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ICID Newsletter

Managing water for sustainable agriculture

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2009/3

Message from the President

Dear members of the ICID family,

In addition to representing ICID at the Fifth World Water Forum in Istanbul in March, I had the opportunity, over the past few months, to participate in some extremely exciting international activities and National Committee events, which reinforced the importance of the mission and work of ICID.



For example, I had the privilege to meet with the Moroccan National Committee (ANAFIDE) in Rabat and help them to celebrate their 40th anniversary. I delivered a talk on water and food security, and shared information about Canada's on-going efforts in the irrigation and drainage sector. I deeply enjoyed my interactions with our ANAFIDE colleagues, and appreciated the many innovations that Morocco is undertaking to intensify their high value agricultural production for the export market. Morocco provides a very good example of how water is intensively and wisely managed, in order to add high value to agriculture. Shortly after, I was in Hyderabad, India for ICRISAT Board meetings, and was able to visit some of the excellent work being done by ICRISAT scientists and engineers in watershed management, water harvesting, soil moisture management, and dryland agriculture. ICRISAT's work on these topics is truly exemplary, and I have asked the Secretary General to find ways in which ICID can work with ICRISAT to transfer technology and best practices to some of our national committees facing similar technological issues, particularly in sub-Saharan Africa. At the invitation of the Government of Guyana, I met with members of that

country's national committee and advised on the modernization and rehabilitation of some of the country's strategic flood control and drainage infrastructure. The lesson being learned in Guyana is that infrastructure which was designed and built over 100 years ago, can no longer accommodate the changes in urban development and climate that are now occurring. The drainage of low lying tidal lands is being compounded by sea level changes and rising water levels. This has major cost implications as government grapples with the challenge of rehabilitating aged infrastructure versus building completely new hydraulic structures. I was very pleased, as usual, to participate in the annual technical meetings of the Canadian National Committee of ICID (CANCID), held this year in the very charming and historic Ville de Quebec. The meetings were extremely well attended; the quality of the technical sessions was excellent, but most exemplary was the extensive participation of our students and young professionals in all aspects of the conference. This bodes well for our profession and reaffirms that a very strong corps of young professionals are emerging, to take our profession to its next highest level in the near future. As the saying goes: the future is in good hands!

I was invited by the President of the World Water Council (WWC) to make a presentation on water and food security and ICID's work on this topic at the WWC Board of Governors meeting in Madrid in June. The WWC had, in the past, been heavily engaged in water supply and sanitation issues in the past, and their President acknowledged that with the current food crisis, it is only appropriate that the WWC work with organizations such as ICID to tackle the water for food security challenges. My intervention at the WWC governors meeting could not be more timely, given the various communiqués released by the G8 and G20 leaders at their recent

summit in L'Aquila, Italy. The leaders of the world's most affluent and influential countries have recognized the constraints of water availability and the growing number of people, particularly in the developing countries, who are being affected by rising food prices and undernourishment. It is estimated that one billion people are undernourished; this is 100 million more than in 2008. The FAO suggests that \$30 billion per year are needed, to double food production, in order to feed the world population of 9 billion by the year 2050.

Water and food security are definitely dominating the global development agenda. However, what was most intriguing is that the documentation from the G8 meetings failed to make the direct connection between water resources and food security. Some 40% of the world's food comes from an irrigated land area of about 300 million hectares. This represents about 18% of the world's cropland. The heavy dependence on irrigated agriculture to meet the food security challenges must therefore never be underestimated. ICID, because of its mission and committees of experts drawn from 108 member countries is well positioned to take the leadership on making the link between effective water resources management and food security. We must work vigorously to articulate the reinvestments needed for irrigation, drainage, flood control, water storage, dams, ponds and reservoirs. I would personally like to support the work of our National Committees, as they take on the challenges associated with water for food security. I hope that we can collectively engage in a very deep dialogue on this topic when we meet in New Delhi, December 6-11 at the 60th IEC meeting.

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

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Welcome to New Delhi

60th IEC MEETING AND 5th ASIAN REGIONAL CONFERENCE, DECEMBER 2009



On 6 December 2009, the Indian National Committee on Irrigation and Drainage (INCID) will have the privilege of welcoming delegates from around the world to the ICID's 60th International Executive Council (IEC) meeting and 5th Asian Regional Conference. It is a matter of immense pleasure and pride to host these events when ICID is celebrating the 60th year of its foundation. India had been honored to host ICID Secretariat at New Delhi since its establishment in 1950, and is also one of its founder member countries. It would be therefore an excellent opportunity for the entire ICID family to be here in the Diamond Jubilee year of the Commission's foundation.

In the past, India had the privilege of hosting the 8th International Drainage Workshop in 2000; 33rd IEC in 1982, the 3rd Afro-Asian Regional Conference in 1980, 17th IEC and 6th Congress in 1966, 4th IEC in 1953, 2nd IEC and 1st ICID Congress in 1951, and 1st IEC in 1950. We are excited to have yet another opportunity in welcoming global irrigation and drainage community.

Presently, INCID is hosted by the Central Water Commission (CWC), an apex technical organisation of the Ministry of Water Resources, Govt. of India. INCID has the membership of professionals drawn from government organizations, academic and research institutes across the country. INCID has organized many national and international workshops in close liaison with the Central Office, and has brought out over a dozen technical publications.

In India the history of irrigation development can be traced back to pre-historic times. Vedas and ancient Indian scriptures have references to wells, canals, tanks and dams which were beneficial to the community and their efficient operation and maintenance was the responsibility of the State. Civilization flourished on the banks of the rivers and harnessed the water for sustenance of life. There is an evidence of the practice of irrigation since the establishment of settled agriculture during the Indus Valley Civilization (2500 BC).

Today, India is a fast growing and the fourth largest economy of the world in terms of GDP. India's achievements in water resources development and management during the past 60 years have been spectacular. The country has the largest irrigated area in the world of about 61 million ha but even then, it covers only 42% of the cultivable area. The irrigated agriculture has made major contribution towards food grain production and in the process has made the country not only self-sufficient, but an exporter of food grains in 2005-07.

We have received overwhelming response to the "call for papers" for the conference; more than 230 abstracts of papers from 24 countries have been accepted for oral/poster presentations. We have blocked more than 300 rooms in various categories of hotels. A dedicated website www.incid2009delhi.org has been established which provides details on accommodation, programme, post conference tours, and facility of online registration and payment.

We are happy that the event will be inaugurated by our Hon'ble Prime Minister, Dr. Manmohan Singh. Delhi with its population of about 12 million is a modern city of India having a blend of both old and modern culture. There are many sites of tourists' interest within and around Delhi including the world famous *Taj Mahal*. The weather in December will be very pleasant.

The Indian National Committee (INCID) and the Central Board of Irrigation and Power (CBIP) - the organizing agency are fully geared-up to ensure an enjoyable stay and rewarding experience to our guests. I am pleased and honored to invite you to participate in these meetings and look forward to welcoming you in coming December at New Delhi.

A.K. Bajaj
Chairman, CWC and INCID

Managing Water for Food and Rural Development: An European Outlook

23rd European Regional Conference (ERC) of the ICID was held in Lviv, Ukraine during 18 - 21 May, 2009 on the theme 'Progress in Managing Water for Food and Rural Development'. The conference was organized by the Ukraine National Committee (UKCID) in cooperation with the European Regional Working Group (ERWG) of ICID. Professionals from Bulgaria, Germany, Hungary, Iran, the Netherlands, Poland, Romania, Russia, Spain, Ukraine, United Kingdom, and Uzbekistan participated in the conference. Some key Office Bearers like Chairman, ERWG and Vice Pres. Eiko Lübke, Pres. Hon. Bart Schultz, Pres. Hon. Peter Lee, Secy. General M. Gopalakrishnan joined the Regional Conference and spoke in the sessions. Vice Pres. Peter Kovalenko provides a brief on the key outcome of the conference.

The 23rd European Regional Conference of ICID focused on the issues related to flood control, water demand, application of GIS technology in water management, development of management plans for river basins, and impact of climate change as evidenced from the increase in the frequency of floods and droughts all across the Europe. The young professionals discussed about their roles in decision-making process on topical questions in the context of water and land management for food and rural development. As an outcome of the Conference, the '**Lviv Declaration**' was brought out.

Conclusions and Recommendations

- ♦ There is a good development with respect to integrated management of water and land resources - covering policy development, stakeholder participation, actual implementation, modeling, data collection, storage and dissemination.
- ♦ More and more projects are being developed and implemented in an integrated way, by taking into account social conditions, stakeholder participation, possible impacts of climate change, technical, economic, gender, and environmental aspects. However, more experience still has to be gained to improve these aspects. This will be especially important during the operation and maintenance phase of rural development projects.
- ♦ Primarily due to human activities as well to a certain extent due to the impacts of climate change, the impact of floods and drought is significantly rising in many places. Therefore it is increasingly

important that in the development of projects both the present day conditions as well as the envisaged mid-term and long-term scenarios are taken into account in the decision-making process. In light of this, the European Water Framework Directive and the European Flood Directive are important guiding documents and need to be implemented jointly.

- ♦ For improved coordination of the wide range of activities for rural development at different spatial levels, like integrated land and water management, river basin management, rural development and spatial planning, it is recommended that legislation and organization structures, wherever relevant, should be updated.
- ♦ There is an urgent need to strengthen international water legislation for protection of the right of water for agriculture, in order to support sustainable and integrated water management - irrigation and/or drainage depending on the local conditions - as a prerequisite to guarantee the food security.
- ♦ Activities of the Interstate Commission for Water Coordination of the Central Asia (ICWC) in the framework of cooperation of the five states - Kazakhstan, Tajikistan, Uzbekistan, Turkmenistan, and Kirgizstan - may serve as an example for the trans-boundary cooperation in other river basins.
- ♦ Further development of a network of Russian speaking water management specialists that was initiated in January 2009 is required. All the scientific organizations were encouraged to join the network.

Agreed Actions

- ♦ While acknowledging the need for significant increase in food production through sustainable rural development in the forthcoming decades and the potential of several of the European countries, like Ukraine, to contribute to this, it was agreed to launch an initiative for a joint project on 'Integrated Water Management for Improved Food Production in European Countries'. The ICID European Regional Working Group (ERWG) will take a lead to prepare a proposal in cooperation with the potential partners.
- ♦ The UKCID and GECID jointly will take up the initiative of strengthening the network for European young professionals in the water management sector. They will also promote activities like research projects, exchange of professionals, summer schools, etc.
- ♦ The activities of the European Work Team on Sustainable Irrigation Management (EWTSIM) will be reviewed and further developed in light of the need for integrated approaches for rural development.

For further details, contact Dr. Peter Kovalenko, Vice Pres., ICID, and President UKCID at kovalen@users.ukrsat.com.



Use of Brackish Groundwater in Aquaculture and Agriculture

The UN and other agencies dealing with water sector have indicated that one third of the world population already faces water scarcity, and warned that “radical actions” are required in order to continue to feed the world’s population over the next 50 years. One of the proposed major actions is to reduce the use of freshwater for crop production by as much as 50%. This reduction should result from higher water use efficiency, the re-use of wastewater, and also by the use of so-called marginal waters, including brackish surface water and brackish groundwater. Dr. Samia El-Guindy, Vice Pres. ICID, and Member of the ICID Working Group on Use of Poor Quality Water for Irrigation (WG-PQW) explains as how the brackish water can effectively be used in aquaculture and agriculture.



Why Use Brackish Water?

Brackish water has a level of salinity between freshwater and sea water (0.5 – 30 grams of salt per liter). International interest in the use of brackish water for production of food and other goods is indeed increasing. The reasons are diverse:

- In large dry land areas all water resources need to be exploited in order to cope with the growing water requirements. This is the case in the Middle East, but also in large areas of India, Australia and the USA;
- In old irrigated areas without sufficient drainage, the acquired salinity of soils and shallow groundwater often prevents continued growth of traditional crops; more salinity-resistant crops or crop varieties are required. Such examples can be seen in southern Pakistan, in parts of China, and in the north-east of Thailand; and
- In coastal areas, increased seepage of seawater partly accelerated by sea level rise, results in brackish groundwater and soils. This is the case in the Netherlands, Spain, Japan and some other low-lying countries.

Notwithstanding, in all situations there is a need for the development of new crops or crop varieties/cultivars in order to keep the areas in active crop production.

The available brackish groundwater resources are not being exploited as yet. The salinity levels of brackish waters are too high for irrigation of conventional crops. However, many of the barren lands could be made productive if suitable salt-tolerant crops or special cultivable techniques could be adopted to use the brackish water. Appropriate large-scale production systems using this water have not been developed so far. Small-scale experiments, however, as well as developments elsewhere in the Middle

East, do indicate that suitable opportunities exist to use the brackish water.

In principle, there are two possible ways of using brackish waters:

- Desalinization of brackish and salty waters. At present this is not feasible for large-scale use in agriculture or aquaculture because of high energy demands, but it is already cost-effective for more luxury water use, such as in hotels and resorts. Along the Red Sea coast desalination is common in such ventures. In some other Middle East countries desalination for drinking water is already being practiced; and
- Development of production systems that can make use of available brackish water without (major) treatment.

Integrated Agri-aqua Culture Farming System

A pilot farm based on the multi-use of the water unit in different activities was established in Egypt. First of all, groundwater is pumped from deep wells to lined tanks for intensive production of tilapia. The effluent from the tilapia tanks is discharged for re-use in catfish tanks, while the effluent from the catfish tanks, containing important nutrients, is used again to irrigate berseem and other crops. The berseem is subsequently grazed by sheep, goats and cattle. Finally, the livestock manure and plant residues/offal are used for production of biogas (Figures 1 and 2). The farm covers some 500 feddan (210 ha), of which 1.5% area is used for aquaculture, 42% area for berseem and livestock, 34% area for horticulture, and the rest for hatcheries, godowns, houses, offices and other infrastructure. Annual yield of fish was reported to be high (37 g/m³ and of export-quality, since pollution is absent), and the crop produce was also higher than that grown with commercial fertilizers. The fish waste improves desert soil qualities substantially, resulting in an increase of the value of the land.

The salinity of the well water was rather low (500–700 ppm), but in order to prevent building up of soil salinity, the

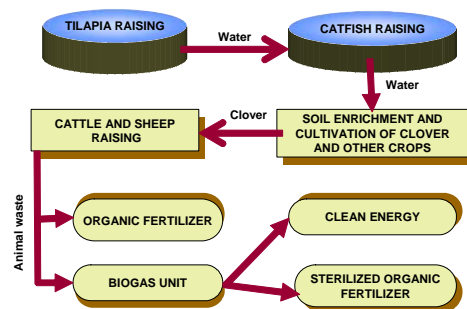


Figure 1

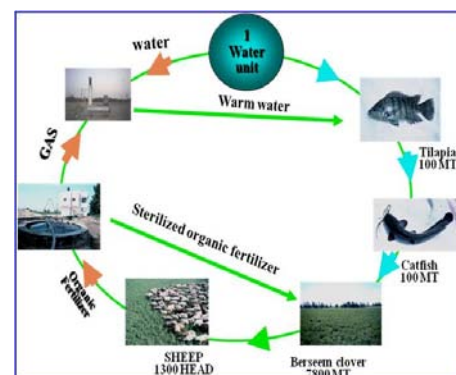


Figure 2

soil is leached with freshwater after the harvest of berseem. The aeration system for the fish tanks was demonstrated; the various systems are used only when absolutely required because of the high consumption of electricity.

The following table shows a comparison between the conventional and the proposed systems for an unit water quantity. It is seen that the proposed system has very high potential for water conservation. There are other uses of the proposed system, besides food production and water saving amplifying multiple uses of water.

Conventional System	Item	Proposed System
100 MT	Tilapia	100 MT
100 MT	Catfish	100 MT
4500 MT	Clover	7800 MT
1000	Sheep	1300
No	Warm Water	Yes
No	Organic Fertilizers	Yes
Variable	Waste	Nil
100	Irrigated Feddans	130
0%	Water Conservation	67%

Vice President Dr. Samia El-Guindy may be contacted at app@link.net

ICID Enters 60th Year of its Service to Global Farming Community

On 24 June 1950, 11 countries joined their forces and established the International Commission on Irrigation and Drainage (ICID) with its Secretariat at New Delhi, India. Presently, the Commission has a network of 108 countries with 63 countries as its active members spread across the world. About 290 professionals from its member countries and international organizations voluntarily contribute their knowledge and expertise in furthering the mission of ICID. To mark the 60th year of ICID foundation, Central Office on 24 June 2009 organized a brief function inviting experts/professionals from the FAO and India. The following is the gist of presentations of the key speakers.

At the outset, **Er. M. Gopalakrishnan**, Secretary General made presentation on '60 Years of ICID' and took stock of the last 59 years by highlighting key activities/events, publications, and ICID contribution to the world in the field of irrigation, drainage and flood management.



(L to R) Er. V.B. Patel, Dr. Gavin Lindsay Wall, Er. M. Gopalakrishnan, Er. A.K. Bajaj

Dr. Gavin Lindsay Wall, FAO representative to India and Bhutan briefly dealt with the impact of water scarcity on the poor and discussed the experience and views of FAO on irrigation water management. He said that water use has been growing at more than twice the rate of population increase in the last century, and, although there was no global water scarcity as such, an increasing number of regions were chronically short of water. According to FAO, the world hunger is projected to reach a historic high in 2009 with 1020 million people going hungry every day. By 2025, 1800 million people will be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under stress conditions. The situation will be exacerbated as rapidly growing urban areas place heavy pressure on nearby water resources. The most recent increase in hunger is not the consequence of poor global harvests but is caused by the world economic crisis that has resulted in lower incomes and increased unemployment. This has reduced access to food by the poor.

To face the challenges of irrigation management and deliver the catch-cry of 'more crop per drop', Dr. Gavin suggested three interlinked steps as the way forward - (1) to mobilize communities and build their social capital to manage water. The central thrust must be that of the old adage 'for the people by the people', (2) to measure the water resource, the deliveries and the losses; as you can only

manage what you can measure, and (3) to adopt a service approach to the provision of irrigation water. It has been observed that farmers are willing to pay for services, be it for water or for power; provided the services are rendered consistently, fairly and represent value for money. Dr. Gavin cited an example of a FAO project in India where these three steps have worked successfully.

Er. V. B. Patel, Former Chairman, Central Water Commission (CWC) talked on 'Role of Participatory Irrigation Management (PIM) in Food Security'. He said that India needs about 500 million tons of food grain to feed its estimated population of 1.6 billion by the year 2050. As cropped land area has already reached its peak at 145 million ha, expansion of the irrigated area, adopting water saving measures, and increasing crop productivity are the available options to achieve the target food production. Er. Patel said that Participatory Irrigation Management (PIM) is a favoured option to achieve the food security of the country as it has potential for not only saving water but also increased crop yields and farmers income. He apprised the lessons learnt from PIM in India and made suggestions to accelerate its up-scaling.

Er. A.K. Bajaj, Chairman, Central Water Commission (CWC) and INCID invited all the participants to join the 5th Asian Regional Conference to be held in December 2009 at New Delhi.

MESSAGE FROM THE PRESIDENT

Dear Friends,

It gives me extreme pleasure to say a few words on this auspicious occasion of the 60th anniversary of the founding of ICID.

As President of this esteemed organization, I am continually impressed and amazed by the strength, resilience, fortitude, and creativity of the ICID family over the past 60 years. ICID is an international institution which depends entirely on the support of its 108 member countries and the voluntary efforts of the experts in the national committees.

The global reach and impact of the institution is particularly commendable given its humble beginnings with 11 member countries in 1950. Few institutions can claim to have attained such a high level of maturity and international recognition. We owe this remarkable achievement to the vision, dynamism and generosity of our founding fathers, who created the organization with head office in New Delhi, and to the thousands of dedicated volunteers and experts, Central Office staff, Secretaries General, and office bearers who have blazed a trail of excellence and innovation over the past six decades.

The ability of ICID to meet the evolving technical, scientific and engineering challenges over the decades should never be underestimated. From the early work in design and construction of irrigation and drainage projects, to development of standards of practice, to improvement of system efficiency, to rehabilitation and modernization of the vast irrigation and drainage infrastructure, ICID has led the way. It has informed governments, multilateral and regional development agencies, and practitioners of best policies and practices. When the emphasis shifted to environment, people, farmers, institutions, poverty, finance, and climate change, ICID showed that it was fully capable of adapting to these emerging and prevailing challenges. However, ICID is not only concerned with the present, but it has the vision to look ahead, and to start to grapple with the issues of food security, markets, trade, biofuels and energy. These matters will change our way of thinking and doing business, and I am proud to say that ICID has already shown that it is geared up to deal with this new agenda.

I close by wishing all in the ICID family, the national committees, and Central Office staff my heartiest congratulations on this Diamond Jubilee anniversary. Last but not least I express my deepest gratitude to the Government of India for graciously hosting the Central Office and for its pivotal support of ICID since the founding in 1950.

May ICID continue to grow from strength to strength, and have even more glorious future.

With my very best wishes.

Chandra A. Madramootoo
President

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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.

This is a paid advertisement.

Modernizing Surface Irrigation Methods in USA

Globally, surface irrigation methods are the dominant method of crop irrigation covering about 85% of the world irrigated area of 280 million ha. Surface methods include - furrows, graded and dead level basins, border strips, surge and their various combinations. However, in many countries there has been a gradual transition from these surface irrigation systems to pressurized systems (sprinkler, and micro irrigation). This shift has been mainly due to the cost of labor and water, availability of water, and the price of fertilizers and other agricultural chemicals. Dr. James E. Ayars, ARS-USDA, Vice Chairman, ICID Working Group on Drainage (WG-DRG) provides the present scenario of surface irrigation methods and some tips for their modernization.

Preamble

World over, the acceptance of new irrigation methods and management by the farmers has always been and continues to be an issue. In the United States, for example, many farmers feel they have the knowledge and expertise to effectively manage their irrigation systems and are reluctant to evaluate alternatives. Often it is outside economic forces that drive them to accept new technologies e.g. the need to dispose of saline drainage water. This is often the case in developing countries as well.

In the United States, approximately 40% of the 21 million hectares of the total irrigated land uses surface irrigation methods. Attempts have been made to adapt surface irrigation on light soils using techniques such as surge irrigation, but this generally requires equipment that is expensive and not readily available, specially in developing countries. Open channel systems are still the norm for providing irrigation water in many irrigation districts. Some districts have opted to line channels or install piping systems to minimize water loss.

Present Scenario

The underlying principles used to design and operate surface irrigation systems are reasonably well known and have not changed significantly over the years. For any of these systems to be effective the

soil surface has to be well graded, and the flow versus the field length has to be balanced. In recent years, there has been increased emphasis on using laser grading to create the uniform grades or dead level systems that are required to effectively use surface irrigation. The use of siphons and gated pipes on furrow irrigation systems is quite common in the United States. Furrow irrigation systems can be easily developed in a wide range of soils, field configurations, and a wide range of discharges. This is not the case with systems such as level basin that requires high flow rates that often times are not available.

In reviewing the latest monograph from the American Society of Biological and Agricultural Engineers (ASBAE) titled 'Design and Operation of Farm Irrigation Systems' there is much emphasis on the adoption of technologies that will be used to schedule irrigation, develop precision agriculture, and similar sorts of systems. However, it is acknowledged that in developing countries, innovative research and extension education is needed to provide and implement simple but efficient low-cost methods of irrigation and make them easy to operate, suitable for the crop, and acceptable to growers. Some work is already being done on a relatively small scale, but there is much room for innovation. However, the overriding message is that research and extension is

needed to develop simple and effective means of irrigation for developing areas.

Management of on-farm water is also a challenge that is limited by the availability of water to meet on demand crop water requirements. Frequently, the situation arises when water is available but it is not the optimum time for irrigation; however, due to prevailing rotation system water distribution, farmers are

compelled to apply water to their fields. This results into not only a potential loss of water due to deep percolation but also damage to both crop and land.

Suggestions for Improvement

As a first step in the implementation of improved surface irrigation in developing countries, it would be advisable and desirable to develop on-farm irrigation and demonstration projects that would first look at improving the field surface grade and the distribution system to the field and subsequently working with the farmers to develop management strategies for cropping that will be matching to the available water supply. The possible actions could be as follows;

- ♦ Identify cooperating farmers in an irrigation district and complete an analysis of existing irrigation practices and make recommendations for incremental changes to include, land grading, improved irrigation water delivery to the farms, and to fields. On farm management could then use siphons or technologies such as gated pipe to apply water over fields.
- ♦ Conduct small research studies and demonstration projects to evaluate the most effective design parameters for individual fields. This will include managing the water delivery on the field to balance the flow and field length to give farmers some operational parameters that fit in with their overall method of operation.
- ♦ Hold farmers' field days to demonstrate new technologies and provide feedback on potential application and modification of these technologies.
- ♦ Develop farmer outreach programs to publicize the results and develop new educational approaches to teach farmers how to irrigate using the latest techniques.

Dr. James Ayars can be reached at <james.ayars@ars.usda.gov>



Alternate furrow irrigation of a tomato field using siphon tubes, USA

Future ICID Events

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



The theme of the conference is "Improvement in Efficiency of Irrigation Projects through Technology Upgradation and Better Operation and Maintenance". The conference will deliberate on six sub-themes namely, (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. For registration and further details, please contact: Member Secretary, Indian National Committee on Irrigation

and Drainage (INCID), CWC, Room No. 424(N), Sewa Bhavan, R.K. Puram, New Delhi 110066. Tel: +91-11-2610 7086; 2610 1593; Fax: +91-11-2617 6533 or Conference Secretary, Secretary, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi 110021, India. Tel: +91-11-2611 5984/ 2611 1294; Fax: +91-11-2611 6347; E-mail: sunil@cbip.org; cbip@cbip.org; Website: <http://www.incid2009delhi.org>

3rd African Regional Conference: The Nigerian National Committee on Irrigation and Drainage (NINCID) regrets to inform that the 3rd African Regional Conference (AfRC) will not be held during 11-14 October 2009 at Abuja due to unavoidable circumstances.

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 development and management under the small land holding

conditions". The Indonesian National Committee on Irrigation and Drainage (INACID) is organizing both the events. For more information, please contact—Secretary General, INACID, Ministry of Public Works, Directorate General of Water Resources, Main Building, 3rd Flood, Jalan Pattimura No. 20, Kebayoran Baru,

Jakarta Selatan, Indonesia. Tel: +62 21 723-0317, 723-0318; Fax: +62 21 726-1956, E-mail: inacid2010@gmail.com; inacid_indonesia@yahoo.co.id; secretariat@icid2010.org; Website: www.icid2010.org

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". 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: 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>

Other Related Events

McGill Conference on Global Food Security, 5-7 October 2009, McGill University, Montreal, Canada.

The theme of the conference is "Impacts

of global financial turmoil on food security". For details, please contact: Faculty Planning and Communications, Macdonald Campus, McGill University,

21,111 Lakeshore Rd., Sainte-Anne-de-Bellevue, Qc H9X 3V9, Canada. E-mail: globalfoodsecurity@mcgill.ca Website: <http://www.mcgill.ca/globalfoodsecurity>

USCID 5th International Conference on Irrigation and Drainage, 4-7 November 2009, Salt Lake City, Utah, USA.

The theme of the conference is "Irrigation

and drainage for food, energy and the environment". For details, please contact: USCID, 1616 17th Street, #483, Denver, CO 80202. Tel: 303-628-5430;

E-mail: stephens@uscid.org; Website: www.uscid.org

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