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# Biosalinity News

Newsletter of the International Center for Biosaline Agriculture

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## FROM THE EDITOR

*Biosalinity News* is produced three times a year by the International Center for Biosaline Agriculture (ICBA). The electronic version is available on ICBA's website www.biosaline.org

This newsletter is expected to serve as a forum for exchange of news and information among people interested in research and development activities in saline agriculture. To achieve this objective we need your help and input.

A highlight of this issue is an article on the importance of dates in biosaline agriculture. Future issues will endeavor to carry such articles by scientists working on biosaline agriculture that would be of interest to all persons interested in saline agriculture.

This issue provides information on future activities of ICBA at its headquarters and elsewhere.

The Editor will be pleased to receive short articles on research and development in saline agriculture; announcements of seminars, workshops, meetings and training courses; reviews of state-of-the-art saline agriculture and relevant new publications. Please send your submissions to:

*The Editor*
*Biosalinity News, ICBA*

## Pearl Millet Shows Initial Promise for GCC Countries

Several pearl millet (*Pennisetum glaucum* L.) genotypes acquired from ICRISAT, courtesy ICARDA, have proved to be well adapted to the local environmental conditions at the ICBA station in Dubai. These genotypes produced both biomass and seeds in quantities comparable to their outputs in less stressed environments elsewhere in the world.

Moreover, some of these genotypes showed consistent high yield in response to a range of salinity levels (4, 9 and 14 dS/m) used in this ICRISAT/ICBA collaborative research experiments. In addition, some genotypes were identified to do better in winter, while others do better in spring. Therefore, different genotypes can be selected for summer and winter to maximize forage production. Pearl millet thus showed a high potential for cultivation in moderately salt-affected environments under hot and dry environmental conditions prevailing in the Gulf Cooperation Council (GCC) countries.

Pearl millet (*Pennisetum glaucum* L.) is a warm-season annual crop that responds well to good management, such as irrigation and fertilization. It grows on a wide range of soil types.

Grown on some 24 -28 million ha in Africa and Asia, the crop feeds at least 500 million people. Pearl millet is currently gaining significance as forage, animal feed and as a dual-purpose crop, particularly in the USA, Australia and South America. Apart from yield, its nutritional value is also significant. Its seed protein content is comparable or higher than that of maize and sorghum; it can reach more than 14%. Leaf protein levels are also high, ranging from 5-20%. Dry matter production can vary from 2.8 to 15 t/ha depending on inputs and time of sowing.

As more than 50% of the total irrigated agricultural area in the Gulf region is occupied by forage crops, ICBA places prime importance on developing sustainable forage production systems that are based on irrigation with waters of varying salinity levels.

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*ICRISAT Director General Dr William Dar (center at left) at ICBA's pearl millet fields in May... and the crop irrigated with low salinity water (5 dS/m) five weeks later.*

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### Pearl Millet Shows Initial Promise

(Cont. from Page 1)

The most consistent and promising entries found in the study were pearl millet genotypes ICMS 7704 and IAC ISC TCP 1. Varieties ICMV 97471 and EERC had high yield potential at medium and high salinity levels, in addition to high seed production at these levels. ICRISAT's research efforts have already identified varieties that are heat and drought tolerant. ICBA can complement those efforts by identifying the elite varieties that combine high salinity tolerance, higher water use efficiency (WUE) and higher biomass production and can be useful in cropping systems of GCC countries. WUE was found to be high and consistent under all salinity levels in pearl millet lines ICMS 7704 and IAC ISC TCP 1. Further evaluation of a wider range of the crop's genetic material, procured from ICRISAT, is in progress at ICBA.

## Breakthrough in Salt-tolerance Research

Barren, salt-laden soils could be transformed into arable farmland thanks to plants genetically modified to be salt-tolerant, according to a recent issue of *New Scientist*, dated 4 August 2001.

Genetically-modified (GM) plants can grow on saline land because they can store excess salt in their leaves. The article states that GM plants can be used not only to make the saline land productive, but also to remove the salt. It quotes Dr Eduardo Blumwald of the US University of California at Davis, saying "A farmer can clean the soil and grow a crop and make a profit at the same time." By manipulating one gene, Dr Blumwald and Dr Hong-Xia Zhang of the University of Toronto, created a salt-tolerant tomato plant that stashes excess sodium ions in cellular sacks known as vacuoles. The fruits taste just like ordinary tomatoes, the scientists state.

The article further adds that Dr Edward Glenn of the University of Arizona, Tucson, who studies salt-loving plants, has hailed the achievement as the key breakthrough needed in salt-tolerance research for 30 years.

Researchers have been trying for years to create salt-tolerant crops, with little success.

Blumwald and Zhang added codes to the gene for a membrane transport protein called AtNHX1, which pumps sodium ions into the vacuoles. The researchers ramped up the expression of the transporter gene by adding a "promoter" sequence, which they took from the cauliflower mosaic virus. Blumwald had discovered the transporter in 1985, while he was studying vacuoles. Similar transporters have been found in naturally occurring salt-loving plants.

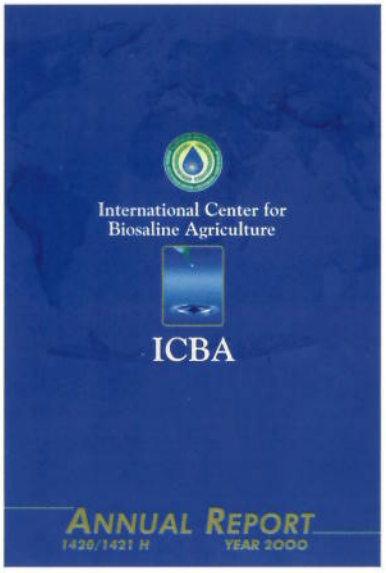
According to the *New Scientist* article, Blumwald and Zhang say that GM plants can grow in salt levels at 0.2 moles per liter–50 times higher than the level normal plants can tolerate.

The breakthrough is significant, as a fourth of world's irrigated farmlands have become saline.

## New Publications


*ICBA Annual Report 2000 (1420/1421 H).* The 40-page, 4-color publication is the first annual report of ICBA, which has just completed its 2nd year of operations. In the preface of the document, the President of the Islamic Development Bank, ICBA's founding donor, states, "we are confident in the IDB that this flagship center will reach out to serve our member countries and humanity at large."

*ICBA Strategic Plan 2000-2004.* The 70-page, 4-color document presents ICBA's plan to make a difference in the first 5 years of its operations. It traces the reasons for setting up the Center and ICBA's program philosophy and strategic choices. It lists ICBA's goals for the first five years of its operations.



## Forthcoming Events

# ICBA to Co-sponsor Two Symposia

### Salt-marsh Ecosystems Symposium in UAE

Under the patronage of His Highness Sheikh Hamdan Bin Zayed Al Nahyan, UAE Minister of State for Foreign Affairs and Deputy Chairman of the Environmental Research and Wildlife Development Agency (ERWDA), ERWDA and the United Nations Environment Programme (UNEP) are jointly organizing an international symposium and workshop on "Research and Management Options for Mangrove and Salt Marsh Ecosystems" from 20 to 24 Dec 2001 in Abu Dhabi, UAE. Cosponsors of the event are ICBA and the Japanese Oil Development Company (JODCO).

The objectives of the event are to bring together experts on mangrove and salt-marsh ecosystems; to examine impacts of urbanization and coastal development on those ecosystems; to review and discuss constraints and obstacles regarding restoration of those ecosystems; to identify R&D needs for those ecosystems; and to establish an effective communication network among the concerned parties.

For further details please contact Dr Amrita G de Soyza, Arid Zones 2001, ERWDA, P O Box 45553, Abu Dhabi, UAE. Fax: (971) 2-6817361.

### Salt-affected Ecosystems Symposium in Egypt

Egypt's Desert Research Center under the Ministry of Agriculture and Land Reclamation is organizing an international symposium on Optimum Resources Utilization in Salt-affected Ecosystems in Arid and Semi-Arid Regions from 8 to 10 April 2002 in Cairo, Egypt. Cosponsors of the event include the Food and Agriculture Organization of the United Nations (FAO), ICBA, the Arab Centre for the Studies of Arid Zones and Dry Lands (ACSAD), the Arab Organization for Agricultural Development (AOAD), the Centre for Environment and Development for Arab Region & Europe (CEDARE) and the Egyptian Environmental Affairs Agency (EEAA).

The objectives of the event are to assess salinity problems in arid and semi-arid areas; present the status of biota in salt-affected ecosytems; identify causes and impact of salinity on resources; amelioration and remedy of salinity problems; study management of sustainable resource utilization of salt-affected ecosystems; and understand the role of socio-economic and cultural aspects in the management and improvement of salt-affected ecosystems.

Those interested in participating can contact Prof. Hassan M El-Shaer, Symposium Coordinator, 1 Mathaf El-Mataria St, P O Box 11753, Mataria, Cairo, Egypt. Tel: (202) 6448907 and (202) 6448909 Fax: (202) 6357858, Email: vicep-2@drc-egypt.com and drc_alshaer@hotmail.com

## Human Resource Development: Courses in 2001

Three courses to enhance human resource capabilities of the national agricultural research systems were planned at ICBA this year. One course was successfully conducted at ICBA headquarters in Al Ruwayyah, 23 km from Dubai, and two others are planned to be held later this year.

***Irrigation with brackish water, 12-16 May 2001***

This course presented the basic principles for agricultural production using brackish water. The overall objective was to introduce the concept of irrigation with saline water and enhance the skills of operators for the management of salt-affected farming systems. Participants included 16 engineers from UAE and Oman.

Significant feedback obtained from the questionnaire distributed to participants included requests for a special course on drainage design.

***Propagation and management of halophytes for optimal production, 20-24 October 2001***

This course to be held at ICBA headquarters will

- introduce the concept of biosaline agriculture and the role of halophytic species in agricultural production systems
- provide hands-on training on management of halophytes including cultural practices
- introduce forage quality concepts through analytical methods.

Participants will learn of the importance of halophytic grasses, shrubs and trees in agricultural systems.

***Genebank operations: Germplasm and data management, 22-26 December 2001***

The course, to be held at ICBA headquarters, is designed to improve the capabilities of scientists and technicians of national agricultural research programs to run national genebanks according to internationally recognized standards.

Participants will learn about the role of genebanks in agriculture; assembly, characterization, evaluation, documentation of germplasm and the linkages of these operations; and data management in a genebank environment.

*Costs:* Participating agencies will be required to cover travel and accommodation expenses of their nominees. ICBA will coordinate transportation and housing for participants coming from outside the UAE.

# ICBA Signs New Agreements

## Memoranda of Understanding (MoUs) Signed

### The Arab Authority for Agricultural Investment and Development (AAAID)

ICBA signed an MoU with AAAID on 1 May 2001 at Khartoum, Sudan, to engage in cooperative activities of common interest and mutual benefit. AAAID was set up to develop agricultural resources of the Contracting States with particular emphasis being made on the provision of food stuff to the Contracting States and to carry out necessary investigations and studies dealing with relevant projects. AAAID will cooperate with ICBA within a framework of its objectives relating to international and regional organizations and corporations.

*AAAID President Mr Abdul Kareem M Al Amri (right) and the ICBA Director General Dr Mohammad Al-Attar signing the MoU*

AAAID was founded in 1976 with the primary objective of assisting in the agricultural development of the Arab world. The main objective of AAAID is to promote development of Arab agricultural resources, enhance food and agricultural production, expand intra-Arab countries trade, increase Arab production of various inputs for plant, animal and fish production and conserve the natural environment by expanding forests and grazing areas. Apart from strictly productive activities AAAID is also involved in projects in the sector of infrastructure that serve the productive schemes.

The MoU enables ICBA and AAAID to jointly explore, design and implement specific projects in agriculture with emphasis on forages, field crops, afforestation, land reclamation, irrigation, on-farm water use technology and other agricultural resources with the intent of increasing the production of food and timber; jointly organize conferences and workshops; jointly publish results of collaborative work; to exchange scientific documents and information of relevance; and for ICBA to provide technical consultancy as requested by AAAID.

### The King Abdulaziz City for Science & Technology (KACST), Kingdom of Saudi Arabia

In May 2001, ICBA signed an MoU with KACST, a Gulf Cooperation Council (GCC) country national agricultural research system (NARS). This is the second MoU with a GCC NARS to be signed by ICBA. The first such agreement was signed with the Environmental Research and Wildlife Development Agency (ERWDA) of the United Arab Emirates earlier this year.

ICBA's agreement with KACST is to engage in cooperative activities of common interest and mutual benefit. KACST has a vision to be a world-class research organization vital to Saudi Arabia's future and an important source of science and technology for national societal mission, which combines technology with a human touch.

KACST institutes focus on research projects that end up with a prototype of a product or a service, or offer feasible technical solutions to problems facing the public and private sectors. The aim of this approach is provide a link between research and academia on one hand and the industry and development on the other. KACST research institutes provide premier science and technology research facilities in Saudi Arabia.

This MoU enables ICBA and KACST to jointly explore, design and implement specific projects in agriculture with emphasis on forages, field crops, afforestation, land reclamation, irrigation, on-farm water use technology and other agricultural resources with the intent of increasing the production of food, feed, and timber; to jointly organize activities of mutual interest including conferences, workshops and training courses in fulfillment of their mission/vision; to jointly publish the results of collaborative work by the staff from both parties.

The signatories of the document are KACST's Vice President for Research Institutes Dr Mohammed Al-Suwaiyel, and the ICBA's Director General Dr Mohammad Al-Attar. Dr Al-Suwaiyel is also a member of ICBA's Board of Directors.

# Date Palm and Biosaline Agriculture

## Date Palm—A Tree with a Taste for Salt

Abdullah A. Jaradat, Plant Genetic Resources Scientist, ICBA

The date palm is an unusual tree. It needs to keep *"its head in the sun and its feet in the water"*. It can withstand hot weather, which is not unusual. What is unusual is the kind of water it can keep its "feet" in to survive the hot weather. *Date palms can withstand considerable salinity (up to 22,000 parts per million) and also thrive when irrigated by brackish water.* This is the reason for its cultivation in the deserts of the Middle East and North Africa. The sugar-rich (60-70%) fruits serve as an important food for local inhabitants. The tremendous advantage of the "tree of life" is its resilience, its long-term productivity, and its multiple purpose attributes.

Date palm trees are very productive and the fruit yield can be as high as 100-200 kg per tree. There are some 1,500 known date palm varieties around the world. The Greek (and scientific) name for the date palm is *Phoenix* (purple or red) *dactylifera* (the finger-like appearance of the fruit). The earliest records of date palm cultivation go back 7,000 years in Eridu, lower Mesopotamia, but it is generally believed that cultivation began thousands of years earlier.

Although frequently grown in sand, the date palm is not erinaceous. It has air spaces in its roots and may grow well where water is close to the surface, but it is not aquatic. It can grow in very salty places, but it is not a true halophyte as it grows better where the water is fresh. Though its leaves are well adapted to hot, dry conditions, and the growing point and vascular bundles in the trunk are well insulated, it is not a true xerophyte, as it needs a generous water supply.

### Unusual Even among Monocots

Palms are unusual among monocots in having broad leaves and an arborescent (tree) habit. They are not deciduous. The vast majority is limited to tropical regions. The plant is dioecious. Wild populations, as well as seedlings derived from cultivated clones, consist of an equal proportion of females and males. This is brought about by a single gene, or a block of genes, determining sexuality. The male morph is heterozygous and the female, homozygous recessive.

**Wild and cultivated dates.** Cultivated date palm is closely related to a variable aggregate of wild and feral palms distributed over southern, warm, and dry Middle East as well as the northeastern Saharan and north Arabian deserts.

These spontaneous dates show close morphological similarities and parallel climatic requirements with the cultivated clones. In addition, they are interfertile with the cultivars and are interconnected with them by occasional hybridization. Botanists place these wild dates with *P. dactylifera* L. The wild forms produce basal suckers just as the cultivated varieties. Their fruits are smaller than the domesticated clones. These contain relatively little pulp and are frequently non-palatable or even indigestible. Thus, in the date palm also, domestication has led to the increase in fruit size and pulp quality. Wild and cultivated date palms also differ in their mode of reproduction. Sexual reproduction is the rule in the wild stands while cultivation has brought a shift to vegetative propagation; simply put, this has led to the fixation of desired highly heterozygous female clones. *P. dactylifera* was well suited for this shift since it produces easily transferable suckers.

### Genetic Richness

**Spontaneously growing date palms.** Spontaneously growing dates are found all over the Middle East. They often represent secondary escapees. However, in some areas, dates are genuinely wild and occupy primary niches. In *P. dactylifera*, we are therefore faced with a variable complex of wild forms, segregating escapees, and cultivated clones, which are all genetically interconnected by occasional hybridization. There can be little doubt that the wild *dactylifera* forms are indigenous to the warm and dry parts of the Middle East. The GCC countries are both a part of the center of origin and a major part of the center of diversity of date palms. Further, the GCC countries are today the world's highest producers and consumers of dates.

*Date palm sapling at ICBA*

**Wild dates.** *P. dactylifera* is the main Middle Eastern wild representative of its genus, which comprises 12 species distributed over Africa and south Asia. The only wild date found in the East Mediterranean basin is *P. theophrastii*, a narrow endemic confined to Crete and Turkey.

Three wild *Phoenix* species grow on the fringe of traditional date cultivation in the Old World and, in these areas, they may have enriched the gene pool of the cultivated fruit trees through spontaneous hybridization: *P. atlantica* grows near the

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Atlantic shore of North Africa, and it is apparently involved in the formation of some Moroccan date cultivars; bushy *P. reclinata*, occurs in south Arabia and in Africa south of the Sahara, and it probably hybridizes with *P. dactylifera* on the southern fringe of date cultivation, finally on its eastern border, the Indus Valley, the cultivated date comes in contact with the wild *P. sylvestris*, a non-suckering tall, 'rainpalm' not adapted to deserts but to wetter, tropical climates. *P. dactylifera* occasionally hybridizes also with this palm.

**Collections.** Certainly, the species is not threatened; however, due to its long history of domestication it is not clear whether wild populations of *P. dactylifera* exist. The most recent survey lists only 10 collections worldwide, the largest of which are found in Algeria, India, Iraq, Nigeria and the US. Except possibly for the Nigerian collection, most accessions appear to be elite cultivars or breeding lines, so the genetic diversity is probably low.

Approximately, 600 different kinds of dates are available in the Arab countries; these account for 60% of the global production. The fruits, depending upon the variety and growing conditions vary from 2 to 60 grams in weight, from 2 to 11 cm in length, and from 1 to 3 cm in width, offering wide scope for selection.

Desirable characters in the date palm include: glossy black fruit, late maturity, firm texture, atmospheric moisture tolerance, superior quality, and long fruitstalk.

## Threats to Date Palm

Some 50 million date palms in Arabia are under threat of attack by an insect pest called the red palm weevil, threatening the region's multimillion-dollar date industry and the very survival of the trees. Unfortunately, the only effective control measure is to cut down the infected trees and destroy them at an early stage to prevent the weevil from spreading over large areas.

Constraints to date palm production include: drought, high salinity, aged trees, bayoud disease, and genetic erosion. Date palm groves in North Africa are aging; almost one-third of productive date palm trees in Algeria are beyond the limits of their productive years; and almost half of the Tunisian productive date palms are more than 50 years old. Bayoud, caused by a fungus, is a serious disease in North Africa; it is estimated that this disease infected two-thirds of the Moroccan, Tunisian and Algerian palm groves.

The diversity of date palm groves in North Africa is declining. One variety, Deglet Noor, for example, constitutes 45% of all Algerian and 60% of all Tunisian date palm groves. The same trend was noticed in Morocco.

For centuries, the propagation of date palms by offshoots was the only commercial method of vegetative propagation used in date palm growing regions of the world to multiply the best varieties. However, date palm benefited from techniques involving tissue culture and molecular biology. Slow growth, dioecy, the slow offshoot-based propagation system and the impossibility of predicting adult characteristics of the seedlings have severely restricted improvement of date palm.

### Uses of the date palm

The Arabs say that there are as many uses for dates as there are days in the year.

| | |
|---|---|
| Medicinal | Low incidence of cancer and heart disease among Bedouin Arabs, who eat dates regularly.<br>Good source of iron and protein.<br>A detersive and astringent in intestinal troubles.<br>An infusion, decoction, syrup or paste to treat sore throat, colds, and bronchial catarrh.<br>Relieves fever, gonorrhea, edema, and problems related to liver and abdomen.<br>Seed powder is used as an ingredient in a paste given to relieve ague.<br>Gum that exudes from the wounded trunk is used in India for treating diarrhea and urinary ailments.<br>Gum from the trunk is a diuretic and a demulcent.<br>The roots relieve toothache.<br>The pollen yields an estrogen-estrone-and has a gonadotropic effect on young rats. |
| Food | With cereals, in pudding, bread, cookies, ice cream, candy bars, jams, jelly, juices, syrups, etc.<br>As date-sugar powder.<br>Leaves cooked and eaten as a vegetable.<br>Ground seeds are mixed with flour to make bread in times of scarcity.<br>Palm sugar derived from sap of *P. sylvestris*. |
| Feed | Nutritious feed when dehydrated and mixed with grain.<br>Fed to camels, horses and dogs in the Sahara desert.<br>Seeds soaked in water fed to camels, horses, cattle, sheep and goats.<br>Chicken feed from dried and ground seeds. |
| Commercial | Ornamental tree.<br>Seed contains oil suitable for use in soap and cosmetics.<br>Source of oxalic acid.<br>Seed as ornamental necklaces and beads.<br>Seed used as charcoal by silversmiths.<br>Leaves used for making mats, screens, baskets, crates and fans.<br>Leaves are a good source of cellulose pulp.<br>Leaves combined with corncobs and peanut shells make good insulating boards.<br>Dried leaves are made into walking sticks, brooms, and fishing floats.<br>Dried leaves are used as fuel.<br>Leaf sheaths provide scents for perfumes.<br>Fiber from leaf sheaths is used for making packsaddles, rope, coarse cloth, large hats and material for filtering drainage pipes replacing synthetic filters.<br>tripped fruit clusters are used as brooms.<br>Syrup made from ripe fruits coated on pipes and leather bags to prevents leaks.<br>Wood from the trunk makes posts and rafters used in construction. |

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## Date Palm—A Tree with a Taste for Salt (Cont. from Page 6)

Genetic improvement should be able to provide: technological and agronomic criteria to facilitate the selection of elite varieties for future development, micropropagation technology with which to rapidly multiply certified stocks using somatic embryogenesis and axillary branching methods, and genetic fingerprinting of selected elite date palm germplasm.

### ICBA and the Date Palm

As a part of its mission, ICBA will demonstrate the value of saline water resources for the production of environmentally and economically useful plants, and to transfer the results to national research services and farming communities in the Arab and Islamic worlds and beyond. No other plant is better than the date palm to achieve the stated goal. ICBA, along with its partners in the GCC countries, are developing a regional project on date palm, the objective of which is twofold. First, ICBA intends to build the world's first inclusive database on available date palm cultivars, and their horticultural characteristics and distribution. Then, ICBA intends to evaluate date palm genetic resources for salt tolerance for use in farms in the GCC countries and elsewhere.

# ICBA Participates in International Events

## International Salinity Conference in USA

ICBA presented a paper on "Irrigated Systems for Biosaline Agriculture in Arid Zones" at the International Conference on Sustained Management of Irrigated Land for Salinity and Toxic Element Control held at Riverside, California, USA, 25-27 June 2001.

The event was hosted by the George E. Brown Jr., Salinity Laboratory (GEBSL), United States Department of Agriculture, Agricultural Research Service, Riverside, California, a major research institution working on problems related to salinity. ICBA's delegation at the conference comprised of Director General Dr Mohammad Al-Attar, Director of Technical Programs Prof. Faisal Taha, and Irrigation Management Scientist Dr Bassam Hasbini.

The ICBA paper described efforts for development of design standards for irrigation using saline waters. Two irrigation systems were discussed: sprinkler and drip irrigation. Problems associated with sprinkler irrigation were related to wind drift and the resultant increase in salt concentration in irrigation waters. Problems associated with drip systems included formation of salt contours around the drip emitter. The paper discussed alternatives to minimize these problems. The paper also dealt with the choice of suitable irrigation systems in view of different hydraulic properties of saline water and associated soil problems.

At the conference, papers were presented from Argentina, Australia, Canada, China, Iran, Israel, Japan, Pakistan, Spain, South Africa, Syria, Thailand, Tunisia, UK and FAO, Rome.

GEBSL is USA's primary facility dedicated to basic research on salinity problems in agriculture. It works on the physics, chemistry, and biology of salt-affected, soil-water-plant systems.

## Preparations for WWF3 in Japan

ICBA's Deputy Director General Mr Ahmed Hariri and Mr Karim Allaoui, Technical Assistant to the Islamic Development Bank's Vice President Operations attended the kick-off meeting for the 3rd World Water Forum, known to many as WWF3.

The meeting, organized by the World Water Council and the Secretariat of WWF3, was held 3-5 June 2001 to plan for WWF3, which is likely to be held in Kyoto, Japan, in March 2003. Other co-sponsors of the meeting were the World Bank, the African Development Bank, the Asian Development Bank, the Global Water Partnership, UN's World Water Assessment Programme, The World Conservation Union (IUCN), the International Commission on Irrigation and Drainage (ICID), International Commission on Large Dams (ICOLD) and several associations and NGOs.

More than 200 participants attended the meeting.

The meeting launched the Virtual Water Forum (VWF) on the Internet and brainstormed to gather ideas for making WWF3 a success, reflecting on lessons learned from WWF2. The VWF is a highly sophisticated web-enabled facility with advanced support functions, which will allow participants to exchange views and ideas on water related issues through virtual conference rooms dedicated to specific water topics.

A Water Voice Project was designed to collect water-related opinions, suggestions and ideas, primarily from those who have no Internet access. Subsequently, ICBA's web page has been linked to the WWF3 web page link system.

The ICBA and IDB delegates strongly recommended that WWF3 consider a session on "Prospects of Use of Alternate Waters in Irrigated Agriculture." A preliminary approval has been received and efforts are being made to finalize this recommendation with the organizers.

# Visitors: Seeing is Believing

## UAE Minister of Agriculture and Fisheries

During his visit to ICBA on 18 September, His Excellency Saeed Bin Mohammad Al-Raqabani, UAE Minister of Agriculture and Fisheries, emphasized the need to train UAE nationals in aspects of biosaline agriculture. He noted there are many technical institutes in the country, especially the UAE University's Faculty of Agriculture, which has produced and will continue to produce graduates in the field of agriculture studies.

The Minister emphasized the importance of having ICBA located in the UAE, which follows the rich tradition of the UAE University in Al Ain providing a useful thrust to agriculture research in the country. He added that the federal authorities are interested in agricultural issues, especially in supporting farmers in their efforts to use different water sources, including drainage water. ICBA, he said, could provide the appropriate know-how and advise to UAE farmers.

*UAE Minister of Agriculture and Fisheries (fourth from left) listens to an MSc student from UAE University pursuing his studies at the Center.*

The Minister stated that ICBA's research results would provide different kinds of plants that are useful to farmers in the country.

## Arab Fund Representatives

On 20 Sep 2001, Dr Mervat Badawi, Director, Technical Department, the Arab Fund for Economic and Social Development (AFESD), visited ICBA, accompanied by AFESD Economic Advisor Mr Abdul Hameed Al Zaqalaei.

AFESD is the third founding donor of ICBA, the other two being the Islamic Development Bank and the OPEC Fund for International Development. AFESD had earlier provided US$1 million towards the building of greenhouses and a shade house, and the development of irrigation facilities at ICBA. The irrigation facilities were co-financed by the OPEC Fund.

Dr Badawi's impressions written in the Visitor's Book sums it all: " We were indeed very impressed by the Center, its dedication, and the enthusiasm of the scientists. The Center fills an important gap in the research continuum and promises to be very useful... I am sure it will have an important place on the world research map."

*Dr Mervat Badawi (second from right) and Mr Al Zaqalaei (third from right) being briefed on a greenhouse experiment.*

## Staff News

**Mr Ahmed Saleh Hariri, Deputy Director General**

On completion of his secondment to ICBA in July, Mr Hariri, ICBA's Deputy Director General, returned to the Islamic Development Bank (IDB). He is now working in the office of the President, IDB.

Mr Hariri, a national of Saudi Arabia, was responsible for overseeing the construction of the facilities at ICBA and later for building and nurturing ICBA's Administrative Services. His contributions to the Center are many and the entire ICBA family wishes him well in his new assignment at IDB.

**Mr Ibrahim Ahmad Bin Taher Al-Mehrizi, Government Liaison Officer**

Mr Bin-Taher, a United Arab Emirates (UAE) national, joined ICBA in September 2001. He is an accomplished public relations and communications expert and will work with ICBA management towards improved interface between the Center and the GCC countries, specifically the host country Government. He specializes in mass media campaigns.

Mr Bin-Taher holds a Masters degree in Media Organization Management from San Bernardino University, California, USA and a Bachelors degree in Mass Communication from the UAE University. Prior to joining ICBA, he was Head of Public Relations and Media Section at the Sharjah Municipality in the UAE. He had earlier worked as a journalist for seven years with the newspaper *Al-Ittihad.*