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ICID Newsletter

Managing water for sustainable agriculture

Also at <http://www.icid.org>

2009/1

Message from the President

Dear Friends,

In a few weeks, the global water community will be convening for the Fifth World Water Forum in Istanbul. Quite appropriately, given Turkey's geography, the overall theme for the Forum is: Bridging Divides for Water. Turkey has that unique position of connecting the Mediterranean and the Aegean Seas with the Black Sea. It is the country where we sometimes say: East meets West.



Forum participants will be deliberating under six key Themes. ICID has been playing a key role in Theme II: *Advancing Human Development and the Millennium Development Goals (MDGs)*, and specifically in Topic 2.3 - *Water and food for ending poverty and hunger*. This is very appropriate given the mission of ICID, as the world's leading NGO dealing with water for food production. ICID's leadership in Topic 2.3 could not be more timely, given the current global food crisis, particularly in a time of financial and economic uncertainty. The situation is further compounded by the growing crises of diminishing freshwater availability and degradation of water quality. We know that given the current food crisis, with an additional 150 million people going into poverty, the original MDG of halving the number of people affected by poverty and hunger by the year 2015 will not be achieved. This does indeed raise cause for alarm, particularly for those of us in the ICID family working in agriculture, food production and water management. Have we failed in our mission? Perhaps we were operating under the assumption that the technological advances we were making in irrigation and drainage, together with the

rapid advances in biotechnology were going to pull us through, and enable us to achieve the MDG of reducing the 800 million people affected by poverty and hunger to 400 million by 2015. Now with an increase in the number of people going in to poverty and hunger, rather than a decline, we are faced with an even larger monumental task.

Rather than give up, my message is that now more than ever, we must gather up our intellectual strengths and focus our energies on changing the way in which water is managed. We can no longer study water conservation, water reuse, water harvesting, and storage. We must work with the political and financial machinery to rapidly invest in these systems, despite the global financial situation. This is not the time for us to sit back and wait for the financial crisis to end. Failure to act immediately means that we will be swept away by the time the next crisis emerges. The terrain under our feet is slowly slipping from under us. We must engage with the agricultural specialists working on drought and salt tolerant crops, and collaborate with the plant geneticists who are using the modern tools of genomics to engineer crops which use less water to produce more food. We must also link much more deeply with the resource managers in land and forestry, to optimize the food, fibre and energy producing potential of the world's arable land base.

There is no doubt that biofuels will continue to dominate the debate over allocation of scarce land and water resources for energy production. Each country will have to make decisions suitable to its policy environment. It could very well be that some countries may aggressively pursue a bioenergy policy to favour national energy security. However, we must be a part of the debate on how to implement such policies under food and water pressures. Another issue that will come up for discussion in Istanbul is the

role of world trading agreements and international markets on local food producing potential and food availability. While some favour the liberalization of markets, others have indicated that such liberalization has distorted food prices and led to the dumping of cheap food in some countries. This has had the effect of destroying local food producing capabilities in some developing countries. If the rural poor are to improve their quality of life, and move towards a better financial state, then food prices will have to decrease, and local food production must thus be boosted. New marketing schemes will need to be developed, for locally produced food to reach both the rural and urban poor. There is a call for local food producing communities to become involved in value added processing and marketing of food products. This type of vertical integration in the rural sector might be a way to stimulate economic development. One thing is clear in all of this, and that is the critical role of water to increase crop productivity and yields. And if such increased production does stimulate rural development, then part of the monetary returns can be used to invest in new water schemes, and finance some of the operation and maintenance costs of existing irrigation and drainage systems.

It is my view that ICID now has a reinvigorated mandate to position water management at a much higher political level, by clearly demonstrating how irrigation and drainage can reduce poverty and hunger, contribute to energy security, and stimulate rural development through the introduction of new marketing opportunities and value added chains. I hope that the Fifth World Water Forum will be the spark that ignites this new revolution for ICID.

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 Newsletter is published quarterly by ICID Central Office, New Delhi, India.

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ICID WatSave Awards 2009: Call for Nominations

ICID instituted 'WatSave Awards' in 1997 to recognize 'outstanding contributions to water saving in agriculture' across the world. Entries for the nominations for the WatSave Awards 2009 are now open. Awards are given in three categories viz. (i) Technology, (ii) Innovative Water Management, and (iii) Young Professionals. The Awards are only made in respect of actual realized savings and not for promising research results, plans and/or good ideas/intentions to save water. Each award carries prize money of US\$ 2000 and a Citation.

The ICID WatSave Awards for the year 2009 are sponsored by Indian National Committee on Irrigation and Drainage (INCID) and will be presented at the 60th meeting of the IEC scheduled to be held in December 2009 at New Delhi.

The entries are open to all professionals/teams from ICID member countries as well as non-member countries. In case of an entry from a 'non-member' country, the nomination has to be routed through and validated by an active National Committee of ICID. The contact coordinates of the ICID National Committees/ Committee, the

'Nomination Form', 'Conditions and Criteria', and 'Evaluation Proforma' are available for download at <www.icid.org/awards.html>. The deadline for receipt of the entries from the applicants along with a completed 'Nomination Form' etc. to the concerned National Committees is **31 July 2009**. The National Committees after reviewing the applications as received will forward electronically only the deserving nominations so as to reach the Central Office, ICID, New Delhi on or before **31 August 2009**. For more information, please contact Secretary General, ICID <icid@icid.org>.

New ICID Publications

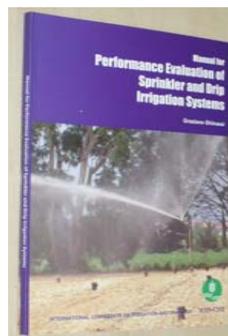
Water Saving in Agriculture



ICID initiated a WatSave Program through its "The Hague Declaration" in 1993 with the objective of promoting successful water saving/conservation practices in agriculture among member countries.

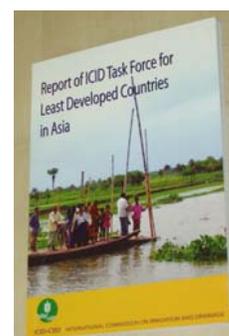
Subsequently, in 1997 WatSave Awards were instituted to recognize outstanding contributions to water savings across the world. This publication is a compilation of successful water saving experiences/initiatives, tools and research studies contributed by the past WatSave Award winners as well as by select experts from Australia, Brazil, China, India, Egypt, South Korea, Pakistan, South Africa, Spain, The Netherlands, Turkmenistan, UK and USA. The publication is a rich source of information and an inspiration for all those professionals, policy makers, researchers, and irrigators engaged in producing 'more crop per drop'. Price: US\$ 20.

Manual for Performance Evaluation of Sprinkler and Drip Irrigation Systems



Worldwide the use of sprinkler and micro irrigation methods have been steadily increasing to cope up with water scarcity and also the efficient use of other inputs like fertilizers and energy, besides increasing crop yields. Nevertheless, pressurized irrigation methods should not be considered as panacea for improving on-farm water management. It is essential to carry out periodic diagnostic analysis and performance evaluation of the systems to ensure their optimal operation. This manual is authored by Graziano Ghinassi, Italy and provides comprehensive information on both theoretical and practical aspects of various performance indicators and field evaluation techniques of drip and sprinkler irrigation systems, besides case studies from various countries. This manual is a useful reference to the researchers, irrigation managers and students. Price: US\$ 20.

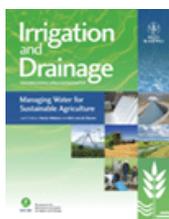
Report of ICID Task Force for Least Developed Countries in Asia



Of the world's 50 Least Developed Countries (LDCs), 15 are located in Asia and remaining are in Africa and South America. Development and management of irrigation, drainage and flood control play a key role in poverty eradication and increasing the productivity of agriculture in LDCs. ICID in 2003 established a Task Force for Least Developed Countries in Asia (TF-LDCs-AS) to investigate the problems and needs of LDCs and to identify the priority issues that need to be addressed for their development. It was found that the LDCs are facing problems like – capital shortage, poor governance, limited capacity to service financial borrowings, inadequate legal systems, and underdeveloped farmer organizations. This book contains various recommendations towards promoting irrigation and drainage in LDCs of Asia. Price: US\$ 10.

(These and other publications can be ordered on-line at ICID website: www.icid.org/publication.html)

Take advantage of Irrigation and Drainage Online



The ICID journal, Irrigation and Drainage is available online FREE via Wiley InterScience® for all ICID Office Bearers, workbody members and subscribers.

Papers are available in easy to read PDF format; Provides access to the full text of all articles published in Irrigation and Drainage since 2001, as well as 'Tables of Contents' and Abstracts; EarlyView® service provides papers online as soon as they have

been accepted for publication. Sign up for FREE Wiley InterScience Alerts – receive the table of contents via email as soon as an issue is published online: <http://www.interscience.wiley.com/journal/ird>. Now available on the website **Volume 58.1**.

ICID Coordinates the Debate on Water and Food for Ending Poverty and Hunger at the 5th World Water Forum, Istanbul

The 5th World Water Forum (WWF5) with the main theme of 'Bridging Divides for Water' will be held in Istanbul, Turkey, from 16-22 March 2009 will address six Themes and under each Theme about four topics. ICID has been chosen as a Coordinator for Topic 2.3 on "Water and Food for Ending Poverty and Hunger" under Theme 2 "Advancing Human Development and the Millennium Development Goals (MDG)". The following is the update on ICID contribution to WWF5.

ICID has established Consortia of Consultative Partners comprising key interested organizations based upon their interest in and/or relevance to the Topic (Box). A Draft Topic Report as prepared with inputs from consortia partners will form the basis

for presentations and discussions during the four Sessions that will address the Key Questions viz., (i) How to achieve the required food production to meet the growing demand? (ii) Key Question II: How can food market measures boost

rural development and poverty alleviation? (iii) Water for bioenergy or food? (iv) How can better water management and reduce poverty and hunger? – A synthesis. The time schedule of the sessions and the key issues are shown in the Table.

Box : Consultative Partners

Farmers Associations: Consortium of Indian Farmers Association (CIFA); International Federation of Agricultural Producers (IFAP); National African Farmers Union, South Africa.

International Agencies/ UN Agencies: Arab Water Council (AWC); Centre for Environmental and Geographic Information Services (CEGIS); Food and Agriculture Organization of the United Nations (FAO); Mediterranean Agronomic Institute of Bari (IAMB); International Development Enterprises (IDE); International Fund for Agricultural Development (IFAD); International Union for Conservation of Nature (IUCN); International Water-related Associations' Liaison Committee (IWALC); and UNESCO-IHE Institute for Water Education.

Research Institutions/ Professional Associations: Challenge Program on Water and Food (CGIAR-CPWF); International Centre for Advance Agronomic Studies (CIHEAM); International Center for Agricultural Research in the Dry Areas (ICARDA); International Hydropower Associations (IHA); Institute of Water Resources and Hydropower Research (IWHR); International Water Management Institute (IWMI); Scientific Information Centre of Interstate Coordination Water Commission (SIC-ICWC); World Bioenergy Association (WBA); and World Vegetable Centre (AVRDC).

Other Institutions: Agence Française de Développement; Association Française pour l'Etude Irrigations et le Drainage (AFEID); Centre for Built Environment (CBE); EcoAgriculture

Partners; French Water Partnership (FWP); Gender and Water Alliance; Institute for Agriculture and Trade Policy; Israel Export and International Cooperation Institute; McGill University, Canada; Roundtable on Sustainable Bio-fuels (RSB); Veoli Water; Rubicon Systems, Australia; and Urban Agriculture Network, China.

National Governments: Agriculture and Agri-Food Canada; Brazilian Water Agency (ANA); Central Water Commission, India; Dept. of Water Affairs and Forestry, South Africa; General Council of Agricultural Development, Morocco; Institute for Civil Services Training and Education, Ministry of Public Works, Indonesia; Ministry of Water Resources, China; Ministry of Water Resources and Irrigation, Egypt; Ministry of Jihad-Agriculture, Iran; and Water Sector Project, Bangladesh.

Table: Session Schedule and Key Issues

Session/ Key Question I	Session/ Key Question II	Session/ Key Question III	Session/ Key Question IV
(Wednesday, 18 March 2009, 14:30-19:00 hrs)	(Thursday, 19 March 2009, 08:30-13:00 hrs)	(Thursday, 19 March 2009, 08:30-13:00 hrs)	(Thursday, 19 March 2009, 14:30-16:30 hrs)
<ul style="list-style-type: none"> How to bridge between agricultural and water policies to avoid both global and local food crises? How can institutional and technical water management improvements contribute to the required increase in food production? What types of investments are necessary to develop additional water resources including non conventional and to modernize existing irrigation and drainage schemes to improve water productivity? How can rainfed agriculture contribute more effectively, while maintaining irrigated agriculture, to enhance food security and improve livelihoods in rural areas? What policies and actions are needed to ensure the sustainability of water resources and the river basin services that underpin the increases in agricultural productivity that must be achieved? 	<ul style="list-style-type: none"> How can poor farmers benefit from market opportunities and how to improve the marketing chain? How can local markets be strengthened e.g. by capacity building and farmer empowerment (including micro-financing) consistent with trade? How can new agricultural market opportunities help in financing improved water productivity and services? 	<ul style="list-style-type: none"> How can rural communities benefit from bioenergy crops? How to avoid conflict with food production by considering reversible crops from non-food to food production, and using marginal water and land? How to develop farming practices compatible with nature balance, increasing the resilience of rural poor and ecosystems on which they depend? What may be the implications of bio-fuels policies and trends for the water resources, availability and allocation among uses (including by ecosystems) and thus on ecosystems and livelihoods? 	<ul style="list-style-type: none"> How to reconcile agricultural and water policies to avoid both global and local food crises? How can institutional and technical water management improvements and investments contribute to increase the food production? How can scientific findings more effectively be transferred to practical technologies, especially supporting the poor farmers? How can poor farmers benefit from market opportunities? How can local developments benefit from bioenergy?

In addition to the Topic 2.3, ICID will also contribute to Topics 1.1, 1.2, 1.3, 2.2, 2.4, 3.2,3.3, 4.2, and 6.3 through its workbodies, national committees and

representatives. The Topic Report and the Draft Session Situation Document along with the list of Consortium Partners are available on ICID website [http://](http://www.icid.org)

www.icid.org/wwf5 and WWF5 website <http://www.worldwaterforum5.org> as well as on the VMS platform of the Forum website.

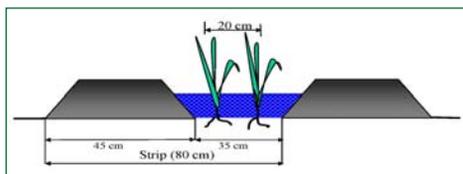
Growing More Rice with Less Water: Egypt Shows the Way

Worldwide harvested rice area is 150 million ha, of which some 90 million ha are irrigated. Traditionally, paddy is grown using huge amount of water. However, increasing water shortage at the farm level has forced farmers in many countries to adopt innovative technologies and management measures in reducing water use without jeopardizing rice yields. ICID has honored some outstanding water saving contributions in rice cultivation from China, India, and Pakistan. The following is a brief of yet another water saving contribution in rice cultivation from Egypt. Dr. Yousri Ibrahim Atta, Professor at the Water Management Research Institute (WMRI) and recipient of ICID WatSave Innovative Management Award 2008 has developed an innovative method of rice cultivation using significantly less amount of water besides high yields.

Strip Method of Rice Cultivation

In Egypt, rice is not only a staple food crop for a large population but also a cash crop for farmers. In the traditionally cultivated rice crop farmers normally apply 15 to 20 thousand cubic meters of water per ha. Egypt being a water short country, the Government has pegged the rice area to 460,000 ha. Despite the restriction on further expansion of rice area, there has been a steady increase in the area. This has been creating a pressure on already limited water resources of the country. Egyptian Researchers have therefore been engaged in developing water saving irrigation methods in rice cultivation. Dr. Yousri Ibrahim Atta of Water Management Research Institute (WMRI) has developed a new method for cultivating rice with high potential for water saving.

Traditionally, in Egypt rice is grown in leveled basins which are kept flooded to a depth of about 7 cm. The new method - so called 'strips method' consists of broad-based ridges and furrows (Figure). Rice seedlings are transplanted in furrows in hills (4 to 5 plants) 10 cm apart in two rows 20 cm apart. The plant density is kept same as in the traditional method (25 hills/m²). Irrigation water is applied to the furrows to maintain a depth of 7 cm. The rice variety used was Sakha -104 having cropping duration as 135 days. The WMRI has been conducting experiments on this new method since 2002 using different furrow widths.



Benefits of the New Method

In the traditional method of rice cultivation, farmers normally apply about 15,000 m³ of water per hectare; while in the new method about 9,000 m³ per ha is



Vegetative growth stage of rice 20 days after transplanting



Maturity stage of rice 90 days after transplanting

applied. This water quantity in both the methods excludes water used during nursery period, which normally is about 4000 m³/ha. Thus water saving of about 40% is achieved in the strips method over the traditional basin method of rice cultivation. The average rice yield obtained in strips method was 9.3 tons/ha which is about 6% higher than the traditional method. As regards the water use efficiency, in the traditional method, it was worked out as 0.59 kg/m³; while in case of strips method it was about 1.03 kg/m³ of water. The decrease in water use is mainly attributed to the reduction in the field surface flooded area due to furrows. Other advantages of the strip method

include reduction in irrigation time and labour, higher efficiency of fertilizer application, and easy weed control. The new method does not require puddling of the field during the land preparation.

Currently about 150 hectares are cultivated in Egypt using the new method. The Egyptian Ministry of Water Resources and Irrigation (MWRI) has been promoting the innovative method to expand it to different regions of Egypt. For more information, please visit www.icid.org/ws1_2008.pdf or contact Dr. Yousri Atta at <Yosriatta8888@yahoo.com>

Switching from Portable Sprinkler System to Semi-permanent Boosts its Adoption in India

Sprinkler irrigation system has been used in India since last four decades. However, farmers have been experiencing difficulties in operation of portable sprinkler systems. As a result, these are not effectively used by farmers. Dr. Yella Reddy, Principal Scientist and his colleagues at Andhra Pradesh Micro Irrigation Project (APMIP) developed an innovative semi-permanent sprinkler system to overcome the inherent limitations of the conventional portable system. The new system has advantages like labour saving, convenience in operation and better working conditions in the field, besides water savings up to 50% over conventional surface irrigation. The new system has become popular and its adoption has been increasing. The innovation was honoured with ICID WatSave Technology Award 2008. The following is a brief of the innovation.

Andhra Pradesh Micro Irrigation Project

Indian State of Andhra Pradesh has a cultivated area of 12 million ha and 5.5 million ha as irrigated area. Of the State's surface as groundwater resources estimated at 108 billion cubic meters, 65 billion cubic meters are currently withdrawn for various uses. Irrigation water withdrawal accounts for more than 95% of the total water withdrawals. There is an extensive use of groundwater for irrigation through more than 3.0 million electric pumpsets.

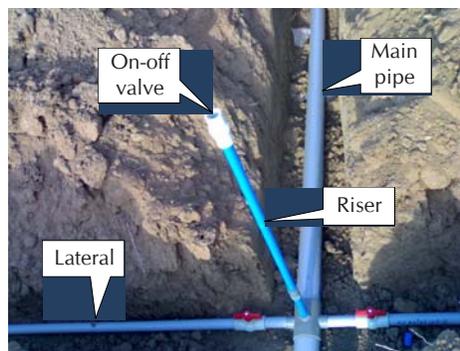
The Government of Andhra Pradesh in 2003 launched an ambitious project called "Andhra Pradesh Micro Irrigation Project" (APMIP) to bring about 0.25 million ha under pressurized irrigation systems by 2008. The Government provides liberal subsidy to farmers (70% of the system cost or Rs. 50,000* per family, whichever is lower) towards installation of pressurized irrigation systems. As a result, presently more than 0.493 million ha comprising 0.319 million ha under micro irrigation and 0.174 million ha under sprinkler irrigation were equipped benefiting over 400,000 agricultural families.

Semi-permanent Sprinkler System

In India, generally portable sprinkler system is commonly used for field crops. Under the Government's subsidy scheme a standard sprinkler set consists of 25 HDPE pipes of 60/75 mm diameter and 6 meter length each, five sprinkler heads having 0.5 liters per second as nominal discharge, and five GI riser pipes. The cost of such a unit is about Rs.15,000 per ha. More than 150,000 portable sprinklers sets were installed by farmers during the last 4 years. However, due to high labour requirement in operation of the system and inconvenience in operation, a low cost, semi-permanent sprinkler system was developed to overcome the limitations of the conventional portable sprinkler systems. The new system consists of a buried PVC main pipe designed

* 1 US \$ = Rs.48.00 (2009)

telescopically using 90 mm, 75 mm and 63 mm diameter pipes. Laterals of 25 mm dia PVC pipe were connected to the main pipe on both sides at 12 meter spacing and installed below the ground (Figure). Each lateral has three risers at a spacing of 12 meters. Only one sprinkler operates at



one ha area can be irrigated per day with a depth of 20 mm and pump discharge of 5 lps. The semi-permanent system provides a few advantages like labour saving, convenience in operation and better working conditions in the field. Also it helps to eliminate ponding of water near the lateral joints. The water savings achieved is similar to the conventional portable system and is up to 50% compared to traditional surface irrigation method.

The Government of Andhra Pradesh has planned to bring about 0.8 million ha under pressurized irrigation systems in next five years under major lift irrigation projects. Presently, the surface irrigation systems are planned on duty basis i.e. about 148 ha per million cubic meters. However, the Government intends to



a time on each lateral. Number of sprinklers to be operated simultaneously is chosen in proportion to pump discharge.

The initial investment cost of the semi-permanent system is Rs. 38,000 inclusive of cost of preparing trenches for main pipes and laterals. Despite its increased costs, farmers are increasingly adopting this method and so far over 6,000 ha have been covered with semi-permanent sprinkler systems. With the above layout and assuming daily 7 hours power supply,

enhance this duty to 222 ha per million cubic meters by switching to pressurized irrigation systems in the commands of lift irrigation schemes with a view to bring more area under irrigation from saved water.

For details, please access http://www.icid.org/ws2_2008.pdf or contact Dr. Kaluvai Yella Reddy at <yellareddyk@yahoo.com>.

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Issue 5

INSIGHT ON ULTRA-LOW SEDIMENT FLOW PROVIDED BY ARGONAUT-ADV®

LOUISIANA, USA.

Louisiana's coastal wetlands provide vital wildlife habitat and a strong buffer against storms. But they are threatened by subsidence and cut off from the historic floods that built the Mississippi River Delta. Using SonTek Argonaut-ADV®, a Louisiana State University team captured continuous streams of data on shallow, slow-moving currents (down to 1 mm/s) that are notoriously difficult to measure. Their findings are teaching stakeholders how releases of sediment-rich pulses of water through a diversion structure near New Orleans may be managed to help rebuild marshes while minimizing impacts on local fisheries.

> www.sontek.com/news/UltraLowFlow.pdf



ACOUSTIC DOPPLER TECHNOLOGY ENABLES FAST ASSESSMENT OF POST-QUAKE HYDRAULIC CONDITIONS



SICHUAN PROVINCE, China.

A 7.9 magnitude earthquake in China left millions homeless and susceptible to thirst and water-borne disease as it ravaged the country's hydrology monitoring stations. SonTek/YSI immediately responded with assistance and hydroacoustic equipment — allowing hydrologists to gauge the speed and strength of water flow, as well as monitor drinking water distribution. The advanced RiverSurveyor®



provided fast assessment of flood conditions and did in minutes what had taken hours for a field crew with conventional instruments. > www.sontek.com/news/ChinaQuake.pdf

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A SMART WAY TO HANDLE FLOODS

KUALA LUMPUR, Malaysia.

Devastating floods are common in crowded Kuala Lumpur, necessitating the massive Stormwater Tunnel Management and Road Tunnel (SMART) project. Because accurate and timely information on discharge and velocity are vital for success, 16 SonTek Argonaut-SL and Argonaut-SW current meters were required. Says Bruce Sproule, Greenspan Technology's International Manager, "SonTek equipment...was the easiest and most accurate to incorporate into this project. The support is good and the equipment reliable."

> www.sontek.com/news/SmartTunnel.pdf



The most common and widespread of the world's natural hazards is the flood. According to UNESCO, these disasters strike about 150 times, impact 500 million lives, and create at least \$60 billion in damages — each year. Providing fast and reliable flow data under unpredictable conditions is serious business at SonTek. And making a difference anywhere in the world means our instruments have to be accurate, reliable, and capable under extreme conditions.

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Spate Irrigation, Livelihood Improvement and Adaptation to Climate Variability and Change

Spate irrigation is a type of floodwater harvesting and management system unique to arid and semi-arid regions bordering highlands. It is a largely neglected and forgotten form of resource management, in spite of its potential to contribute to poverty alleviation, adaptation to climate change and local food security. Mr. Abraham Mehari Haile, Lecturer at the UNESCO-IHE, the Netherlands and Member, WG-ON-FARM provides a brief overview of the state of spate irrigation.

Spate Irrigation

In spate or flash irrigation, floodwaters originating from sporadic rainfall in macro-catchments are diverted from ephemeral rivers and spread over agricultural land. After the land is inundated, crops are sown, sometimes immediately, but often the moisture is stored in the soil profile and used later. A variety of low and high value crops are grown under spate irrigated fields. They include cereals (sorghum, millet, wheat and barley), oilseeds (mustard, castor, rapeseed), pulses (chickpea, cluster bean) as well as cotton, cucurbits, tomatoes and other vegetables. Besides providing irrigation, spates recharge shallow aquifers (especially in river beds), fill cattle ponds and in some areas they are used to spread water over pasture or forest land.

irrigation in Afghanistan, Saudi Arabia, Tanzania and Kenya. In addition to these, there are many undocumented water resource systems in Central Asia, China/Mongolia and Latin America, wherein first floods are used to fertilize and soften-up the land to be followed by semi-perennial irrigation supplies.

Management of Spate Irrigation

The water management systems in spate irrigated agriculture are among the most spectacular and complicated social organizations. They require construction of diversion structures locally that are able to withstand floods and guide flash water over large areas dissipating its erosive power. This also requires a strong local cooperation and agreement on how to distribute a common good that is unpredictable and uneven.

potentially contribute significantly to local and regional food security, which in a world of higher food prices and reduced food aid assumes large importance.

In several cases highly productive agricultural systems are sustained by spate irrigation. One example can be found in the Eastern Lowlands of Eritrea, where thanks to a sophisticated system of moisture management, sorghum yields of 4 tons/ha are achieved. This is three to six times higher than sorghum yields elsewhere. A second example is the Tihama Plains in Yemen, where the conjunctive use of spate irrigation and groundwater (recharged from spate) sustains the grain basket (and livestock basket) of the country. Similarly, the coastal spate and groundwater systems in Saudi Arabia have the highest water productivity in the entire country. This



Spate irrigation is unfortunately neglected but could contribute to poverty alleviation and climate change adaptation



Eritrea, Sheeb - Spate management arrangement are among the most spectacular local organization

Spread of Spate Irrigation

Spate irrigation can be found in West Asia (Pakistan, Iran, Afghanistan), the Middle East (Yemen, Saudi Arabia), North Africa (Morocco, Algeria, Tunisia), the Horn of Africa (Ethiopia, Eritrea, Sudan, Somalia) and more sporadically in other parts of Africa, South America and Central Asia. The area under spate irrigation globally is substantial. It forms one of the largest, but also least known and most neglected water harvesting systems. Worldwide about 2.6 million ha are under spate irrigation and the acreage varies from year to year depending on rainfall. There are also un-quantified areas under spate

In spite of the fact that spate irrigation has the potential to significantly contribute to the reduction of rural poverty and enhance adaptability to climate variability and climate change in some of the most fragile areas on earth, development investments in the system have been meager. It has been argued that in several poor countries, especially in Africa, the per capita reservoir storage capacity is quite low. In spate irrigation moisture is stored in the soil profile and in shallow aquifers at a much lower cost than storing water in a surface reservoir. Even though spate irrigation is inherently risky, it can

imply that the spate irrigation is a complex but not necessarily marginal resource management system.

Various spate irrigation documents are also available online and can be downloaded free of charge from a website of the Spate Irrigation Network (SpN): www.spate-irrigation.org. For any queries regarding membership of SpN or other spate irrigation related matters, you may write to Abraham Mehari Haile at a.meharihaile@unesco-ihe.org or Frank Van Steenberg at fvantseenberg@metameta.nl.

ICID Events in 2009-11

23rd European Regional Conference, 17-24 May 2009, Lviv, Ukraine:

The theme of the conference is "Progress in Managing Water for Food and Rural Development". The conference is organized by the Ukrainian National Committee on Irrigation and Drainage (UKCID) in collaboration with the European Regional Working Group

(ERWG) and German National Committee on Irrigation and Drainage (GECID). Prof. Peter Kovalenko, Vice President, ICID and President, UKCID has extended invitation to all to come to the beautiful UNESCO cultural heritage city of Lviv. Authors wishing to give a presentation (oral or poster) should submit papers to: UKCID, 37,

Vasilkivska Str., Kyiv, 03022 Ukraine, E-mail: <ukcid@igim.org.ua> or contact: Vice Pres. Peter Kovalenko, Tel: +380-44-2573348, Fax: +380-44-2574001, E-mail: <kovalen@users.ukrsat.com>. For details about the program, registration, accommodation etc., please visit <<http://europeicid2009.org>>

3rd African Regional Conference, 11-14 October 2009, Abuja, Nigeria:

The theme of the conference is "Role of Irrigation and Drainage in Food Security: Towards attaining the Millennium Development Goals in Africa". The subtopics are – (i) Food production and income generation through irrigated agriculture; (ii) The role of private public partnership in irrigated agriculture in

poverty reduction; (iii) Performance appraisal of different irrigation systems towards achieving Millennium Development Goals and the way forward; (iv) Irrigated agriculture as a strategy for poverty reduction in developing countries; and (v) Environmental sustainability and pursuit of the Millennium Development Goals. For details, please visit the Conference

website: <<http://www.icid2009.org/>> or contact: Engr. D.B. Madu, Secretary General (NINCID), Federal Ministry of Agriculture and Water Resources, PMB 159, Garki, Area 1, Abuja, Nigeria. Tel: +234 804-4108000; 803-32977965; Fax: +234-9-2347394; E-mail: <nincid@icid2009.org>

60th IEC Meeting and 5th Asian Regional Conference, 6-11 December 2009, New Delhi, India:

The Indian National Committee on Irrigation and Drainage (INCID) is organizing the 60th International Executive Council Meeting and 5th Asian Regional Conference during 6-11 December 2009 at New Delhi. The theme of the conference is "Improvement in Efficiency of Irrigation Projects through Technology Upgradation and Better Operation and Maintenance". Papers are invited on the sub-themes: (i) Modernization of public/state operated irrigation system and services; (ii) Public-private partnership in irrigation development and management; (iii) Integrated approach in agricultural drainage; (iv) Capacity

development for modern irrigation management; (v) Impact of climate change on water resources availability and crop productivity; and (vi) Legal aspects in sharing of water resources. A comprehensive synopsis of about 450-550 words of proposed papers may be submitted electronically to the Organizers by **30 April 2009**.

Besides the conference, there will be many interesting international workshops and side meetings. An exhibition of products and services related to irrigation, drainage and flood control is also planned to be held. Technical visits have been arranged to the reputed Research Institutes. Many exciting excursions and post-conference tours have been arranged.

Those registering before **30 June 2009** will get a discount of US\$ 50/ INR 500.

For details about the programme, venue, accommodation and online registration facility please visit: <<http://www.incid2009delhi.org>> or contact Conference Secretariat: Secretary, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi 110021, India. Tel: +91-11-26115984/ 26111294; Fax: +91-11-26116347; E-mail: <sunil@cbip.org>; <cbip@cbip.org>, or INCID Secretariat: Member Secretary, Indian National Committee on Irrigation and Drainage (INCID), CWC, Tel: +91-11-26107086; 26101593; Fax: +91-11-26176533; E-mail: <arc5delhi@gmail.com>

61st IEC Meeting and 6th Asian Regional Conference, 10-16 October 2010, Yogyakarta, Indonesia:

The theme of the conference is "Improvement of Irrigation and Drainage Efficiency through Participatory Irrigation Department and Management under the Small Land

Holding Conditions". For details, please visit: <http://www.icid2010.org>, or contact: Indonesian National Committee on Irrigation and Drainage (INACID), Ministry of Public Works, Directorate General of Water Resources, Main Building, 3rd Floor, Jalan Pattimura

No. 20, Kebayoran Baru, Jakarta Selatan, Indonesia. Tel: 62-21-7230317; 7230318; Fax: 62-21-7261956; E-mail: <inacid2010@gmail.com>; <inacid_indonesia@yahoo.co.id>; <secretariat@icid2010.org>;

21st Congress on Irrigation and Drainage and 62nd IEC Meeting, 15-23 October 2011, Tehran, Iran:

The theme of the 21st Congress is "Water Productivity towards Food Security". The congress will discuss on Question 56 "Water and Land Productivity Challenges" and Question 57 "Water Management in

Rainfed Agriculture", besides Symposium on "Climate Change Impacts on Soil and Water Resources", and Special Session on "Modernization of Water Management Schemes".

Parallel to these, **8th International Micro Irrigation Congress (IMIC)** will also be held. For details, please contact: Iranian

National Committee on Irrigation and Drainage (IRNCID) Secretariat, No. 24 Shahrshaz Alley, Kargozar St., Zafar St., Tehran, Iran, Postal Code: 19198-34453. Tel: (+9821) 2225 7348 – 2225 0169, Fax: (+9821) 2227 2285, E-mail: <irncid@gmail.com>, <icid2011@gmail.com>, or visit: <<http://www.icid2011.org>>

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