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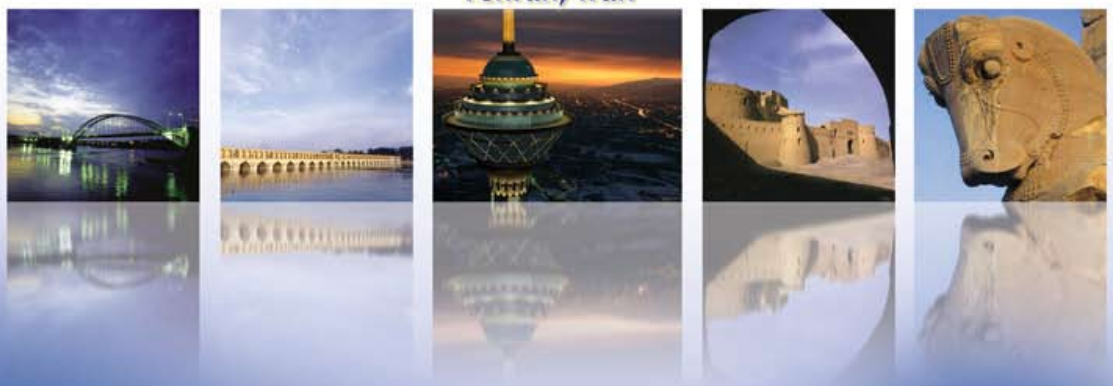
21st ICID Congress on Irrigation and Drainage
&
8th International Micro Irrigation Congress

15-23 October 2011
Tehran, Iran



CALL FOR PAPERS

INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE
NEW DELHI, INDIA

21st International Congress on Irrigation and Drainage
&
8th International Micro Irrigation Congress

15-23 October 2011
Tehran, Iran

Theme:

Water Productivity Towards Food Security

CALL FOR PAPERS

ICID•CIID

International Commission on Irrigation and Drainage
48 Nyaya Marg, Chanakyapuri, New Delhi 110021, India

International Commission on Irrigation and Drainage (ICID) was established in 1950 as a Scientific, Technical, Non-commercial, Non-Governmental International Organization (NGO) with headquarters at New Delhi, India. The Commission is dedicated to enhancing the worldwide supply of food and fiber by improving water and land management, especially the productivity of irrigated and drained lands. The mission of ICID is to stimulate and promote the development and application of the arts, sciences and techniques of engineering, agriculture, economics, ecological and social sciences in managing water and land resources for irrigation, drainage and flood management using research and development, and capacity building. ICID aims to achieve sustainable irrigated agriculture through integrated water resources development and management (IWRDM). ICID network spreads to 110 countries all over the world.

DATES TO REMEMBER

1. Submission of Summary and Conclusions	**01 September 2010**
2. Intimation of Acceptance	**15 December 2010**
3. Receipt of full text of accepted papers	**01 March 2011**

CONTENTS

INVITATION

The International Commission on Irrigation and Drainage (ICID) is a scientific and technical non-governmental international professional organization dedicated inter alia, to improve water and land management to enhance the worldwide supply of water and fibre for all people. ICID stimulates and promotes the development and application of arts, sciences and techniques of engineering, agriculture, economics, ecology and social science in managing water and land resources for irrigation, drainage and flood control and river training applications. It's objectives encompass research and development, capacity building and adoption of comprehensive State-of-the-Art approaches and techniques for sustainable agriculture in the World. ICID, founded in 1950, enrolled as many as 108 member countries; about 63 of them are active and contribute to the goals and mission of ICID.

ICID Congresses concentrate on themes of global interest but of a closer nature to their own professional missions. The ICID Congresses held at three year intervals are well known for their ability to attract best responses.

Iran succeeded in the honour of hosting the 21st Congress in a stiff competition during the Sacramento IEC in October 2007. The 21st ICID Congress will devote itself to 'Water Productivity towards Food Security', a theme of high current relevance. A global decrease in the food grain stocks in recent times with a consequent impact on food prices have sent shock around and reversed the trend of complacency in agricultural front which got set in for a few decades in the past. Decreasing land and water resources assigned for agricultural production, the likely climate change impacts and the competition for agricultural land and water for bio fuel crops are some of the major issues which confront us in the ever-changing environ that we live in. The set of Questions to look into some aspects of these current challenges are 'Water and Land Productivity Challenges' and 'Water Management in Rainfed agriculture'; 'Climate Change Impacts on Soil and Water Resources' have also been assigned as an exclusive topic for the Symposium. A Special Session on 'Modernisation of Water Management Schemes' would look into the ongoing reforms and the need in re-inventing irrigation projects.

The process of identifying the General Reporters and the Panel Experts for the Congress will be undertaken during the International Executive Council of ICID in New Delhi, India in December 2009. In the successive bulletins on the Congress, one will find more information.

Responses to ICID Congress themes are usually substantial. Due to obvious constraints to present all of them, only a limited number of papers are selected for presentation at the Congress and their texts published in a CD-ROM. Poster Sessions for the Congress Questions are arranged to give an opportunity to more authors for presentations; this enables them to have a closer and intensive interaction with the international participants. Full-text of the accepted papers for the Poster Session will also find a place in the CD-ROM. The Congress transactions will contain all the keynote addresses, general reports and abstracts of all papers.

As a country with rich historic tradition in irrigation, drainage and flood management, Iran has indeed a lot to offer. I am sure that this event will provide a wonderful opportunity for you to visit this great country with an ancient civilization and tradition.

It is my proud privilege to invite you to join us and strengthen our efforts by sharing your expertise through a response paper to the Questions, Symposium or the Special Session which are detailed within this bulletin. Kindly reserve the dates in your diary for attending the Congress. Your participation is very important for us.

M. Gopalakrishnan
Secretary General, ICID

WELCOME

During the annual meeting of ICID held in Sacramento, USA, in 2007, the Islamic Republic of Iran officially proposed to host the 21st Congress on Irrigation and Drainage as well as the 62nd International Executive Council Meeting of ICID in 2011 which was gladly approved by ICID members. During ICID 20th Congress held in Lahore, Pakistan, in 2008, it was also programmed that the 8th International Micro-Irrigation Congress be simultaneously held with 21st Congress in Tehran, in 2011.

The Iranian National Committee on Irrigation and Drainage (IRNCID) is honored to invite all members of ICID, as well as, the other national and international relevant entities to gather in Tehran, capital of Iran, in 2011 to participate in these three scientific events and has already started to fulfill its commitments to organize them in the most outstanding way possible.

Iran is one of the most ancient human civilizations with the richest social culture. There are numerous cultural heritages and historical monuments that reveal the engineering skills of ancient Iranians in building huge sustainable structures. Constructing regulatory water weirs that date back to 1000 years ago and water purification works in 3,300 years ago are examples of how Iranians have been intending to establish potable and agricultural water management systems since early times.

In spite of the arid and semi-arid conditions, Iran has achieved a lot to develop its irrigation and drainage systems, to control floods, and to store surface waters by means of small, medium, and large dams. Dams are constructed to secure agricultural and potable water where over 8.5 million hectares of irrigated agriculture are successfully managed for food security in Iran.

Only by physical development of water systems, food security can not be fulfilled. However, development of software together with an integrated planning and management of soil and water resources are required.

In many countries, water shortage for agriculture, drinking and industrial usages is among the most crucial challenges. Certain countries may have adequate water but they may not have sufficient land for farming. To reach the main target of irrigated agriculture which is food security, different measures such as increased soil and water productivity, maximum usage of water per unit, optimum water utilization, and best usage of soil per unit area could be applied as guaranteeing solutions toward food security. To this end, the main topic of the 21st ICID Congress was selected as: "Water Productivity towards Food Security", and also the main topic of 8th Micro Irrigation Congress was selected as: Innovation in Technology and Management of Micro-irrigation for Crop Production Enhancement which shall provide an opportunity not only for gathering, exchanging, and applying experiences from all over the globe but also for the top challenge of future agriculture and water sector of the world.

The ICID event in 2011 will be good opportunity for experts, professionals, and decision-makers of different countries to get together in Tehran, acquaint with the rich Iranian culture, visit historical beauties of this ancient country, and exchange knowledge and experience for an enhanced irrigation and drainage at the global level as well.

M.R. Attarzadeh
Deputy Minister of Energy for Water and Wastewater Affairs, and
Chairman of IRNCID

INTERNATIONAL REVIEW COMMITTEE

GENERAL REPORTERS

QUESTION 56 : **Water and Land Productivity Challenges**

Dr. S. Nairizi (Iran)

QUESTION 57 : **Water Management in Rainfed Agriculture**

Dr. Theiv Oweis (Syria)

SPECIAL SESSION : **Modernization of Water Management Schemes**

Dr. Karim Shiati (Iran)

SYMPOSIUM : **Climate Change Impacts on Soil and Water Resources**

Dr. Chandra A. Madramootoo (Canada)

SEMINAR : **Possibilities of Using Traditional Methods in Modern Water Management Systems**

Dr. Kamran Emami (Iran)

PANEL EXPERTS (UNDER EXPANSION)

- Dr. Yohei Sato (Japan)
- Dr. Muhammad Nawaz Bhutta (Pakistan)
- Dr. Ragab Ragab (UK)
- Dr. B.R. Sharma (India)
- Dr. James E. Ayars (USA)
- Dr. N. Hatcho (Japan)
- Dr. Suhas Wani (ICRISAT, India)
- Dr. Md. Ait Kadi (Morocco)
- Ing. Helvecio Mattana Saturnino (Brazil)
- Dr. Ir. Maurits Ertsen (The Netherlands)
- Dr. M. Satoh (Japan)

21st International Congress on Irrigation and Drainage

15-23 October, 2011, Tehran, Iran

SCOPES OF CONGRESS TOPICS

During the Congress, papers are presented and discussed for two Questions, a Special Session, a Symposium, and numerous Workshops. For the Questions, authors can submit papers through their National ICID Committees, or through the International Organizations active in the field of irrigation and drainage. For the Special Session, Symposium and Seminar, only one paper per country can be submitted. Details are given in this Call for Papers. The topics for the two Questions, Special Session, Symposium, Seminar and Micro Irrigation Congress are:

A. Congress Questions

Question 56	Water and Land Productivity Challenges
Question 57	Water Management in Rainfed Agriculture
B. Special Session	Modernization of Water Management Schemes
C. Symposium	Climate Change Impacts on Soil and Water Resources
D. Seminar	Possibilities of Using Traditional Methods in Modern Water Management Systems

CONGRESS THEME : Water Productivity Towards Food Security

In the last century, the world population has tripled. It is expected to rise from the present 6.5 billion to 8.9 billion by 2050. Water use has been growing at more than twice the rate of population increase in the last century, and although there is no global water scarcity as such, an increasing number of regions are chronically short of water. By 2025, 1.8 billion people will be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under conditions of water stress. The situation will be exacerbated as rapidly growing urban areas place heavy pressure on local water and land resources.

In most countries, the agriculture sector is the predominant consumer of water. In many cases, irrigated agriculture has played a major role in the development of rural economies, supporting economic growth and poverty reduction.

Although enough food is being produced to feed the world's population, there are still some 925 million undernourished/hungry people in the world. With nearly the same water and land resources base, we shall have to grow enough food to additionally feed about 2 billion people. Considering the increased demand for food resulting from expected increase in the standard of living, we need to double the level of food production. Securing our food supply is not negotiable. We all need safe and good-quality food in order to live a healthy life.

However, increasing water productivity holds the key to future water scarcity and food security challenges. There is scope for an accelerated increase in water productivity. Water productivity in agriculture has increased steadily in the recent decades, largely owing to increasing crop yields, and the potential still exists for further increase. However, the pace of such increase will vary according to the type of policies and investments, with substantial variations in the impact on the environment and livelihoods of rural populations.

21st ICID congress shall provide an opportunity to exchange updated knowledge and researches on Irrigation, Drainage and Flood Management that contribute to enhanced food production with less water, and better protection from uncontrolled flooding.

A. Congress Questions

QUESTION 56 : Water and Land Productivity Challenges

Today, agriculture consumes about 70 percent of all global water withdrawal, up to 95 percent in several arid and semi-arid countries. Increasing the efficiency of soil and water use and enhancing agricultural land and water productivity at all levels of the production chains are becoming priorities in a number of rapidly growing countries. A systematic approach to agricultural land and water productivity requires actions at all levels, from crops to irrigation schemes, and from national to international economic systems, including the trade in agricultural products. It calls for an informed discussion on the scope for improved land and water productivity in order to ameliorate intersectoral competition for water resources and optimize environmental, social and economic outcomes.

No doubt, irrigation should play a greater role to meet the food demand of the 3rd millennium by focusing on land and water productivity, while preserving rural environment. Researchers are invited to submit their papers on the following sub-topics:

56.1 Water and Land Productivity: Concepts, Indices and Targets

Developing Water and Land Productivity Concepts and Indices; Water and Land Productivity Framework; Approaches to Water and Land Productivity Improvement; Impact of Climate Change on Water and Land Productivity Trends; Strategies to Systematically Improve the Productivity; Planning to Enhance the Water and Land Productivity; Role of Various Inputs towards enhancing Water and Land Productivity; Measuring Productivity Indices; Productivity Analyzing Methods; Monitoring and Evaluation; Performance Assessment Frameworks; Adverse Impacts of Water Productivity Increase.

56.2 Innovations, Technologies and Best Practices for Sustaining and/ or Increasing Water and Land Productivity

Water-Saving Technologies; Innovations on Increasing Water and Land Productivity; Innovations on Soil Fertility Improvement; Effect of Water Pricing Policy on Water Productivity; Techniques on Improving Irrigation Methods; Technology to Improve Water Productivity in Greenhouse Farming; Developing Local Technologies; Adapting Technology According to Farmers Knowledge; Integrating Indigenous Knowledge with Modern Development; Revisit Irrigation Techniques; Nanotechnology and Bio-Technologies in Irrigated Agriculture; Application of Information Technology (IT) in Irrigation and Drainage; Controlling Pest and other Damages through Sustainable Land Management; Agri-business Food Chain Approach to Improve Productivity

56.3 Productivity of Poor Quality Waters for Irrigation Uses

Sustainable Use of Poor Quality Water (PQW) for Irrigation Purposes; Technologies for Managing PQW in Irrigation; Measurements of Water Quality; Impact of Poor Water Quality on Crop Production; Guidelines, Principles and Policy Frameworks on Use of Poor Quality Water; Monitoring and Management of Water Quality; Classification of Poor Water Quality; Managing Use of Saline Groundwater and Surface Fresh Water; Adaptation of Crops to Poor Quality and

Brackish Water; Socio- economical and Environmental Impacts of Using PQW for Irrigation.

56.4 Improving Crop Water Productivity under Stressed Environment

Soil-Water Management under Water Stress Conditions; Deficit Irrigation; Evapo-Transpiration Management; Soil Water Retention Techniques; Genetically Modified Crops to resist Stressed Environment; Agronomic Enhancement to Cope with Stressed Environment; Improving Soil Fertility Management to Control Land Degradation.

56.5 Irrigation and Drainage Management Improvements

Training and Education; Capacity Building in Irrigation and Drainage; Operation and Maintenance of Irrigation Systems; Performance Assessment of Irrigation and Drainage; Decision Support System; Benchmarking of Irrigation and Drainage Systems; Rehabilitation and Modernization of Irrigation and Drainage Systems; Organizational/ Institutional Reforms; Participatory Irrigation Management (PIM); Irrigation Management Transfer (IMT); Comprehensive Research on Irrigation and Drainage Management; Strengthening Accountability for Irrigation Service Delivery.

QUESTION 57: Water Management in Rainfed Agriculture

Sixty Percent of world harvested crops are coming from rainfed agriculture covering 1.2 billion hectares of land. There are also six billion hectares of natural grass land and pastures which are contributing to human food chain. In spite of such a vast rainfed area available to the human utilization, its contribution to the global food security is limited. No proportional efforts have been put forward by governments, international agencies and concerned NGOs to enhance the benefits of such natural resources. Little development has been contemplated to the traditional dry farming in past decades, particularly in developing countries. The productivity of rainfall, so called green water, in these regions is relatively low and there is considerable scope for improvement, through rainfall management, agro-technical and agro-business innovations, investments in infrastructures and technology accompanied by biotechnology enhancements to introduce appropriate varieties of crops.

57.1 Drainage and Flood Management in Rainfed Farming

Spate Irrigation; Drainage Management in Rainfed Agriculture; Bio Drainage in Water Logged Area; Flood Management to Increase Soil Moisture Storage; Controlled Flooding and the Role and Importance of Floodplain Management in Food Production; Calamity Polders (as Part of Flood Management).

57.2 Water Harvesting and Conservation

Low-Cost Water Storage; Micro Catchments Water Harvesting Systems; Hillside Runoff and Conduit Systems; Floodwater Harvesting and Stream Diversion; Water Harvesting Techniques; Identification of Unconventional Water Resources; Appropriate Technology to Utilize Unconventional Water Resources; Suitable Technology to Utilize Fog; On-Farm Storage of Harvested Water and their Design; Management and Economic Viability; Impact of Water Harvesting on Stream Flow and the Environment; Reduction of Water Losses from On-Farm Storage; Application of Mono-layers to Suppress Evaporation Losses.

57.3 Supplementary Irrigation

Appropriate Scheduling for Supplementary Irrigations; Economical Consideration of Supplementary Irrigations; Promote Efficient Pre-Irrigation Techniques; Cropping Strategies to Mitigate Water Scarcity Effects; Small Scale Irrigation Systems for Small Enterprises; Drought Mitigation through Supplementary Irrigation.

57.4 Rainfed Farm Management

Separate Policy for Water Resources in Rainfed Areas; Water and Soil Conservation Methods; Strategies for Soil Water Enhancement; Improvements in Rainfed Crop Yields; Policy Reform and Infrastructure Investments in Rainfed Areas; Improvement in Rainfall Effectiveness; Applications of Super-absorbers in Rainfed Farming; Modern Technology to Improve the Soil Water Holding Capacity including Super-absorbers and Polymers; Biotechnological Methods to Increase Crops Productivity; On-Farm storage; Business Models for Successful Rainfed Agriculture.

B. Special Session: Modernization of Water Management Schemes

Irrigation is critical to food security and economic growth in the World. The wide gap between actual and desirable performance threatens the sustainability of irrigated agriculture. The challenges for increasing the productivity of irrigation systems have forced countries to think of new strategies. The need therefore is for diagnosis of existing irrigation services and modernization options. Irrigation modernization is defined as "a process of technical and managerial upgrading of irrigation schemes with the objective to improve resource utilization (labour, water, economics and environment) and water delivery services to farms; or the transition from supply-oriented to service-oriented irrigation water delivery" (FAO). The current emphasis on technical and managerial upgrading policy has several important implications for irrigation.

Irrigation institutions need to link their central task of providing irrigation services to agricultural production and to integrate their water demands and uses with other users in the basin. An enhanced appreciation of the water delivery and flows across landscapes and the circulation of groundwater within aquifers will lead to informed decisions on the use and reuse of agricultural waters. The concerned agency would like to know how the delivery system and the on-farm irrigation systems are to be managed. In order to exchange updated knowledge and researches on modernization of agricultural water and irrigation schemes, authors are invited to submit papers related to the subtopics mentioned / suggested below :

- Institutional modalities and financial implications;
- Policy and legal implications;
- Modernizing infrastructure;
- Use of GIS & RS for the operation of irrigation systems;
- Monitoring, evaluation and performance;
- Automation of irrigation systems for better operation;
- Applying improved administrative principles and techniques (advanced techniques of data collection methods related to crops, cultivated areas, irrigation requirements, flow measurement devices & water charges);
- New concepts to upgrade irrigation services;
- Capacity development, and;
- Environmental issues.

C. Symposium: Climate Change Impacts on Soil and Water Resources

A great deal of circumstantial events during the past decade or two suggested that the earth's climate is changing. More importantly, scientific research on climate trends and the Earth's responses during the past 150 years indicate that change is now occurring much more rapidly than during past historical period. There can be little doubt that during the twentieth century, humans altered the Earth's climate by emitting huge quantities of green house gases. If we continue on our present course, life on Earth will be extremely altered. The very sustainability of Earth's life – support system is now in question.

The science of climate predications has improved immensely during the past few decades. New and more refined models, incorporating many of the known feed backs are available. Nevertheless, several important uncertainties in the current numerical models frustrate predication of the climate. Chief among these is the prediction of human behaviour.

Climate change may affect the global Food security by altering the existing patterns of water availability and agricultural productivity through the following phenomena:

- Increasing precipitation at higher latitude leading to increased winter/ spring runoff and flooding in some areas.
- Decreasing precipitation and increasing drought frequencies at lower latitude countries.
- Sea level rise and associated salt water intrusion could negatively impact agriculture.

The following regions are affected:

- Low latitude, low – income areas will experience the greatest impacts.
- Arid to semi arid region appears most vulnerable to climate change.

How can agriculture adapt to these changes?

- Technological adaptation, such as improved irrigation practices, demand management approaches, development of non conventional water resources, and technological innovations.

- Agro technical adaptation, such as alternative cropping pattern, soil water and fertility treatments.
- Government agricultural policies, such as enhancing agricultural insurance policy, manipulating water allocation policies.

Authors are invited to present papers related to these issues of climate change and food security.

D. History Seminar: Possibilities of Using Traditional Methods in Modern Water Management Systems

The development of societies especially in arid and semi-arid areas in the last 5,000 years is closely connected with water management problems. These requirements have shaped the relevant societies and their structures. In the course of the centuries, systems and methods under variable conditions have conclusively demonstrated their sustainability. Today, the knowledge and structural remains of these methods are not only interesting archaeologically and historically, but can also help solve current problems.

Modern water management in many regions of the world has to cope with two particular problems. One problem is climate change and the other problem is population growth including the wish for a higher standard of living in these regions, which leads to constantly increasing demands for water.

In this context, traditional methods, compared with modern technology, offer several advantages in rural areas:

- Sustainability of these methods have already been proved by long experience with them. However, they have fallen into oblivion as a result of “modernization” and social changes.
- The methods can usually be implemented with simple means and locally available materials.
- Skilled workers and local people can apply the methods, if necessary after instructions, and later maintain the infrastructure by themselves.
- They are very economical in their consumption of primary energy, use renewable energies and can thus function in a climate-neutral way.
- In a profitability analysis, the traditional methods, for underdeveloped and sparsely populated regions, can have more advantages than “modern” methods.

- Local people feel a sense of self-worth because they are actively engaged in the work with which they can identify themselves.
- If existing remains are integrated, they can be better preserved and the function remains visible.
- Installations in use are more interesting for tourists. Appropriate tourism can be an additional source of income for the region.
- Old methods are often better suited to the natural eco-system. Thus, overuse of existing resources is usually out of the question (e.g. old lifting devices can remove only as much groundwater as is created afresh, unlike electric pumps).
- The methods can, in conjunction with modern systems, open up new perspectives (in the area of irrigation, e.g. the lifting and extraction of water in connection with micro irrigation).

The seminar will cover all aspects of implementation of traditional methods into modern water management systems: social and structural conditions; possibilities of reconstruction and reintegration; maintenance, benefits and limitations; good examples and all kinds of messages to show that we can learn a lot from traditional methods.

8th International Micro Irrigation Congress

Theme: Innovation in Technology and Management of Micro irrigation for Enhanced Crop and Water Productivity

Global demand for food is likely to double in the next 25 to 30 years mainly due to population growth and change of diet. Many countries are endeavoring to achieve food security at a national level. A major portion of this new food demand would be fulfilled from irrigated agriculture. However, further expansion of irrigated lands is ironically limited by freshwater availability particularly in arid and semi-arid regions. Micro irrigation has shown a promise to tackle such a complex and multivariable situation, by allowing higher water use efficiency, minimizing non-beneficial losses of water, reduced energy requirements for operation, and improved agro-technical practices.

Water quality is another impeding factor which has to be taken into account for further development of irrigated agriculture. Micro irrigation has demonstrated a better compatibility to use poor/ low quality waters by way of flexibility and better performance compared to other irrigation methods. However there are several bottlenecks associated with further expansion micro-irrigation which need to be reviewed and dealt with. Concerns such as adaptability to varied soil and water quality, lowering of maintenance costs, increasing of life duration of field distribution systems, innovation in technology to reduce capital costs, and developing crop specific management practices, etc.

The objectives of the Congress are as follows:

- To share experiences in the use of new technologies and best management practices in drip, micro-sprinkler, and other localized irrigation systems.
- To review the status of use of micro irrigation for smallholders;
- To understand socio-economic and technological factors impeding expansion of drip and micro-sprinkler irrigation area.

Topics of the Congress

Papers are invited from experts, irrigation managers, researchers, government and private agencies, farmers, technicians and students to contribute with their knowledge and experiences on the following topics:

- Best management practices/ success stories of micro irrigation adoption;
- Lessons learnt from failures in up scaling micro irrigation;

- Developments in Subsurface micro irrigation;
- Low cost and low energy consuming irrigation systems;
- Automation in micro irrigation;
- Micro irrigation in greenhouses;
- Micro-irrigation for small scale farms;
- Use of low quality waters in micro irrigation;
- Modeling, design and decision support system in micro irrigation;
- Advances in operation and cost effective maintenance of micro irrigation systems;
- Management and cost of micro-irrigation for large farms;
- Efficiency and productivity in micro irrigation systems;
- Socio-economic consequences of the conversion of traditional systems to micro irrigation systems;
- Analysis of long term sustainability of micro irrigation systems;
- Technical performance and quality assessment of micro irrigation systems;
- LCA (Life Cycle Analysis) applied to micro irrigation.

SCHEDULE : Deadlines for Congress Questions, Special Session, Symposium, Seminar and Micro Irrigation Congress

♦ National Committees[1] to intimate name(s) of author(s) of paper to the Central Office	**01 August 2010**
♦ Submission of comprehensive "Summary and Conclusions" of about 500-600 words of the proposed paper to the Central Office by National Committees along with proforma at **Annex 1**	**01 September 2010**
♦ Result of review/screening of "Summary and Conclusions" to be intimated by the Special Committee to the Central Office	**30 November 2010**

[1] Only applicable for Special Session and Symposium

- Intimation of acceptance of "Summary and Conclusions" of proposed paper by the Central Office to National Committees and authors — **15 December 2010**

- Receipt of full text of accepted papers[2] in electronic format and two hard copies in the Central Office along with proforma at **Annex 2** — **01 March 2011**

SUBMISSION OF PAPERS

The comprehensive "Summary and Conclusions" of about 500-600 words of the paper proposed is required to be sent by the authors together with the proforma given at Annex 1 (page 18) to the ICID Central Office through the concerned National Committee no later than 01 September 2010. For definition of "Summary and Conclusions" please refer Annex 3 (page 20). The National Committees and International Organizations can contribute papers as follows:

Congress Questions

Each National Committee and ICID affiliated International Organization may submit one or several papers on the Questions of the Congress. Other invited International Organizations may submit only one paper each.

Nationals of non-member countries can also submit papers on the Congress Questions provided they bear charges at the rate of US$ 10 per paper.

Special Session

Each National Committee and International Organizations shall submit only one paper on any aspect(s) of the theme of the Special Session.

Symposium

The total number of papers for Symposium shall be limited to about 12. Each National Committee may submit only one paper.

Seminar

The total number of papers for Seminar shall be limited to about 12. Each National Committee may submit only one paper.

[2] The papers must be sent through e-mail along with the photographs, drawings embedded in the electronic version.

8th International Micro Irrigation Congress

Authors to send 'Summary and Conclusion' of the proposed papers (Annex 1) directly to ICID Central Office (not through National Committees) as per schedule.

SELECTION OF PAPERS

Congress Questions and Special Session

In addition to the initial screening of the proposed papers ("Summary and Conclusions") at the National Committee level, papers for the Congress Questions and Special Session will be further screened at the international level by the concerned Special Committee consisting of the General Reporter and Panel Experts. Only 5-10 papers will be finally selected per sub-topic of the two basic Questions for presentation at the Congress. In order to give opportunity to greater number of authors to make their presentations and have a closer and intensive interaction with the international participants, poster sessions will be organized for the Congress events. Full text of all accepted papers either for presentation at the Congress events or at the Poster Session will be published in the Congress Transactions on CD-ROM. Three categories of authors for Poster Sessions have been identified as :

1. Authors who wish to present a paper in poster form only;
2. Authors of selected papers who wish to complement their papers with posters for its better comprehension (colour photographs, etc.);
3. Authors to whom the special committee, consisting of General Reporter and Panel Experts, indicate to present their paper as poster.

The decision of the Special Committee regarding acceptance of papers with or without modifications, or rejection of any paper shall be final.

Symposium and Seminar

The papers will be reviewed by the Chairperson of the Symposium and Seminar.

His/her decision regarding acceptance of the paper with or without modifications, or not accepting the same shall be final.

8th International Micro Irrigation Congress

The 'Summary and Conclusion' will be reviewed by International Review Committee.

GUIDELINES FOR PREPARATION OF ACCEPTED PAPERS

1. Focus on those aspects in which something original or of practical importance is to be contributed.

2. The range of each topic has been defined on the basis of the present knowledge of the topic. Original contributions on new aspects will be accepted on merit basis. Authors should note that a re-statement of well-known facts and principles, available in easily accessible publications, may not be accepted. However, if in presenting new facts and principles it becomes necessary to refer to old publications, this may be done as briefly as possible for clarity. References may be given to help interested readers to search deeper into the subject.

3. Authors may bear in mind that the aim of the Congress is to pool experience and knowledge, not only in basic principles but also with regard to field studies and actual results obtained in different countries. In discussing fundamental principles, however, authors should try, as far as possible, to refer mainly to their practical aspect. Experience has shown that purely academic discussions, whatever their intrinsic value, are not followed by the large majority of the audience in a Congress. It is, therefore, desirable that authors should concentrate and stress more on the practical aspects rather than the theoretical aspects. Again, in discussing field results and practical experiences, fundamentals should not be ignored entirely. It is only by a proper understanding and analysis of a given experience that the result can be applicable to similar circumstances, elsewhere.

4. The language of the paper should be either English or French.

5. The title of the paper should be as brief as possible, preferably not exceeding 70 characters and spaces. The translation of the title into the other language (in French, if the paper is in English and vice versa) should appear below the title in the language of the paper.

6. The author's full name should appear below the title of the paper in the other language (see item 6 above) and a footnote stating present employment and complete address, fax, e-mail, telephone etc., must appear on the first page of the paper, separated from the text by a 4-cm rule.

7. The paper should contain an abstract of about 250 words in the language of the paper (English or French) and a "Summary and Conclusions" of about 500-600 words in the other language (French or English). The "abstract" and the "Summary and Conclusions" should precede in that

order before the text of the paper. Guidelines for preparing abstract and "Summary and Conclusions" are given in Annex 3. Example of the layout of pages, figures and tables are given in Annex 4.

8. It is imperative that the paper to be submitted must not have been published elsewhere prior to the date of the Congress. Material of an advertising nature may not be accepted.

9. The paper must be written in third person.

10. The data and numerical information should be given in metric units; and if necessary, equivalent units in British system may appear in brackets.

11. Detailed references should be given at the end of the text of the paper. References should be arranged in alphabetical order according to surname. The arrangement in an individual reference should be as under:

    Name(s) of author(s), Year of issue, Title of publication or article, Name of Periodical or publisher, volume number, issue number, page numbers, language (if other than that of the paper).

    Example :

    Broner, I. and R.R.P. Law. 1992. Water balance for irrigation using ET input. ICID Bull. 41(2): 173-182.

GUIDELINES FOR PREPARING ELECTRONIC VERSION

Authors are required to supply an electronic version of the paper in Microsoft Word format. Authors are advised to strictly follow the following guidelines for preparation of the paper.

Layout of text

- Page size A4 (Width 21 cms, Height 29.7 cms) with Top Margin 3 cms, Bottom Margin 3 cms, Left and Right Margins 3.8 cms.
- The title of the paper should be in capital letters (Font : Arial, Size : 14 points, all bold caps) in the centre of the page, and the author's name should be two type spaces below the last line of the title in the other language. If there are more than one author, these should be on the same line one after another.
- Use quadruple spacing between the author's name and the first main heading. Thereafter, use double spacing between headings and paragraphs and between paragraphs.

- Main headings to be in capital letters (Font : Arial, Size : 12 points, all bold caps) in centre of the page.
- Sub-headings to be in bold small letters (Font : Arial, Size : 10 points, all bold) starting flush to the left-hand margin.
- The general text to be in Arial with font size 10.
- Indent the paragraphs.
- An entire small section may be indented for emphasis.
- Use single spacing in the text. If a line contains scripts or indices, use 1½ spacing between that line and the next.
- Give equations/formulae in the centre of the page using 2½ spacing between text and equation, and in between equations.
- The captions of figures and tables should be given in two languages – in the language of the paper as well as in the other language (in French, if the paper is in English and vice versa).

Figures

- Insert figures in the appropriate area with a separate copy of the figures in another file. The inserted figures are required in high resolution format (TIF, jpeg etc.) with 200 dpi or more.
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- Insert figure(s) as close as possible to its/their first reference in the text.
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- Type captions at the bottom of the figure (in centre) in both the official languages as show below :

  Figure 1. Irrigation supply and demand (Fourniture et besoins en eau d'irrigation)

- The word "Figure" and the figure number should appear in bold lower case as "Figure 1".
- Figures may be either 120 mm wide or less. Full page figures could be in size of 125 mm x 220 mm.

- Line drawings should be made in black and white or colurs in JPG/TIF/ DWG/AI/EPS formats and inserted in the respective areas. Source files are also required for better resolution.
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- Insert tables and formulae as close as possible to their first reference in the text.
- Formulae, if more than one, may be numbered, consecutively.
- Number tables consecutively in Arabic numerals and provide them with suitable headings at the top (in centre) in both official languages as shown below :

  Table 1. Performance indicators of irrigation technology (Indicateurs de performance de la technologie d'irrigation)

- Type "Table 1." In bold lower case.
- Avoid abbreviations in column headings and indicate units in the line immediately below the heading.
- Give explanations, if any, at the bottom of the table, and not within the table itself.

Limits for number of pages

The National Committees and international organizations associated with ICID can submit one or more papers of 20 pages (inclusive of tables and figures) or less each for each of the Congress Questions and Micro Irrigation Congress. Similarly in the case of the papers for the Special Session and the Symposium, the papers should be of 15 pages (inclusive of tables and figures) or less from each National Committee and the International Organizations.

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Annex 1

21st International Congress on Irrigation and Drainage and 8th International Micro Irrigation Congress, Tehran, Iran, 2011

Proforma to be completed by authors while submitting "Summary and Conclusion" of proposed paper by 01 September 2010

1. Title of the proposed paper .....
   .....
2. State whether the paper is for: (tick one ✓) Oral ☐ / Poster ☐ presentation.
3. State whether the paper is for: (tick one ✓)

   Congress Question 56 – Sub-topic ☐ 56.1 ☐ 56.2 ☐ 56.3 ☐ 56.4 ☐ 56.5

   Congress Question 57 – Sub-topic ☐ 57.1 ☐ 57.2 ☐ 57.3 ☐ 57.4

   Special Session ☐ Symposium ☐

   Seminar ☐

   Micro Irrigation Congress ☐

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Annex 2

21st International Congress on Irrigation and Drainage and 8th International Micro Irrigation Congress, Tehran, Iran, 2011

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   Congress Question 57 – Sub-topic ☐ 57.1 ☐ 57.2 ☐ 57.3 ☐ 57.4

   Special Session ☐ Symposium ☐

   Seminar ☐

   Micro Irrigation Congress ☐

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Annex 3

GUIDELINES FOR PREPARING "ABSTRACTS" AND "SUMMARY AND CONCLUSIONS" OF PAPERS

1. Definitions

1.1 "Abstract" is a shortened or condensed version of the essential points of the paper within the prescribed limit of space. It should be an informative abstract providing "current awareness" information, i.e. the problem tackled (procedure and methods), factual resultant data and discussion, results and conclusions, in a condensed and convenient form.

1.2 "Summary and Conclusions" is more comprehensive than "abstract" and contains more detailed information about the contents and conclusions of the paper. Besides enabling the reader to decide whether it merits his reading or not, the purpose of the "Summary and Conclusions" is to enable the scrutinizers to make correct appraisal of suitability or otherwise of the paper for the purpose for which it is being submitted.

2. Language of "abstracts" and "Summary and Conclusions" of the papers

The official languages of the Commission are English and French. Papers are accepted in either of the two languages adopted by the author(s). "Abstracts" and "Summary and Conclusions" of the papers for the Congress Questions, Special Session and the Symposium are invariably published simultaneously with the papers themselves. Accordingly all papers should contain an "abstract" in the language adopted by the author and also a "Summary and Conclusions" in the other official language of the Commission.

3. Size of "abstracts" and "Summary and Conclusions

3.1 Abstract : About 250 words.

3.2 Summary and Conclusions: about 500-600 words.

Annex 4

EXAMPLE OF LAYOUT OF PAGES, FIGURES AND TABLES

MODERNIZATION OF SPATE IRRIGATED AGRICULTURE: A NEW APPROACH

MODERNISATION DE L'AGRICULTURE IRRIGUÉE DES EAUX DE CRUE: UNE NOUVELLE APPROCHE

Abraham Mehari Haile1[1], Bart Schultz[2] and Frank van Steenbergen[3]

ABSTRACT

Spate irrigation, a floodwater harvesting and management system, has for the past 70 centuries, provided livelihood for resource poor people. At present it serves about 13 million people in some 20 countries. Despite being the oldest, however, the system still remains the least studied and the least understood. It is only in the past two decades that the system was subject to some modernization interventions, much of which focused on improving floodwater diversion efficiency. Effective floodwater diversion measures are necessary, but they must be supplemented with equally effective field water distribution, soil moisture conservation as well as agronomic and agro-forestry measures if sustainable improvement of land and water productivity is to be achieved.

This paper draws on the studies conducted in the past 5 years particularly in Yemen, Pakistan and Eritrea. The studies employed both qualitative and quantitative methods and assessed the modernization package that could result in lasting enhancement of crop productivity in spate irrigated agriculture. The suggested modernization measures include: avoid overstretching the command area, limit the number of irrigation turns to two or an irrigation gift of 1,000 mm; avoid field bund heights of more than 1 m, adopt a field-to-field water distribution system instead of an individual field water distribution system, opt for water rights and rules that entitle downstream fields to the more frequent small and medium floods thereby ensuring equity in both water quality and quantity; minimize evaporation losses through pre-and-post irrigation tillage, soil mulching as well as agro-forestry for augmenting soil porosity and organic matter content and promoting the burrowing by insects or crustaceans.

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RÉSUMÉ ET CONCLUSIONS

Vague d'irrigation, un macro-bassin d'inondation collecte de l'eau et système de gestion, existe depuis le passé 70 siècles comme une source majeure de revenus principalement de communautés économiquement défavorisées dans les zones arides et semi-arides. En dépit d'être une des plus anciennes des ressources en eau des systèmes de gestion, cependant, le système est toujours le moins étudié et le moins bien compris et documentés. La plupart des investissements ont été acheminés dans les systèmes d'irrigation pérenne que ceux-ci ont relativement fiables sources d'eau et sont perçues comme ayant un rendement supérieur durable, et moins de risques et d'incertitudes en ce qui concerne les productions végétales et animales. Cela dit, il y a eu, au cours de la dernière décennie, été de plus en plus une reconnaissance entre les gouvernements, les organismes non gouvernementaux et la communauté des donateurs vague que l'irrigation est un des principaux atouts d'améliorer la vie des communautés pauvres et est donc utile d'investir Ce peu regain d'intérêt a, néanmoins, principalement axées sur la modernisation technique des interventions adaptées à améliorer l'efficacité eau détournement.

Outre l'amélioration de l'efficacité eau détournement et c'est important, la modernisation devrait inclure un ensemble de champ de distribution de l'eau, l'humidité du sol de conservation, agronomique et agro-foresterie mesures si une augmentation durable des terres et la productivité de l'eau doit être atteint. Vague des systèmes d'irrigation en grande partie sous la rareté de l'eau conditions qu'ils comptent sur l'eau qui est imprévisible dans accident, la durée et le volume. En outre, dans plusieurs systèmes, l'eau précède la période de production des cultures en champ approprié de gestion de l'eau et l'humidité du sol des mesures de conservation nécessaires pour améliorer la possibilité qu'une grande partie détournée de l'eau est conservée dans la zone racine de profondeur le profil du sol et rendues accessibles pour la croissance des cultures.

Ce document s'appuie sur les études menées dans le passé de 3 à 5 ans, notamment au Yémen, le Pakistan et l'Érythrée. Les études ont employé des méthodes qualitatives et quantitatives et d'évaluer la modernisation paquet qui pourrait se traduire par la mise en valeur durable de la productivité des cultures en crue de l'agriculture irriguée. La proposition de modernisation, en plus efficaces de dérivation de l'eau, sont les suivants: éviter un trop grande zone de commandement, de limiter le nombre d'irrigation se tourne vers deux ou un cadeau d'irrigation de 1000 mm; éviter domaine Bund hauteurs de plus de 1 m, adopter un terrain à domaine système de distribution d'eau au lieu d'un domaine réseau de distribution d'eau, optez pour les droits sur l'eau et des règles qui autorisent les domaines en aval de la plus fréquente des petites et moyennes

inondations afin d'assurer l'équité à la fois la qualité de l'eau et la quantité; minimiser les pertes par évaporation de pré-et post - l'irrigation de travail du sol, le paillage des sols ainsi que l'agro-foresterie pour augmenter la porosité du sol et la teneur en matière organique et la promotion de l'enfouissement par les insectes ou les crustacés.

1. INTRODUCTION

Spate irrigation, a macro-catchment flood water harvesting and management system, has existed for the past 70 centuries as a major source of livelihood of mainly economically disadvantaged communities in arid and semi arid regions. Despite being one of the oldest water resource management systems, however, the system is still the least studied and the least understood and documented. Most investments have been channelled into the perennial irrigation systems as these have relatively reliable water sources and are perceived to have a higher sustainable return, and lesser risks and uncertainties with regard to crop and livestock production. That said, there has, in the last two decades, been an increasingly emerging recognition among governments, non government agencies and the donor community that spate irrigation is one of the main assets for bettering the lives of poor communities and is hence worthwhile investing in. This renewed interest has, nonetheless, mainly focused on technical modernization interventions tailored at improving floodwater diversion efficiency.

2. OPTIMIZATION OF IRRIGATION TURNS AND GIFTS

Given the unpredictable nature of floodwater, in spate irrigation systems to have in place fixed irrigation turn is a near impossible task - the irrigation gift usually ranges from 500 to 1,000 mm of water depth. A flexible irrigation turn is, however, a common practice. For many centuries, farmers have drafted and implemented a set of water rights and rules that, among other things, direct which field should be irrigated first from what flood category. To this end, perhaps the two most important rules have been:

- The water rule on second, third or fourth turn, which states that a certain field can receive a second, third or fourth turn only after all other fields receive one, two or three turns respectively;
- The water rule with regard to the different flood categories, which allocates small and medium floods (10 to 50 $m^3 s^{-1}$), and occasionally moderately-large floods (50 to 100 $m^3 s^{-1}$) to the upstream fields; moderately-large and sometimes large floods (100 $m^3 s^{-1}$ to 200 $m^3 s^{-1}$) to the midstream fields; large and very large floods (> 200 $m^3 s^{-1}$) to the downstream fields.

The soil moisture storage analyses were done using the spate irrigation tailored simple spreadsheet based Soil Water Accounting Model (SWAM) (Mehari, 2007) and the results were validated with the more complex well-established Soil Water Atmosphere Plant (SWAP) model (Kroes and Van Dam, 2003). The summary of the soil moisture results obtained from both models is presented in Table 2.

Table 2. Soil moisture storage at the onset of the planting period (mid September) for spate irrigated fields with silt loam and sandy loam soil profiles (L'humidité du sol de stockage au début de la période de plantation (mi-Septembre) pour les champs irrigués des eaux de crue de limon et de des profiles de sol sableuse limon)

Irrigation schedule scenarios	Possible irrigation interval combinations based on the time of the last irrigation turn		Soil moisture within the 2 m deep root zone of sorghum and maize in cm	
	Day last irrigation turn received	No. of interval combinations	SWAM model	SWAP model
Likely scenario				
Three turns	15 July	1	67	69
	30 July/1 August	6	72	73
	15 August	8	77.5	77
Two turns	I July	1	62	66
	15 July	3	66	69
	30 July/1 August	8	71	72
	15 August	4	77	77
Less likely scenario				
Three turns	15 July	1	67	69
	30 July/1 August	3	72	72
	15 August	3	77.5	77
Two turns	30 June	1	62	66
	15 August	1	77	77
Unlikely scenario				
Three turns	30 June	1	62	66
	15 August	1	78	77
Two turns	22 June	1	60	65
	30 June	1	62	66
	7 August	1	74	74
	15 August	1	77	77

Source: Mehari, 2007

3. SOIL MOISTURE HOLDING AND INFILTRATION CAPACITY MAINTENANCE AND IMPROVEMENT

If two irrigation turns or 1,000 mm of gross irrigation depth is to result in net soil moisture of 700 to 750 mm and produce an optimum yield of some of the major crops in spate irrigated agriculture, the soil profile must have a good water holding capacity as well as good infiltration rate. In most spate irrigation systems, the soil profiles are a result of successive alluvial silt loam and sandy loam deposition. These soil profiles have high water holding capacity at 300 to 350 mm m^{-1}; their basic infiltration rate (20 to 25 mm hr^{-1}) is categorized as moderately rapid.

These high water holding capacities and infiltration rates would have to be enhanced or at least maintained if spate irrigation systems are to have high land and water productivity at a sustainable manner. To this end, some practical measures include:

- Pre and post irrigation tillage;
- Soil Mulching, mekemet;
- Combined sowing and ploughing tillage practice;
- Agro-forestry: intercropping multipurpose trees with food crops.

3.1 Pre and post irrigation tillage

In pre-irrigation tillage (Figure 5), breaking down the topsoil to increase infiltration rate is the major objective. Such a practice has increased the infiltration rate in Wadi Laba, Eritrea from 23 to 30 mm/hr. Pre-irrigation tillage also makes cultivation much easier and quicker to carry out once the floodwaters arrive, which is important as a lot of labour is required to cultivate the land after irrigation.

4. CONCLUSION AND RECOMMENDATIONS

Modernization interventions in spate irrigation have mostly concentrated on improving the diversion of spate flows rather than improving the productivity of irrigation water. In spite of substantial potential gains, there has been little attention to command area development, improved field water distribution and facilitating moisture conservation. These components have as large or larger impact on crop production than improving water supply; thus, they need to be considered as integral part of spate irrigation modernization efforts.

Figure 5. Pre-irrigation tillage (Pré-irrigation de travail du sol)

This paper has recommended several better field water management and soil moisture conservation measures:

- Reduce the number of irrigation turns from three to two - irrigation gift each turn is 500 mm. This saves 500 mm per ha in upstream fields making it available to midstream and downstream areas. A gross irrigation of 1,000 mm is sufficient for the optimum yield of maize and sorghum, the major crops in spate irrigated agriculture;
- Introduce water rights that allow irrigation of downstream fields with small and medium floods - these floods are currently reserved for upstream and midstream fields. This has two-fold advantages: 1) increases the amount of water supplied to the whole irrigation system in general and the downstream fields in particular. Small and medium floods account for as much as 50% of the total number of floods that occur in a given flood season; and 2) minimizes salinity build-up in downstream fields. Large floods that are commonly allocated to downstream fields, are usually more saline than small and medium floods;

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