Today, 60 percent of irrigated agriculture and more than 80 percent of rural and urban water supplies depend on groundwater. There has been a great boom in the groundwater pumping for irrigation. In the 1970s, the number of irrigation sets was estimated to be about 12 million, while today it is more than 20 million. Groundwater gives farmers greater control over when to irrigate their fields and how much water to apply, leading to twice the crop water productivity of such farms as compared to those that rely on surface water. The rising use of groundwater is also a response to poor water supply services, especially in the urban areas.

The recent World Bank's report on *"Deep Wells and Prudence: Towards Pragmatic Action for Addressing Groundwater Overexploitation in India"* has attempted to identify practical and politically feasible strategies towards more sustainable use of groundwater in India. Several suggestions to prevent overexploitation included amongst others, implementation of effective regulatory measures; pricing measures including volumetric charging; tradable groundwater rights; community management of ground-water wherein the user community is the primary custodian; building capacity and adjusting the role of state groundwater institutions; promoting conjunctive use in agriculture; integrating groundwater in urban water supply planning; and technical and political solutions to agricultural power supply and pricing.

(Source: The World Bank, http://www.worldbank.org)

ICID Events 2010-11

61st International Executive Council Meeting (IECM) and 6th Asian Regional Conference (ARC), 10-16 October 2010, Yogyakarta, Indonesia

The theme of the conference is **'Improvement of irrigation and drainage efficiency through participatory irrigation development and management under the small land holding conditions'**. Besides the 6th ARC, the following workshops/ seminars will be held

FAO/UNW-DPC/ICID workshop on ***'Improving farm management strategies through Aquacrop: Worldwide collection of case studies'***, 8-9 October. Contact: Ms. Elisabeth Mullin Bernhardt, Germany. Tel +49 228 815 0654, E-mail: bernhardt@unwater.unu.edu, Website: http://www.unwater.unu.edu.

Workshop on ***'Nutrient leaching from agricultural soils'***, 12 October. Contact: Dr. G.A.P.H. van den Eertwegh, Convener: The Netherlands. Tel: +31 (0) 30 6069 650, E-mail: ge.van.den.eertwegh@kwrwater.nl

Seminar on ***'History of Irrigation in Eastern Asia'***, 13 October. Contact: Vice President Dr. Hafied A. Gany, Convener, Indonesia. E-mail: gany@hafied.org, secretariat@icid2010.org, Tel: +62-021-723-0318

Online registration facility is available at http://icid2010.org/register/. Accommodation can be booked at http://icid2010.org/accomodation/.

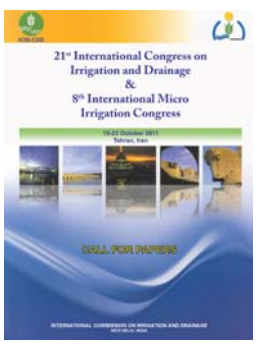
The event will be held at Seraton Mustika, Yogakarta Resort and Spa in the heart of beautiful java Island. The final announcement giving details of registration, programme, accommodation, study tours, technical exhibition, etc. can be accessed at http://www.icid2010.org. For more information, please contact: The Indonesian National Committee of ICID (INACID), 8th Floor of the New Building, Directorate General of Water Resources (DGWR), Ministry of Public Works, Jalan Pattimura No. 20/ Perc. No.7, Kebayoran Baru, Jakarta Selatan, 12067, Indonesia; Tel: +62-21-723-0318, Fax: +62-21-723-0317, E-mail: secretariat@icid2010.org; inacid_indonesia@yahoo.co.id.

24th European Regional Conference, December 2010, Orleans, France

The title of the conference is **"Groundwater resource: An essential resource to be saved and managed"**. For details, please contact: Mr. Sami BOUARFA, Secrétaire Général, Association Française pour l'Etude des Irrigations et du Drainage (AFEID), 361 rue Jean-François Breton, BP 5095, F - 34196 – Montpellier Cedex 5, France. Tel: +33.4.67.04.63.16, Fax: +33.4.67.16.64.40, E-mail: afeid@cemagref.fr, sami.bouarfa@cemagref.fr, Website: http://afeid.montpellier.cemagref.fr

25th European Regional Conference, 16-20 May 2011, Groningen, The Netherlands

The title of the conference is ***"Integrated water management for multiple land use in flat coastal areas"***. The event is co-hosted by the German National Committee (GECID). For more details, please contact: Bert Toussaint, Chairman of Organizing Committee, Ministry of Transport, Public Works and Water Management, Rijkswaterstaat Centre for Corporate Services, P.O. Box 2232, 3500 GE Utrecht, The Netherlands. Tel: +31 6 207 91 372, E-mail: bert.toussaint@rws.nl or contact Mr. Pol Hakstege, Secretary, NETHCID, Tel: +31 88 7972316, E-mail: pol.hakstege@rws.nl. Nethcid2011@rws.nl, Website: http://www.nethcid.nl.



21st International Congress on Irrigation and Drainage, 62nd IEC Meeting, and 8th International Micro irrigation Congress, 15-23 October 2011, Tehran, Iran

The theme of the 21st Congress is ***"Water productivity towards food security"***. Print copies of the 'Call for Papers' are being sent to all National Committees. For details, please contact: Dr. S.A. Assadollahi, Secretary General, Congress Secretary, Iranian National Committee on Irrigation and Drainage (IRNCID), No. 1, Shahrsaz Alley, Kargozar St., Zafar Ave., Tehran, Iran, Postal Code: 19198-34453. Tel: (+9821) 2225 7348 – 22250162, Fax: (+9821) 2227 2285, E-mail: irncid@gmail.com, icid2011@gmail.com, Website: http://www.icid2011.org.

3rd African Regional Conference, 2011, Mali

For details, please contact: Dr. Adama Sangare, President, Association Malienne des Irrigations et du Drainage (AMID), Au Modibo Keita, Im Sulla and Fils, BP 1840, BAMAKO, Mali. Tel: (223) 202 87521, Mobile No: (223) 6674 08 94, Fax: (223) 223 48 82, E-mail: a.sangare@betico.net; betico@betico.net.

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