ISSN 1563-1532

Biosalinity News

Newsletter of the International Center for Biosaline Agriculture

Volume 10, Number 3

September 2009

From the Editor

This third edition of *Biosalinity News* in 2009 covers several topics.

The lead article is about the Arab Water Academy's program which launched recently. A highlight on ICBA's successful seminar in Turkmenistan is covered.

Three scientific articles appear as well. The Genetic Resources team report on the potential of native desert grasses for forage production. Dr Shoaib Ismail offers insight into the use of bioenergy, and Dr Abdullah Dakheel and Mr Ghulam Shabbir inform us about the long-term research on date palm trees.

News of recent and coming workshops, seminars and training courses and staff news are also highlighted.

Contributions on research or projects of interest to our readers are always welcome, as are letters to the Editor. Please send your submissions, including relevant photographs and figures, to:

The Editor
Biosalinity News, ICBA
PO Box 14660
Dubai, UAE
editor@biosaline.org.ae

AWA launches its first program

Participants of the first AWA program

The inaugural course of the Arab Water Academy (AWA), Water Governance for Future Leaders: Concepts, Practices and Analysis of Water Governance (Module 1), attracted 24 people in middle management positions operating in ministries, government agencies, the private and public sectors, and academic institutions in the water sector ranging across seven countries in the region. Funded by USAID and Environment Agency-Abu Dhabi (EAD), the course was held on 28th June to 2nd July in Abu Dhabi. In line with the AWA's mandate to become a regional center of excellence for executive education in water, the first course demonstrates AWA's role to strengthen the knowledge

continued on page 8

ICBA Seminar in Turkmenistan

More than 140 participants attended the scientific seminar *Marginal Quality Water Utilization in Agriculture with Special Reference to Central Asia*. Organized by the International Center for Biosaline Agriculture and the Ministry of Agriculture in Ashgabat, Turkmenistan on 30 May 2009, the well-received seminar was held in conjunction with the Annual Governors' Meeting of the Islamic Development Bank Group (IDB).

In his welcoming address, H.E. Veligylych M Mammedov, Vice-Minister of Agriculture in Turkmenistan, praised the IDB Group for fostering the economic development and social progress of its member countries. The record audience turnout at the scientific seminar showed clearly the interest in capacity building and knowledge-sharing; a key focus of the IDB Group. H.E. Mammedov expressed the wish for many more such collaborative opportunities in the future.

H.E. Birama B Sidibe, Vice President (Operations) IDB Group, chaired the seminar and addressed the audience. In his speech, H.E. Sidibe stressed the importance of water, the aspirations of IDB in combating water and food scarcity in member countries, and the role of ICBA in realizing this strategic vision with its research and development of marginal quality water utilization.

Mr Fawzi AlSultan, Chairman of ICBA's Board of Directors, shared with the participants the fact that in 2009 ICBA was celebrating ten years of considerable achievements, and elaborated on the work undertaken especially in Central Asia region.

continued on page 8

ICBA Seminar in Turkmenistan

Potential of native desert grasses for forage production

NK Rao and Mohammed Shahid, ICBA[1]

Alfalfa (*Medicago sativa*) and Rhodes grass (*Chloris gayana*) are the main fodder crops grown in the United Arab Emirates (UAE). Both these species are exotic and require large quantities of water (up to 48,000 m^3 ha^{-1} yr^{-1}), often drawn from nonrenewable groundwater sources. Large-scale cultivation of these species has resulted in drastic reduction in groundwater levels and an increase in salinity due to intrusion of seawater, especially in the coastal areas.

Indigenous rangeland grasses such as *Cenchrus ciliaris*, *Pennisetum divisum*, *Panicum turgidum*, *Stipagrostis plumosa* and *Coelachyrum piercei* have long been important sources of feed for grazing camel and sheep. These grasses survive with very little water and have excellent adaption to the harsh desert environment, which make them ideal choices for sustainable forage production, thus reducing the use of scarce fresh water resources. Recent studies show that buffel grass (*C. ciliaris*) has significantly lower water requirement compared to Rhodes grass (Osman *et al*., 2008). The nutritional quality of *C. ciliaris* was found to be equal to Rhodes grass, but inferior in *C. piercei* (Peacock *et al*., 2003). In terms of salinity tolerance, *C. ciliaris* and *C. piercei* were found to be less tolerant than Rhodes grass (Nadaf *et al*., 2008). However, there are only limited systematic studies to evaluate the forage potential, water use efficiency, salinity tolerance and nutritional quality of other desert grasses.

The International Center for Biosaline Agriculture (ICBA) has recently initiated collecting the rangeland species for conservation and sustainable use, especially for possible replacement of the 'thirsty' exotic species in forage production systems and to enhance the productivity of rangelands through restoration. If indigenous forage species are to be utilized, the genetic variation existing within species must be explored and utilized to optimize productivity. In this paper, we report the forage yields of 25 accessions of five desert grasses collected from natural habitats in the UAE (Table 1).

The seeds of the grass species were germinated in Jiffy packs and six weeks old seedlings were transplanted into the field in November 2008 at ICBA research station. Each accession was planted in a single row of 3 m, spaced 1 m apart. The distance between plants within each row was about 25 cm. The plants were irrigated with low-salinity water of about 3 dS m^{-1} using the drip-irrigation system. During growth, a single dose of urea one month after planting and two split doses of NPK fertilizer (20-20-20) were applied, each at the rate of 5 g $plant^{-1}$ by banding along the rows. Fresh and dry weight observations were based on three plants, randomly selected in each accession. The plants were cut to a height of 5 cm above the ground level. In all of the species, except *C. piercei*, two harvests were taken between January and June 2009.

An analysis of the data showed significant differences among the species in biomass production ($P<0.001$). Averaged over accessions, biomass potential indicated by fresh and dry matter yields was highest in *P. divisum*, followed by *C. ciliaris* and *P. antidotale* (Table 1). *S. iocladus* and *C. piercei* had the lowest biomass among the five species. The fresh and dry matter yields differed significantly among the accessions of *C. ciliaris* ($P<0.001$). Dry matter yield was highest in RMS-180 (1.1 kg $plant^{-1}$), followed by RMS-184 (0.92 kg $plant^{-1}$) and lowest in RMS-142 (0.21 kg $plant^{-1}$). However, differences in biomass yield among accessions of the other species were not significant (Table 1).

Depending on soil fertility and growing conditions, the dry matter yields of Rhodes grass generally range from about 10-25 t ha^{-1} and that of *C. ciliaris* between 2-9 t ha^{-1} (Cook, 2005). In *C. ciliaris*, variable yields were reported from trials conducted in the UAE . Thus, while the highest dry matter yield obtained at Dhaid Research Station in the

Pennisetum divisum

Panicum antidotale

1. *For more information, contact* **n.rao@biosaline.org.ae**

central region was 15 t ha^{-1} (Osman *et al*., 2008), yields varying between 20 and 90 t ha^{-1} were obtained at ICBA Research Station in Dubai (ICBA, 2008). In Pakistan, fresh biomass yields of up to 10 t ha^{-1} were observed for *P. antidotale* and *C. ciliaris* (Khan *et al*., 2006). In this study, with two harvests under minimal management, dry matter yields (extrapolated from single plant yield) ranging between 6-10 t ha^{-1} were observed in some accessions of *C. ciliaris* and *P. divisum* and *P. antidotale*. Thus, the results demonstrate the potential of these native grasses to replace the exotic Rhodes grass in local forage production systems. The results also indicate that significant intra-specific variation exists within these species, which could provide the basis for improving productivity through selection. For successful development of new forages for production systems or rangeland rehabilitation, it is also essential to determine whether there are significant differences in these accessions in their water use efficiency, nutritive value and ability to grow on salt-affected soils. Further collecting of germplasm of indigenous grasses from a wide range of habitats would indeed provide an expanded genepool for exploitation. Finally, development of new forages and transfer of technology for large-scale adaptation by the farmers also requires considerable agronomic research, followed by extension work to translate the research results into practical recommendations. These objectives can be best achieved through the establishment of a 'forage improvement program' in an institutional framework with a team of breeders, agronomists and extension specialists.

Table 1. Mean fresh and dry matter yields of five native desert grasses

Species	Accession number	Fresh Weight (kg plant^{-1})	Dry Weight (kg plant^{-1})
Cenchrus ciliaris	RMS-107	1.30 abc	0.48 b
	RMS-121	0.76 c	0.30 b
	RMS-142	0.80 c	0.21 b
	RMS-145	1.14 bc	0.41 b
	RMS-164	1.07 bc	0.28 b
	RMS-179	1.31 abc	0.37 b
	RMS-180	2.00 a	1.09 a
	RMS-184	1.87 a	0.92 a
	RMS-194	0.80 c	0.29 b
Mean		1.23	0.48
Coelachyrum piercei	RMS-90	0.29 a	0.15 a
	RMS-109	0.59 a	0.21 a
	RMS-113	0.44 a	0.19 a
	RMS-120	0.49 a	0.18 a
	RMS-151	0.43 a	0.17 a
Mean		0.45	0.18
Panicum antidotale	RMS-95	0.97 a	0.35 a
	RMS-119	1.10 a	0.38 a
	RMS-131	0.59 a	0.17 a
	RMS-141	1.53 a	0.63 a
Mean		1.05	0.38
Pennisetum divisum	RMS-94	2.38 a	1.04 a
	RMS-103	2.02 a	0.80 a
	RMS-104	2.45 a	0.73 a
	RMS-111	1.11 a	0.34 a
	RMS-122	1.93 a	0.56 a
Mean		1.97	0.68
Sporobolus ioclados	RMS-158	0.74 a	0.38 a
	RMS-186	0.78 a	0.30 a
Mean		0.76	0.34

For each species, means within a column followed by the same letter are not significantly different (P = 0.05)

References

Cook, B.G., Pengelly, B.C., Brown, S.D., Donnelly, J.L., Eagles, D.A., Franco, M.A., Hanson, J., Mullen, B.F., Partridge, I.J., Peters, M. and Schultze-Kraft, R. 2005. Tropical Forages: an interactive selection tool. CSIRO, DPI&F(Qld), CIAT and ILRI, Brisbane, Australia.

ICBA. 2008. Annual Report 2007 (1427-28H).

Khan, T.N., Shahbaz, M., Razzaq, A., Ajmal, S. and Khalid, M. 2006. Biomass potential of perennial grass species in Cholistan desert (Pakistan). J. Agri. Soc. Sci. 2: 189-191.

Nadaf, S.K. Al-Farsi, S. M., Al-Hinai, S.A., Al-Harthi, A.S. and Al-Bakri, A.N. 2008. Differential response of indigenous rangeland forage species to salinity. Karnataka J. Agric. Sci. 21: 326-333.

Osman, A.E., Makawi, M. and Ahmed, R. 2008. Potential of the indigenous desert grasses of the Arabian Peninsula for forage production in a water-scarce region. Grass and Forage Sci. 63: 495-503.

Peacock, J.M., Ferguson, M.E., Alhadrami, G.A., McCann, I.R., Al Hajoj, A., Saleh, A. and Karnik, R. 2003. Conservation through utilization: a case study of the indigenous forage grasses of the Arabian Peninsula. J. Arid Environ. 54: 15-28.

Cenchrus ciliaris

Sporobolus ioclados

Coelachyrum piercei

BIOENERGY: PROSPECTS AND POTENTIAL IN MARGINAL AREAS IN DEVELOPING COUNTRIES

Shoaib Ismail and Khalil-ur-Rehman, ICBA[1]

The last decade has seen the importance of three sectors in reference to environment; (i) mitigation of climate change; (ii) reducing atmospheric carbon; and (iii) global energy concerns. Though all are inter-related on a higher scale, a number of efforts have been made in developing countries by government agencies, NGO's and international and national agencies on these issues. However, the issues are more serious and complicated in developing and under-developed countries where over population and harsh conditions restrict the resources for mitigation and alleviation strategies. Among the three, energy concern is a key issue for most countries, largely in terms of security of supply and costs. A lot of serious efforts have been put on renewable energy as oil and other fuel prices have seen a big jump in the last decade. Among the renewable energy sector, both the developed and developing countries have taken serious note of bioenergy. Those developed countries that are not in the arid or semi-arid regions, have invested heavily on renewable bioenergy projects in the drier part of the world that have high amount of solar energy.

Bioenergy is produced by the release of stored chemical energy contained in fuels made from biomass. '*Biomass*' - a product of solar energy is stored by the photosynthetic activity of plants, where the plants remove CO_2 from the atmosphere and combine it with water to produce biomass. A number of names are used synonymously for bioenergy, but technically do have different meaning, based on the end product.

Bio-energy	Involves the conversion of energy in non-fossil organic matter to a more useful energy product (biomass). The biomass is harvested and renewed through re-growth.
Bio-fuels	Liquid fuel products derived from biomass, such as ethanol, methanol and bio-diesel.
Bio-diesel	Methyl esters derived from vegetable and waste oils having similar properties to fossil diesel. It is non-toxic, bio-degradable and can be used in conventional diesel engines.
Bio-gas	Combustible gas derived from an-aerobic decomposition of organic matter, mainly consisting of methane and carbon di-oxide.

Bioenergy is the most widely used renewable source of energy in the world. Out of the total 13.5% renewable energy, it provides 11% of the world primary energy supplies. The conversion of biomass to the different forms of bioenergy is primarily through agricultural products (both non-woody and woody forms) and residues. However, the use of crop biomass—including grain and other plant parts as a raw material, compete with food and feed supplies and may remove valuable plant residues that help sustain soil productivity, structure and avoid erosion. It is therefore important to look for dual-purpose food crops, developing new biomass crops for marginal lands and/or wastelands (where there is no competition with food crops), and developing sustainable livestock management systems that are less dependent on biomass residuals for feeds.

Crops that are usually grown for biofuels include the (i) high sugar content crops, such as sweet sorghum, sugar cane, sugar beet and corn; (ii) crops that have high oil (vegetable oil) content, including oil palm and soybean. A big industry exist for biofuels in Brazil followed by other Latin American countries and the Carribean. Countries like Colombia and Costa Rica are now attempting to implement the Brazilian model of the biofuel industry. Brazil is also making attempts to outsource its crop and biofuel production by establishing joint research and development ventures in Latin America and sub-Saharan Africa (Nigeria, Ghana, etc.). However, one needs to be careful while expanding the biofuel crops, most importantly for exhausting the arable land and water resources. It is also important that these biomass must be produced sustainably or this natural resource will be depleted just like fossil fuels. The introduction of corn in USA as a fuel crop during the early 70's was to help the farmers obtain a better price for their crop by supporting the corn-ethanol market and to promote national security by lessening the dependence on foreign oil. However, on long-term, the efforts did not prove fruitful, since the use of fresh water to grow corn for biofuel was not environmentally sustainable. Shifting cropland from food to fuel was seen to be a contributing factor to the food crisis of 2007, and producing corn ethanol used the same amount of energy as it produced.

On the other hand, many developing countries cannot use edible oils due to short supplies and thus non-oil plants such as *Jatropha* and *Pongamia*, and other woody plants have been researched in South Asian countries. In North America, switchgrass (*Panicum virgatum*) and big bluestem (*Andropogon gerardii*) have been used as a source of biofuel, in addition to provide animal feed. These plants had an advantage over the conventional biofuel crops in using lesser amount of water and to grow on lands incapable of supporting conventional food crops. During the last two decades, the bioenergy concept has thus moved from arable lands towards marginal land and water resources – not competing with food crops. In fact the future of bioenergy will need to be focused more on wastelands (lands that are incapable of growing any type of agricultural crops for food and feed) with least management plantations (more suitable for woody plant species). A great deal of research has been devoted to production from fast-growing trees planted in dense stands as a tree plantation. These short rotation woody crops (SRWC) can be harvested within 5-7 years.

1. *For more information, contact* **s.ismail@biosaline.org.ae**

The species would serve appropriate as bioenergy stocks and would vary by ecological and climatic zones. These species typically may be harvested as entire trees and then replanted, or may be coppiced (re-grown from the stump) every few years. However, in order to grow trees for bioenergy, one has to keep in mind the objective and the resources in mind. If the aim is to produce biomass for energy, then maintaining high biomass productivity will be important, so short rotation forestry systems based on fast growing tree species will be needed. If the intention is to provide a mixture of pulp, wood chip and some timber from the land, then fast growing trees managed on rotations of decades will be a suitable choice.

The prospect of using trees for biomass-to-bioenergy chain under marginal (wasteland) conditions also needs to be carefully defined. In general, most of the wastelands can be classified as those that are not under production due to land and water factors, including, salinity, sodicity, waterlogging, nutrient deficiency, shallow groundwater (saline or non-saline), etc. Usually a combination of these factors makes the land permanently out of production. Selection of tolerant species/varieties/accessions with proper management can lead to better establishment, growth and eventually higher biomass – for bioenergy. A number of species from the genus *Prosopis, Acacia, Eucalyptus, Conocarpus*, etc., have the potential to grow on adverse soil and water conditions, maintain sustainable growth and provide wood (for bioenergy) and foliage (for many uses). However, in order to make the system sustainable and economically viable, it is necessary that integrated management principles are applied. The four scenarios that would work includes: (i) dryland forestry without any infrastructure; (ii), drained systems; (iii) irrigated forestry with natural drainage; and (iv) forestry with a complete irrigation and drainage infrastructure. The cost and outputs will vary inversely from the first option to the last one. However, it will only be economical if the tree plantation is well established with irrigation and later has groundwater to support growth. Under wasteland conditions,

Properly managed tree plantations can provide wood and other bi-products (for bioenergy and other products) and improving the economics under marginal conditions

the only water resource available is the brackish groundwater that would vary in salinity/sodicity levels. As such, in order to establish a successful plantation that is also sustainable, four factors are very important:

1. The availability of brackish water within certain salinity limits.
2. Costs of infrastructure needed (including energy cost).
3. The availability of markets for the biosaline products.
4. The valuation of 'other benefits' to improve the economics.

The International Center for Biosaline Agriculture (ICBA) is part of BIOSAFOR (Biosaline agroforestry) project along with its European (from the Netherlands, Germany and Spain) and Asian (from Bangladesh, India and Pakistan) partners to look into the potential of salt tolerant plants for biomass – bioenergy. The project is funded by the European Union Commission through the FP6 project. The project looks into the whole approach of applying biosaline agroforestry (for bioenergy) on a local, regional and global perspective related to the type of salinity conditions. The project will provide:

- Selection of tree species/varieties/lines/accessions that are fast growing multi-purpose tree species (MPTS) to provide higher biomass under highly saline/sodic conditions.
- Description and categorization of brackish water resources for biosaline (agro) forestry production.
- Characterization of eco-physiological production conditions for biosaline (agro) forestry in arid and semi-arid areas.
- Development of salinity management systems in good balance with the type of biosaline (agro) forestry.

In the first phase of the project, data and information are being assessed on the performance of different tree species in relation to different levels of salinity in various soils. Parallel to this, an inventory of typical saline areas in the arid and semi–arid regions of the participating countries have been prepared. Case study areas of typical plantations under salt-affected lands have been thoroughly evaluated for biomass productivity. The second phase of BIOSAFOR is the analytical phase, where the saline areas are mapped digitally on global scale to assess the global biomass potential from these areas. This will identify the regions where relevant amounts of biosaline biomass can be produced. By using the information on biomass-supply-costs, conclusions will be derived on where the potentially biomass exporting regions are located and what quantities of saline biomass could be supplied, especially to the European market.

The article covers a brief on the BIOSAFOR project supported by the Sixth EU Framework Program for Research and Technological Development (FP6). More information on the project activities and results can be seen in the project homepage on **www.biosafor.eu**.

Growing Date Palms Under Marginal Saline Conditions

Abdullah Dakheel and Ghulam Shabbir, ICBA[1]

Probably originating as early as 4000-6000 B.C., the Date Palm (*Phoenix dactylifera* L.) belongs to the genus *Phoenix* of the family Palmaceae and is extensively cultivated for its edible fruit. A large number of date cultivars is grown throughout the world: Aabel, Ajwah, Al-Barakah, Barhee, Deglet Noor, Holwah, Maktoomi, and Sukkari are some of the most important and popular varieties.

Date Palms are propagated either by suckers/offshoots or by '*in-vitro*' micro propagation techniques. Being a monocot, the Date Palm has a fibrous root system which is divided into four zones: I (Respiratory zone), II (Nutritional zone), III and IV (Absorbing zones). The Date Palm is a dioecious species with male and female flowers being produced on separate palms. The growth and development of date palm fruit involves several external and internal changes, classified as five distinct stages known as (1) Hababouk, (2) Kimri or Jimri, (3) Khalal, (4) Rutab and (5) Tamar. Whole dates are marketed at the Khalal, Rutab and Tamar stages. Iraq, Saudia Arabia, Pakistan, UAE and Egypt are among the highest date producing countries in the world. Yet these countries are also the most water-scarce – in 5 of the 7 countries of the Arabian Peninsula, the water stress index (percentage of water used to available water resources) exceeds 100%. The Date Palm is able to flourish in this region due in part to the fact that it possesses either few or no root hairs and consequently depends on arbuscular mycorrhizal (AM) fungi for water and nutrient absorption. Therefore, it exhibits a considerable mycotrophic habit and association with AM fungi under natural conditions. AM fungi increases resistance to environmental stresses and helps palms to survive under marginal saline conditions. To determine the effect of marginal quality saline water on plant growth, fruit yield and quality of Date Palms, ICBA started a long-term field experiment in collaboration with the UAE Ministry of Environment and Water in 2003. Conducted at the ICBA research station, the experiments used 18 elite date palm varieties and three levels of water salinity (5, 10 and 15 dS m^{-1}).

ICBA initiated a long-term study on fruit yield and quality of dates

Results, so far, have indicated that many varieties have maintained promising growth and economical yield even at medium and high salinity levels despite some negative effects of salinity. Microbiological studies on roots and soil taken from field grown date palms was carried out by BioMyc laboratories in Germany which concluded that roots were colonized at all soil depths and salinity levels. The intensity of AM colonization appeared to be higher at higher salinity levels indicating their role in alleviation of salt stress from the plants. Thus, research is elucidating the important role that the Date Palm plays among the drought and salt-tolerant species in marginal saline conditions.

Staff news

Dr Khalil Ammar

A Palestinian citizen, Dr Ammar headed up the planning department of the Palestinian Water Authority, before receiving a Fulbright Scholarship to undertake his doctoral program in civil and environmental engineering at Utah State University in 2007. Afterwards Dr Ammar worked as a water resources planner at CH2M HILL consulting company in California. He has over than 15 years of experience in water resources management, strategic planning, groundwater modeling and hydrology, and publications in well known journals and conference proceedings.

Dr Henda Mahmoudi

Dr Mahmoudi earned her doctorate in Vegetal Biology from the Faculty of Sciences of Tunis and National Institute of Scientific and Technique Research, Tunisia. With over ten years of professional laboratory experience gained in Tunisia, France, Italy and Germany and numerous scientific publications to her credit, Dr Mahmoudi brings a wealth of international experience to her new role at ICBA as Visiting Scientist responsible for the provision of technical services at the Central Analytical Laboratory.

Mrs Irene Galang Bolus

ICBA was also fortunate to welcome back Mrs Irene, who rejoined the Center as General Accountant after spending one year on maternity leave in the Philippines.

1. For more information, contact **a.dakheel@biosaline.org.ae**

News

Board meeting

Mr Fawzi AlSultan chaired on 21 June the 19th meeting of ICBA's Board of Directors which was held at the Center's Headquarters in Dubai, United Arab Emirates. The Board discussed in details ICBA's achievements and activities in the last six months and approved the work program for the next six months.

Final meeting of the Forage Project

ICBA organized on 23 and 24 June the final meeting of the Steering and Technical Committees of the regional forage project. The seven-participating-countries (Jordan, Oman, Pakistan, Palestine, Syria, Tunisia and the United Arab Emirates) met to share and evaluate project findings. The project which began in 2005 will culminate in November with an international symposium in Syria.

Members of Steering and Technical committees of the project and ICBA staff

Steering Committee Meeting of the Abu Dhabi Soil Survey

The Steering Committee meeting of the Soil Survey of Abu Dhabi Emirate met on April 23rd at Environment Agency – Abu Dhabi Headquarters to discuss the project progress over the last year. The project will conclude in October 2009, however, the Committee approved the convening of an International Soil Conference and the launch of the Soil Survey Report in 2010.

MoUs signed

To strengthen its research activities, ICBA signed four new Memoranda of Understanding:

1. Institute for Vegetables and Ornamental Crops Grossbeeren/Erfurt e.V, Germany (IGZ), February.
2. The ECO Solutions AG, Switzerland, April.
3. Palestinian National Agricultural Research Center, June.
4. Al-Ain Municipality, July.

Dr Shawki Barghouti (left) ICBA Director General and Dr Ali Alfatafta (right) Director General of Palestinian National Agricultural Research Center after signing the MoU

ICBA & IGZ joint PhD Degree Program commenced

Following the MoU signed with the Institute for Vegetables and Ornamental Crops Grossbeeren/Erfurt e.V, Germany (IGZ) in February, Mr Reinhard Seltz was nominated to undertake PhD degree research at ICBA under the joint supervision of Dr Shabbir A Shahid (ICBA), with support from Prof Dr Eckhard George (Humboldt University Berlin) and Dr Dietmer Schwarz (IGZ). Preliminary germination tests have been set up in the ICBA Central Analytical laboratory to help Mr Reinhard in his research to test soil conditioners to improve the soil quality of UAE lands.

AWA Website now 'live'

Since its launch in July 2008, the Arab Water Academy (AWA) has been working behind the scenes to develop the educational programs and infrastructure to establish itself as a regional center of excellence for executive education in water. Much has been achieved in that short time, including the content of the first four programs. Read about the courses being offered at the AWA's new website **www.awacademy.ae**

Conferences and workshops

Soil training

Twenty eight participants were able to benefit from the knowledge and experience of eminent scientists involved in the Soil Survey Project in Abu Dhabi Emirate. Along with Prof Bob Gilkes from the University of Western Australia, scientists from ICBA, Environment Agency – Abu Dhabi and GRM International conducted the training workshop on *Soil Survey and Sustainable Use of Land Resources in Abu Dhabi Emirate* at ICBA headquarters on1-5 February 2009. Participants had the opportunity to learn more about the latest soil survey procedures, remote sensing, and the state-of-the-art technology used to conduct the survey and record the results in the Soil Data Base Management System. A full day field excursion to witness the desert landscape of Abu Dhabi Emirate and discuss on-site the merits, constraints and management issues of soils reinforced the training.

Workshop participants visiting survey site

Workshop participants

Agricultural management workshop

In collaboration with the UAE Ministry of Environment and Water (MOEW), ICBA organized a workshop on *Agricultural Management of the Salinization of Soil and Irrigation Water* from 17 to 18 June.

Twenty-six specialists and technicians from local authorities in the UAE participated in the workshop covering non-conventional water resources, agriculture in the dry saline environments, the rehabilitation and management of saline areas, irrigation techniques for saline water, and salt-tolerant plants.

ICBA Seminar In Turkmenistan

continued from page 1

The seminar included two scientific papers from Turkmenistan, then Prof Dr Faisal Taha, Director Technical Programs of ICBA discussed *ICBA research and development accomplishments in IDB-member countries and future directions*, followed by Dr Kristina Toderich, a scientist from the ICBA office in Tashkent, Uzbekistan, who described *Advances in biosaline agriculture development with reference to Central Asia*.

In conclusion, Dr Ahmad Almasoum, Deputy Director General of ICBA, summed up the proceedings and thanked everyone for their contribution.

AWA launches its first program

continued from page 1

and skills of the Middle East and North Africa's decision-makers to address and manage effectively the region's water challenges.

Initiated by the Arab Water Council, the AWA is based in the EAD headquarters in Abu Dhabi. Management, administration and academic development is undertaken by the International Center for Biosaline Agriculture (ICBA), which is based in Dubai with an office in Abu Dhabi. Initial financial support for the Academy was provided by EAD, the Islamic Development Bank, and the World Bank.

Future programs

Module 2 Leadership in Water Governance Development will be held in November 2009 and Module 3 Water Governance – Context, Dimensions and Futures will held in February 2010 (both in Abu Dhabi). Refer to **www.awacademy.ae** for more details.

International Conference on Soil Classification, 17-19 May 2010

Under the patronage of His Highness Sheikh Hamdan Bin Zayed Al-Nahyan, Ruler's Representative in the Western Region Abu Dhabi, and Chairman Environment Agency - Abu Dhabi, the International Conference on Soil Classification and Reclamation of Degraded Lands in Arid Environments and the Launch of the Abu Dhabi Soil Survey Report will be held on 17-19 May 2010 in Abu Dhabi, United Arab Emirates. The conference is co-organized by the Environment Agency - Abu Dhabi and the International Center for Biosaline Agriculture. See more details about the Conference **http://www.biosaline.org/Default.aspx?NewsId=61**

For more information on ICBA and its latest news, please visit www.biosaline.org