

ICBA and IDB-member countries:

Partners in fostering innovative solutions that promote sustainable agriculture and rural development.

Many of the 56 Islamic Development Bank (IDB) countries, concentrated in North and East Africa, the Middle East, and central and South Asia, are in some of the most water-scarce areas on earth. Renewable water resources are nearly fully exploited, and non-renewable water resources, e.g., ancient groundwater aquifers, are being rapidly depleted. The rural poor suffer the most from water scarcity, because they lack political or economic influence, or the financial resources to buy water services. When water supply, sanitation or irrigation services fail to reach them, their livelihoods and health are seriously compromised.

Originally established in 1999 as a research and development institute focusing on the problems of salinity and using saline water for irrigated agriculture, the International Center for Biosaline Agriculture – ICBA has evolved over the last 15 years into world class modern research facility with a team of international scientists to conduct research on improving the well-being of poor farmers cultivating under marginal conditions. Strategically the Center has broadened its initial focus on applied research and technology development in saline irrigated agriculture to a broader and more integrated approach to strengthening the agricultural sector and identifying sustainable solutions for food and water security in marginal environments.

To ensure food security by 2050 the agricultural sector must produce enough food for a population of 9.1 billion, while providing employment and environmental services, and adapting to climate change. ICBA

believes that marginal environments provide opportunities to enhance food and water security and sustainable livelihoods. The research programs at ICBA are working at the regional, national, state/local and farmer levels to improve agricultural productivity and sustainability. This multi-pronged approach to strengthening the agricultural sector to expand food production by facilitating access to technology, improved germplasm, policies, strategies and programs, is critical to achieve greater food security. Empowering small-scale farmers to expand sustainable, more-intensive crop production (by increasing the resilience of their production systems to respond to increasing demands for limited water resources) for growing forage, food and bioenergy crops will enhance food security.

With the rapid rate at which land and water resources are being degraded and the impacts of climate change and other abiotic stresses on agricultural production, future research has to be directed towards applied and result-based outcomes. Research has to be clearly linked with potential for scaling-up and scaling-out so that the research can be transformed into success stories and eventually into developmental projects.

Significant support from the IDB, the government of the United Arab Emirates, donors and fellow researchers, and partners in national programs has encouraged the evolution in ICBA's research agenda. This brochure summarizes ICBA's historical and current interactions with all 56 IDB-member countries on research projects and capacity building and illustrates how ICBA is working with partners to improve the livelihoods of the rural poor. In addition to research projects and capacity development, the free newsletter Biosalinity News contributes to information sharing and knowledge exchange. Readers of Biosalinity News are widespread in member countries.



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COUNTRY PROFILES

AFGHANISTAN

Capacity Building

2003

- In-situ conservation of plant genetic resources
- Sustainable irrigated agricultural production on degraded/saline land

ALBANIA

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ALGERIA

Capacity Building

2003

- Quality evaluation and utilization of salt-tolerant forages
- Salinization of irrigated lands and reclamation 2005
- Integrated Management of Saline Water Resources and Environments for Forage Production in North Africa Region

2006

- · Scientific Training on Biosaline Agriculture
- AOAD Course on the Utilization of Saline Water in Agriculture

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

ANGOLA

Capacity Building

2007

 Biosaline Agriculture Technologies for Arid and Semi-arid Regions with Reference to Africa (BADEA course)



AZERBAIJAN

Capacity Building

2002

- Production and management of salt-tolerant and halophyte forages and tree species
- Agro-ecological surveys and germplasm collection 2003
- Quality evaluation and utilization of salt-tolerant forages
- Salinization of irrigated lands and reclamation 2003
- Biosaline agriculture and sustainable production systems

2004

- Biosaline Agriculture Principles & Applications with reference to Central Asia & the Caucasus Region 2006
- Advances in Biosaline Agriculture with Reference to Central Asia and Caucasus Region

BAHRAIN

Capacity Building

2006

- AOAD training on "Train the trainers on water awareness in the Arabian Peninsula" Biosaline Agriculture Workshop
- AOAD Course on the Utilization of Saline Water in Agriculture

2008

 Regional training workshop on Biosaline Agriculture Technologies for the Arab Region

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

BANGLADESH

MOU

• Bangladesh Agricultural Research Institute (BARI), 2002

Capacity Building

2002

- Design and management of irrigation systems for biosaline agriculture
- Production and management of salt tolerant and halophyte forages and tree species
- Agro-ecological surveys and germplasm collection 2003
- Salinization of irrigated lands and reclamation

Research:

Title: Demonstration of biosaline agriculture in

salt-affected areas in Bangladesh

Duration: 2003-2007 Collaborators: BARI Funding: ICBA core, BARI

Title: Development of technologies to harness the productivity potential of salt-affected areas of the Indo-Gangetic, Mekong, and Nile river basins

Duration: 2004-2007

Collaborators: RRI; BARI, Bangladesh; Rice Research and Training Center, Egypt; Rice Research Institute of

Iran

Funding: CGIAR Challenge Program on Food and

Water through IRRI

Title: Biosaline Agroforestry: Remediation of saline wastelands through production of renewable energy,

biomaterials and fodder **Duration:** 2007-2010

Collaborators: ICBA, OASE (Netherlands); Utrecht University (Netherlands); BARI (Bangladesh); CSSRI (India); PARC (Pakistan); ACACIA (Netherlands); CITA (Netherlands); Universität Hohenheim (Netherlands)

Funding: European Union

Title: Marginal water resources assessment and use for growing horticultural crops and fodders in the coastal

saline areas of Bangladesh Duration: 2007-2009 Collaborator: BARI

Funding: ICBA core and BARI

Title: Regeneration and dissemination of salt-tolerant

germplasm

Duration: 2007-2013

Collaborators: National and international plant genetic

resources programs **Funding:** ICBA core

BENIN

Capacity Building

2010

- Biosaline agriculture technologies for arid and semi-arid regions with reference to Africa (BADEA)
 2013
- Reclamation of Lands Affected by Salinity in Africa

BRUNEI DARUSSALAM

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BURKINA FASO

Capacity Building

2002

- Agro-ecological surveys and germplasm collection 2003
- Quality evaluation and utilization of salt-tolerant forages
- Salinization of irrigated lands and reclamation

Research

Title: Integrated crop and seed production systems under water/irrigation management in Sub-Saharan

Africa

Duration: 2011-2015

Collaborators: Institut de l'Environnement et de Recherches Agricoles (INERA) of Burkina Faso, National Agricultural Research Institute (NARI) of Gambia, Institut d'Economie Rurale(IER) of Mali, Centre National de Recherche Agronomique et de Development (CNRADA) of Mauritania, (v) Institut National de la Recherche Agronomique du Niger (INRAN) of Niger, (vi) National Agricultural Extension, Research and Liaison Services (NAERLS) of Nigeria, and (vii) Institut Senegalais de Recherches Agricoles (ISRA) of Senegal

Funding: IDB

CAMEROON

Capacity Building

2010

- Biosaline agriculture technologies for arid and semi-arid regions with reference to Africa (BADEA)
 2013
- Reclamation of Lands Affected by Salinity in Africa



CHAD

Capacity Building

2010

- Biosaline agriculture technologies for arid and semi-arid regions with reference to Africa (BADEA)
 2013
- Reclamation of Lands Affected by Salinity in Africa

COMOROS

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COTE D'IVOIRE

Capacity Building

2010

 Biosaline agriculture technologies for arid and semi-arid regions with reference to Africa (BADEA)

DJIBOUTI

MOU

 Cooperation Agreement between Life Sciences Institute of Djibouti Research Center (LSIDRC), 2008

EGYPT

MOU

• Desert Research Center (DRC), 2003 and 2010

Capacity Building

2002

- Design and management of irrigation systems for biosaline agriculture
- Production and management of salt-tolerant and halophyte forages and tree species
- Agro-ecological surveys and germplasm collection 2003
- Quality evaluation and utilization of salt-tolerant forages
- In-situ conservation of plant genetic resources 2005
- Integrated Management of Saline Water Resources and Environments for Forage Production in North Africa Region

2006

 AOAD Course on the Utilization of Saline Water in Agriculture

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region 2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

2012

- Environmental impact assessment and soil and irrigation management associated with the use of marginal water in agricultural production
- Farmers' schools for forage production and utilization techniques under the use of marginal water resources

2013

- Guidelines and methods for socioeconomic assessment and farm surveys
- Farmer field schools for rural family empowerment through optimization of forage and animal production

Research

Title: Harnessing Salty Waters to Enhance Sustainable Livelihoods of the Rural Poor in Four Countries in West Asia and North Africa (WANA)

Duration: 2004 Follow-up 2005-2006

Collaborators: Egypt, Jordan, Syria and Tunisia

Funding: ICBA core, CGIAR

Title: Development of salinity-tolerant sorghum and pearl millet varieties for saline lands. (Next phase of Project "Evaluation of salinity tolerance, growth, yield potential and forage quality in selected

cultivars/accessions of pearl millet and sorghum under

field conditions 2002-2003") **Duration:** 2003-2006 **Collaborator:** ICRISAT **Funding:** ICBA core, OPEC

Title: Development of technologies to harness the productivity potential of salt-affected areas of the Indo-Gangetic, Mekong, and Nile river basins

Duration: 2004-2007

Collaborators: IRRI; BARI, Bangladesh; Rice Research and Training Center, Egypt; Rice Research

Institute of Iran

Funding: CGIAR Challenge Program on Food and

Water through IRRI

Title: Sorghum and Pearl millet for enhanced crop-livestock productivity in saline lands

Duration: 2008-2012

Collaborators: NARS in Egypt, Jordan, Oman, Syria,

Yemer

Funding: OFID, IFAD and ICBA core



GABON

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GAMBIA

Research

Title: Integrated crop and seed production systems under water/irrigation management in Sub-Saharan Africa

Duration: 2011-2015

Collaborators: Institut de l'Environnement et de Recherches Agricoles (INERA) of Burkina Faso, National Agricultural Research Institute (NARI) of Gambia, Institut d'Economie Rurale (IER) of Mali, Centre National de Recherche Agronomique et de Development (CNRADA) of Mauritania, (v) Institut National de la Recherche Agronomique du Niger (INRAN) of Niger, (vi) National Agricultural Extension, Research and Liaison Services (NAERLS) of Nigeria, and (vii) Institut Senegalais de Recherches Agricoles (ISRA) of Senegal

Funding: IDB

GUINEA BISSAU

Capacity Building

2010

 Biosaline agriculture technologies for arid and semi-arid regions with reference to Africa (BADEA)

INDONESIA

Capacity Building

2003

- Quality evaluation and utilization of salt tolerant forages Salinization of irrigated lands and reclamation 2006
- ICBA-IDB Apprenticeship for Human Capacity Building on Biosaline Agriculture in Islamic Countries

IRAN

MOU

 Agricultural Research and Education Organization (AREO) previously the Agricultural Research Education and Extension Organization (AREEO), 2000

Capacity Building

2002

- Production and management of salt tolerant and halophyte forages and tree species
- Agro-ecological surveys and germplasm collection 2003
- Quality evaluation and utilization of salt tolerant forages
- Salinization of irrigated lands and reclamation 2004
- Workshop: Principles and Application of Biosaline Agriculture in Arid and Semi-Arid Regions with Reference to Iran

Research

Title: Production of halophytes in Iran

Duration: 2003-2005

Collaborators: ICBA, NSRC

Funding: NSRC

Title: Development of salinity-tolerant sorghum and pearl millet varieties for saline lands. (Next phase of Project "Evaluation of salinity tolerance, growth, yield potential and forage quality in selected cultivars/ accessions of pearl millet and sorghum under field conditions 2002-2003")

Duration: 2003–2006 Collaborator: ICRISAT Funding: ICBA core, OPEC

Title: Development of technologies to harness the productivity potential of salt-affected areas of the Indo-Gangetic, Mekong, and Nile river basins

Duration: 2004-2007

Collaborators: IRRI; BARI, Bangladesh; Rice Research and Training Center, Egypt; Rice Research Institute of Iran **Funding:** CGIAR Challenge Program on Food and

Water through IRRI



IRAQ

MOU

• Ministry of Water Resources, Republic of Iraq, 2014

Capacity Building

2003

Quality evaluation and utilization of salt tolerant forages

2006

 AOAD Course on the Utilization of Saline Water in Agriculture

2008

 World Bank course on asset management with focus on distribution systems and business planning/risk management for the water sector in Iraq

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region

2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world Research

Title: Regeneration and dissemination of salt-tolerant

germplasm

Duration: 2007-2013

Collaborators: National and international plant genetic

resources programs **Funding:** ICBA core

Title: Salinity in Central and Southern Iraq: better understanding of salinization processes leading to improved management practices and increased

productivity

Duration: 2010-2013

Collaborators: ICARDA, IWMI, Iraq

Funding: ACIAR



JORDAN

MOU

 Al Hashemite Fund for Development of Badia (HFDB), 2014

Capacity Building

2002

- Design and management of irrigation systems for biosaline agriculture
- Production and management of salt tolerant and halophyte forages and tree species

2003

- Quality evaluation and utilization of salt tolerant forages
- Salinization of irrigated lands and reclamation 2006
- Capacity Building in Integrated Management of Saline Water Resources for Forage Production in WANA Region
- AOAD course on the Utilization of Saline Water in Agriculture - Forage Project

2007

- Forage Project Irrigation and Soil Management and Modeling Working Group Meeting
- Working Group Meeting on Salt-Tolerant Forage Production and Utilization in Animal Feeding

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

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 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region

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 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

2012

- Environmental impact assessment and soil and irrigation management associated with the use of marginal water in agricultural production
- Farmers' schools for forage production and utilization techniques under the use of marginal water resources

Research

Title: Harnessing Salty Waters to Enhance Sustainable Livelihoods of the Rural Poor in Four Countries in West

Asia and North Africa (WANA)

Duration: 2004 Follow-up 2005-2006

Collaborators: Egypt, Jordan, Syria and Tunisia

Funding: ICBA core, CGIAR

Title: Expanding date palm cultivation under saline

conditions in Jordan **Duration:** 2004-2008 **Collaborator:** NCARTT **Funding:** ICBA core, NCARTT

Title: Saving freshwater resources with salt-tolerant forage production in marginal areas of the West Asia and North Africa region - an opportunity to raise the

incomes of the rural poor **Duration:** 2004–2009

Collaborators: National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia;

and the United Arab Emirates

Funding: IFAD; Arab Fund for Economic and Social Development; OPEC Fund for International Development; National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia; and the United Arab Emirates, ICBA core

Title: Sorghum and pearl millet for enhanced crop-livestock productivity in saline lands

Duration: 2008-2012

Collaborators: Egypt, Jordan, Oman, Syria, Yemen **Funding:** OFID, IFAD, AFESD and ICBA core

Title: Screening and selection of Triticale genotypes for salinity tolerance and dry matter production

Duration: 2009-2012

Collaborators: Jordan, Oman, Pakistan, Palestine,

Syria, Tunisia, and UAE **Funding:** IFAD and AFESD

Title: The sustainable use of treated wastewater in

agriculture in the Arab world **Duration:** 2010-2013

Collaborators: Arab Center for the Study of Arid Zones and Dry lands (ACSAD), National Agricultural Research

Systems in Jordan, Oman and Tunisia

Funding: IDB, ACSAD, NARS from Jordan, Oman, and

Tunisia

Title: Adaptation to climate change in WANA marginal environments through sustainable crop and livestock diversification

Duration: 2010-2014

Collaborators: NARS in Jordan, Pakistan, Palestine,

Oman, Syria, Tunisia, and UAE **Funding:** IFAD, AFESD, OFID, IDB

KAZAKHSTAN

MOU

 National Academy of Sciences in the Republic of Kazakhstan, 2003 and 2014

Capacity Building

2002

Agro-Ecological Surveys and Germplasm Collection

2003

- Quality Evaluation and Utilization of Salt Tolerant Forages
- Biosaline Agriculture and Sustainable Production Systems (Tashkent, Uzbekistan)

2004

- Biosaline Agriculture Principles & Applications with reference to Central Asia & the Caucasus Region 2005
- Germplasm Evaluation, Multiplication and Data Collection

2006

 Advances in Biosaline Agriculture with Reference to Central Asia and Caucasus Region

2007

 Production and Utilization of Salt Tolerant Forage Crops/Halophytes

2010

 Seed production, maintenance of cultivars and integrated crop management package

Research

Title: Sorghum and Pearl Millet for Crop Diversification Improved Crop-Livestock Productivity and Farmers

Livelihood in Central Asia **Duration:** 2011-2014

Collaborators: ICARDA, ICRISAT, Uzbekistan,

Kazakhstan, Tajikistan Funding: IDB and ICBA core

Title: Enabling Communities in the Aral Sea Basin to Combat Land and Water Resource Degradation

through the Creation of 'Bright' Spots

Duration: 2005-2007

Collaborators: IWMI, ICARDA and NARES of Uzbekistan, Kazakhstan and Turkmenistan **Funding:** Asian Development Bank



KUWAIT

Capacity Building

200

 Genebank Operations: Germplasm and Data Management

2003

 Quality Evaluation and Utilization of Salt Tolerant Forages

2006

- AOAD training on "Train the trainers on water awareness in the Arabian Peninsula"
- AOAD Course on the Utilization of Saline Water in Agriculture

2008

 Regional training workshop on Biosaline Agriculture Technologies for the Arab Region

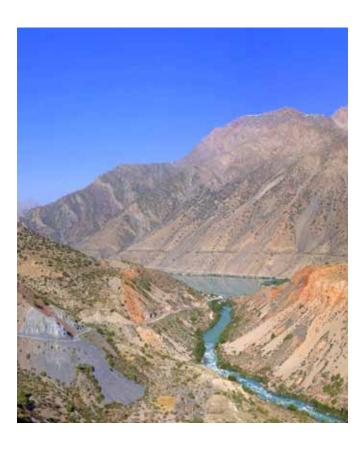
2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region 2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world



KYRGYZ REPUBLIC

Capacity Building

2003

- Quality evaluation and utilization of salt tolerant forages
- Salinization of irrigated lands and reclamation
- Biosaline agriculture and sustainable production systems (Tashkent, Uzbekistan)

2004

 Biosaline Agriculture Principles & Applications with reference to Central Asia & the Caucasus Region
 2006

 Advances in Biosaline Agriculture with Reference to Central Asia and Caucasus Region

LEBANON

Capacity Building

2002

- Design and Management Irrigation Systems for Biosaline Agriculture
- Production and Management of Salt Tolerant and Halophyte Forages and Tree Species

2006

 AOAD Course on the Utilization of Saline Water in Agriculture

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region

2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

LIBYA

Capacity Building

2003

- Salinization of Irrigated Lands and Reclamation 2006
- AOAD Course on the Utilization of Saline Water in Agriculture

2008

 Regional training workshop on Biosaline Agriculture Technologies for the Arab Region

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

MALAYSIA

Capacity Building

2002

- Agro-Ecological Surveys and Germplasm Collection 2003
- Quality Evaluation and Utilization of Salt Tolerant Forages

MALDIVES

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MALI

Capacity Building

2002

- Agro-ecological surveys and germplasm collection 2003
- Quality evaluation and utilization of salt tolerant forages
- Salinization of irrigated lands and reclamation 2013
- Reclamation of Lands Affected by Salinity in Africa

Research

Title: Integrated crop and seed production systems under water/irrigation management in Sub-Saharan Africa

Duration: 2011-2015

Collaborators: Institut de l'Environnement et de Recherches Agricoles (INERA) of Burkina Faso, National Agricultural Research Institute (NARI) of Gambia, Institut d'Economie Rurale (IER) of Mali, Centre National de Recherche Agronomique et de Development (CNRADA) of Mauritania, (v) Institut National de la Recherche Agronomique du Niger (INRAN) of Niger, (vi) National Agricultural Extension, Research and Liaison Services (NAERLS) of Nigeria, and (vii) Institut Senegalais de Recherches Agricoles (ISRA) of Senegal

Funding: IDB

MAURITANIA

Capacity Building

2002

 Production and Management of Salt Tolerant and Halophyte Forages and Tree Species

2005

 Integrated Management of Saline Water Resources and Environments for Forage Production in North Africa Region

2008

 Regional training workshop on Biosaline Agriculture Technologies for the Arab Region

Research

Title: Integrated crop and seed production systems under water/irrigation management in Sub-Saharan Africa

Duration: 2011-2015

Collaborators: Institut de l'Environnement et de Recherches Agricoles (INERA) of Burkina Faso, National Agricultural Research Institute (NARI) of Gambia, Institut d'Economie Rurale (IER) of Mali, Centre National de Recherche Agronomique et de Development (CNRADA) of Mauritania, (v) Institut National de la Recherche Agronomique du Niger (INRAN) of Niger, (vi) National Agricultural Extension, Research and Liaison Services (NAERLS) of Nigeria, and (vii) Institut Senegalais de Recherches Agricoles (ISRA) of Senegal

Funding: IDB



MOROCCO

MOU

 North-South Center for Social Sciences (NRCS) Ibn Zhor University of Agadir (Morocco), 2012

Capacity building

2002

 Production and Management of Salt Tolerant and Halophyte Forages and Tree Species

2005

 Integrated Management of Saline Water Resources and Environments for Forage Production in North Africa Region

2006

 AOAD Course on the Utilization of Saline Water in Agriculture

2008

 Regional training workshop on Biosaline Agriculture Technologies for the Arab Region

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

MOZAMBIQUE

Capacity building

2007

 Biosaline Agriculture Technologies for Arid and Semi-arid Regions with Reference to Africa (BADEA course)

2011

 Biosaline agriculture technologies and its role in the mitigation of climate change in Africa (BADEA)

NIGER

MOU

 Institute National de Recherches Agronomiques du Niger (NIRAN), 2004

Capacity building

2006

- Introduction and Application of Biosaline Agriculture with reference to Niger
- COMSTECH-IDB Joint Scheme on Strengthening of Centers of Excellence - Internship Program on Biosaline Agriculture

2010

 Biosaline agriculture technologies for arid and semi-arid regions with reference to Africa (BADEA)

2013

• Reclamation of Lands Affected by Salinity in Africa

Research

Title: Integrated crop and seed production systems under water/irrigation management in Sub-Saharan Africa

Duration: 2011-2015

Collaborators: Institut de l'Environnement et de Recherches Agricoles (INERA) of Burkina Faso,

National Agricultural Research Institute (NARI) of Gambia, Institut d'Economie Rurale (IER) of Mali, Centre National de Recherche Agronomique et de Development (CNRADA) of Mauritania, (v) Institut National de la Recherche Agronomique du Niger (INRAN) of Niger, (vi) National Agricultural Extension, Research and Liaison Services (NAERLS) of Nigeria, and (vii) Institut Senegalais de Recherches Agricoles (ISRA) of Senegal

Funding: IDB

NIGERIA

Capacity building

2011

 Biosaline agriculture technologies and its role in the mitigation of climate change in Africa (BADEA)

Research

Title: Integrated crop and seed production systems under water/irrigation management in Sub-Saharan Africa

Duration: 2011-2015

Collaborators: Institut de l'Environnement et de Recherches Agricoles (INERA) of Burkina Faso, National Agricultural Research Institute (NARI) of Gambia, Institut d'Economie Rurale (IER) of Mali, Centre National de Recherche Agronomique et de Development (CNRADA) of Mauritania, (v) Institut National de la Recherche Agronomique du Niger (INRAN) of Niger, (vi) National Agricultural Extension, Research and Liaison Services (NAERLS) of Nigeria, and (vii) Institut Senegalais de Recherches Agricoles (ISRA) of Senegal

Funding: IDB



OMAN

Capacity building

2001

- Irrigation with brackish water
- Genebank operations: germplasm and data management

2002

- Production and management of salt tolerant and halophyte forages and tree species
- Agro-ecological surveys and germplasm collection 2003
- Quality evaluation and utilization of salt tolerant forages
- Salinization of irrigated lands and reclamation
- In-situ conservation of plant genetic resources 2006
- AOAD training on "Train the trainers on water awareness in the Arabian Peninsula"
- Capacity Building in Integrated Management of Saline Water Resources for Forage Production in WANA Region
- Quality Assurance of Analytical Laboratories Workshop
- AOAD course on the Utilization of Saline Water in Agriculture - Forage Project

2007

- Forage Project Irrigation and Soil Management and Modeling Working Group Meeting
- Working Group Meeting on Salt-Tolerant Forage Production and Utilization in Animal Feeding

2008

 Regional training workshop on Biosaline Agriculture Technologies for the Arab Region

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region

2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

2012

- Environmental impact assessment and soil and irrigation management associated with the use of marginal water in agricultural production
- Farmers' schools for forage production and utilization techniques under the use of marginal water resources

2013

Guidelines and methods for socioeconomic assessment and farm surveys

Research

Title: Demonstration of biosaline agriculture at Nimr, Sultanate of Oman

Duration: 2001-2004

Contracted by: Petroleum Development Oman LLC **Funding:** Petroleum Development Oman LLC

Title: Development of salt-tolerant sorghum and pearl millet varieties for saline lands. (Next phase of Project

"Evaluation of salinity tolerance, growth, yield potential and forage quality in selected

cultivars/accessions of pearl millet and sorghum

under field conditions 2002-2003")

Duration: 2003-2006 **Collaborator:** ICRISAT **Funding:** ICBA core, OPEC

Title: Evaluation of salinity tolerance and yield in 280

barley varieties and accessions (Phase II)

Duration: 2004-2006 Collaborator: ICARDA Funding: ICBA core

Title: Saving freshwater resources with salt-tolerant forage production in marginal areas of the West Asia and North Africa region - an opportunity to raise the

incomes of the rural poor **Duration:** 2004–2009

Collaborators: National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia;

and the United Arab Emirates

Funding: IFAD; Arab Fund for Economic and Social

Development; OPEC Fund for International

Development; National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia; and

the United Arab Emirates, ICBA core

Title: Screening of Sesbania, Cowpea, Guar and sunflower accessions for salinity-tolerance and yield

Duration: 2004-2012

Collaborators: Oman and UAE **Funding:** ICBA core, IFAD and AFESD

Title: Management of salt-affected soils and water

for sustainable agriculture

Duration: 2006-2009 Collaborator: Sultan Qabous

University, Oman

Funding: ICBA core, Sultan Qabous University

Title: Regeneration and dissemination of salt-tolerant

germplasm

Duration: 2007-2013

Collaborators: National and international plant genetic

resources programs **Funding:** ICBA core

Title: Sorghum and pearl millet for enhanced crop-livestock productivity in saline lands

Duration: 2008-2012

Collaborators: Egypt, Jordan, Oman, Syria, Yemen

Funding: OFID, IFAD, AFESD and ICBA core

Title: Feasibility of Managed Aquifer Recharge using

excess treated wastewater in Oman

Duration: 2009-2012

Collaborators: Sultan Qabous University

Funding: ICBA core, HM Strategic Research Fund

Title: National strategy to combat salinity in Oman

Duration: 2009-2012

Collaborator: Oman Ministry of Agriculture **Funding:** Oman Ministry of Agriculture

Title: Adaptation to climate change in WANA marginal environments through sustainable crop and livestock diversification

Duration: 2010-2014

Collaborator: NARS in Jordan, Pakistan, Palestine,

Oman, Syria, Tunisia, and UAE **Funding:** IFAD, AFESD, OFID, IDB

Title: The sustainable use of treated wastewater in

agriculture in the Arab world

Duration: 2010-2013

Collaborators: Arab Center for the Study of Arid Zones and Dry lands (ACSAD), National Agricultural Research

Systems in Jordan, Oman and Tunisia

Funding: IDB, ACSAD, NARS from Jordan, Oman, and

Tunisia

Title: Workshop on Environmental Cost and Changing Face of Agriculture in the Gulf States-The 2012 Gulf

Research Meeting **Duration:** 2011-2012

Collaborator: Sultan Qabous University **Funding:** Sultan Qabous University



PAKISTAN

MOU

• Pakistan Agricultural Research Council (PARC), 2000

Capacity Building

2002

Design and management of irrigation systems for biosaline agriculture

2003

Quality evaluation and utilization of salt tolerant forages

• In-situ conservation of plant genetic resources

 Capacity Building in Integrated Management of Saline Water Resources for Forage Production in WANA Region

 AOAD course on the Utilization of Saline Water in Agriculture - Forage Project

2007

 Forage Project Irrigation and Soil Management and Modeling

 Working Group Meeting Working Group Meeting on Salt-Tolerant Forage Production and Utilization in Animal Feeding

Research

Title: Use of low quality water for productive use of

desert and salt-affected areas in Pakistan

Duration: 2003-2005 **Collaborator:** PARC **Funding:** ICBA core, PARC

Title: Saving freshwater resources with salt-tolerant forage production in marginal areas of the West Asia and North Africa region - an opportunity to raise the

incomes of the rural poor **Duration:** 2004-2009

Collaborators: National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia;

and the United Arab Emirates

Funding: IFAD; Arab Fund for Economic and Social Development; OPEC Fund for International Development; National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia; and the United Arab Emirates, ICBA core

Title: Biosaline Agroforestry: Remediation of saline wastelands through production of renewable energy, biomaterials and fodder

Duration: 2007-2010

Collaborators: ICBA, OASE (Netherlands); Utrecht University (Netherlands); BARI (Bangladesh); CSSRI (India); PARC (Pakistan); ACACIA (Netherlands); CITA (Netherlands); Universität Hohenheim (Netherlands)

Funding: European Union

Title: Regeneration and dissemination of salt-tolerant

germplasm

Duration: 2007-2013

Collaborators: National and international plant genetic

resources programs **Funding:** ICBA core

Title: Adaptation to climate change in WANA marginal environments through sustainable crop and livestock

diversification **Duration:** 2010-2014

Collaborator: NARS in Jordan, Pakistan, Palestine,

Oman, Syria, Tunisia, and UAE Funding: IFAD, AFESD, OFID, IDB



PALESTINE

MOU

- Palestinian National Center for Agricultural Studies (NARC), 2009
- Palestinian Hydrology Group, 2014Palestinian Water Authority, 2014

Capacity Building

2002

- Design and management of irrigation systems for biosaline agriculture
- Agro-ecological surveys and germplasm collection

2003

Quality evaluation and utilization of salt tolerant forages

2006

- Capacity Building in Integrated Management of Saline Water Resources for Forage Production in WANA Region
- AOAD course on the Utilization of Saline Water in Agriculture - Forage Project

2007

- Forage Project Irrigation and Soil Management and Modeling Working Group Meeting
- Working Group Meeting on Salt-Tolerant Forage Production and Utilization in Animal Feeding

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

2012

 Environmental impact assessment and soil and irrigation management associated with the use of marginal water in agricultural production

Research

Title: Saving freshwater resources with salt-tolerant forage production in marginal areas of the West Asia and North Africa region - an opportunity to raise the

incomes of the rural poor **Duration:** 2004–2009

Collaborators: National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia;

and the United Arab Emirates

Funding: IFAD; Arab Fund for Economic and Social

Development; OPEC Fund for International

Development; National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia; and the United Arab Emirates. ICBA core

Title: Adaptation to climate change in WANA marginal environments through sustainable crop and livestock diversification

Duration: 2010-2014

Collaborators: NARS in Jordan, Pakistan, Palestine,

Oman, Syria, Tunisia, and UAE **Funding:** IFAD, AFESD, OFID, IDB

QATAR

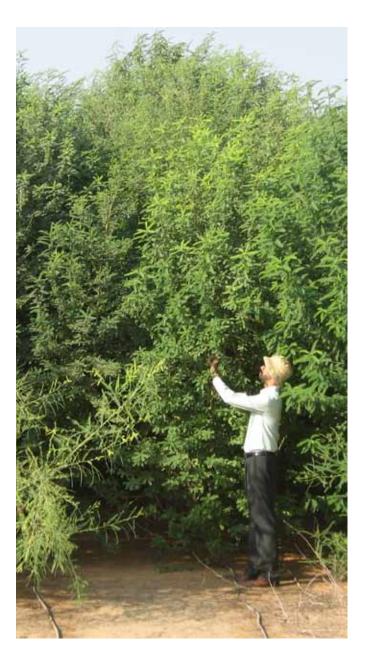
Capacity Building

2006

- AOAD training on "Train the trainers on water awareness in the Arabian Peninsula"
- AOAD Course on the Utilization of Saline Water in Agriculture

2011

• Biosaline agriculture technologies in arid areas



SAUDI ARABIA

MOU

- The King Abdul Aziz City for Science and technology, 2001
- The Arabian Saline Water Technology Company (BEHAR), 2001
- The National Prawn Company, 2004
- Cooperation Agreement with King Abdul Aziz University (KAU), Faculty of Meteorology, Environment & Arid Land Agriculture, 2008
- King Abdullah University of Science and Technology (KAUST), 2013

Capacity Building

2002

- Agro-ecological surveys and germplasm collection 2003
- In-situ conservation of plant genetic resources 2006
- AOAD training on "Train the trainers on water awareness in the Arabian Peninsula"
- AOAD Course on the Utilization of Saline Water in Agriculture

2013

Guidelines and methods for socioeconomic assessment and farm surveys

Research

Title: Biosaline Agriculture Development Program at

the NPC Site, Al-Laith, Saudi Arabia **Duration:** 2004-2006 (extended to 2008)

Contracted by: National Prawn Company, Saudi Arabia

Title: Developing the OIC's Water Vision

Duration: 2010-2012

Collaborators: Organization of Islamic Cooperation,

Islamic Development Bank **Funding:** ICBA core

SENEGAL

MOU

 Cooperation Agreement with Institut Senegalais De Recherches Agricoles/The Senegalese Institute of Agricultural Research (ISRA), DAKAR, SENEGAL, 2007

Capacity Building

2002

- Design and management of irrigation systems for biosaline agriculture
- Production and management of salt tolerant and halophyte forages and tree species
- Agro-ecological surveys and germplasm collection 2003
- Quality evaluation and utilization of salt tolerant forages
- Salinization of Irrigated Lands and Reclamation 2007
- Biosaline Agriculture Technologies for Arid and Semi-arid Regions with Reference to Africa (BADEA course)

2010

 Biosaline agriculture technologies for arid and semi-arid regions with reference to Africa (BADEA)

Research

Title: Integrated crop and seed production systems under water/irrigation management in Sub-Saharan Africa

Duration: 2011-2015

Collaborators: Institut de l'Environnement et de Recherches Agricoles (INERA) of Burkina Faso, National Agricultural Research Institute (NARI) of Gambia, Institut d'Economie Rurale (IER) of Mali, Centre National de Recherche Agronomique et de Development (CNRADA) of Mauritania, (v) Institut National de la Recherche Agronomique du Niger (INRAN) of Niger, (vi) National Agricultural Extension, Research and Liaison Services (NAERLS) of Nigeria, and (vii) Institut Senegalais de Recherches Agricoles (ISRA) of Senegal **Funding:** IDB

SIERRA LEONE

Capacity Building **2007**

 Biosaline Agriculture Technologies for Arid and Semi-arid Regions with Reference to Africa (BADEA course)

SOMALIA

Capacity Building

2003

- Salinization of irrigated lands and reclamation 2004
- Course: Interactive introduction to agronomic practices and crops for successful agricultural production in saline conditions

2006

 ICBA-IDB Apprenticeship for Human Capacity Building on Biosaline Agriculture in Islamic Countries

SUDAN

MOU

- Ministry of Agriculture, Animal Wealth and Natural Resources, Al Khartoum State, 2001
- Arab Authority for Agricultural Investment and Development (AAAID), 2001

Capacity Building

2002

- Design and management of irrigation systems for biosaline agriculture
- Production and management of salt tolerant and halophyte forages and tree species
- Agro-ecological surveys and germplasm collection 2003
 - Quality evaluation and utilization of salt tolerant forages
- Salinization of irrigated lands and reclamation
- In-situ conservation of plant genetic resources 2006
- AOAD Course on the Utilization of Saline Water in Agriculture

2008

 Regional training workshop on Biosaline Agriculture Technologies for the Arab Region

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region

SURINAME

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SYRIA

Capacity Building

2002

- Design and management of irrigation systems for biosaline agriculture
- Production and management of salt tolerant and halophyte forages and tree species

2003

- Salinization of irrigated lands and reclamation
- In-situ conservation of plant genetic resources 2006
- Capacity Building in Integrated Management of Saline Water Resources for Forage Production in WANA Region
- AOAD course on the Utilization of Saline Water in Agriculture - Forage Project

2007

 Forage Project Irrigation and Soil Management and Modeling Working Group Meeting

2008

 Regional training workshop on Biosaline Agriculture Technologies for the Arab Region

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region 2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world Research

Title: Harnessing Salty Waters to Enhance Sustainable Livelihoods of the Rural Poor in Four Countries in West

Asia and North Africa (WANA)

Duration: 2004 Follow-up 2005-2006

Collaborators: Egypt, Jordan, Syria and Tunisia

Funding: ICBA core, CGIAR

Title: Saving freshwater resources with salt-tolerant forage production in marginal areas of the West Asia and North Africa region - an opportunity to raise the

incomes of the rural poor **Duration:** 2004–2009

Collaborators: National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia;

and the United Arab Emirates

Funding: IFAD; Arab Fund for Economic and Social Development; OPEC Fund for International Development; National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia; and the United Arab Emirates, ICBA core

Title: Adaptation to climate change in WANA marginal environments through sustainable crop and livestock diversification

Duration: 2010-2014

Collaborators: NARS in Jordan, Pakistan, Palestine,

Oman, Syria, Tunisia, and UAE **Funding:** IFAD, AFESD, OFID, IDB

Title: Sorghum and pearl millet for enhanced crop-livestock productivity in saline lands

Duration: 2008-2012

Collaborators: Egypt, Jordan, Oman, Syria,

Yemen

Funding: OFID, IFAD, AFESD and ICBA core

TAJIKISTAN

Capacity building

2003

- Quality evaluation and utilization of salt tolerant forages
- Salinization of irrigated lands and reclamation
- Biosaline agriculture and sustainable production systems (Tashkent, Uzbekistan)

2004

 Biosaline Agriculture Principles & Applications with reference to Central Asia & the Caucasus Region

 Advances in Biosaline Agriculture with Reference to Central Asia and Caucasus Region

2007

 Production and Utilization of Salt Tolerant Forage Crops/Halophytes

2012

• Seed production, maintenance of cultivars and integrated crop management package

Research

Title: Sorghum and Pearl Millet for Crop Diversification Improved Crop-Livestock Productivity and Farmers

Livelihood in Central Asia **Duration:** 2011-2014

Collaborators: ICARDA, ICRISAT, Uzbekistan,

Kazakhstan, Tajikstan Funding: IDB and ICBA core

Title: Introduction of Biosaline Agriculture

technologies for improvement of degraded abandoned

farms in Tajikistan **Duration:** 2007-2009

Collaborators: ICBA, Tajikistan Academy of

Agricultural Sciences (TAAS)

Funding: Asian Development Bank and Islamic

Development Bank

TOGO

Capacity building

2010

 Biosaline agriculture technologies for arid and semi-arid regions with reference to Africa (BADEA)



TUNISIA

MOU

- Institut National Meteorologie (INM), 2013
- Institut National des Grandes Cultures (INGC), 2013

Capacity Building

2002

- Production and management of salt tolerant and halophyte forages and tree species
- Agro-ecological surveys and germplasm collection
- Quality evaluation and utilization of salt tolerant forages
- Salinization of irrigated lands and reclamation

2005

 Integrated Management of Saline Water Resources and Environments for Forage Production in North Africa Region

2006

- Capacity Building in Integrated Management of Saline Water Resources for Forage Production in WANA Region
- AOAD course on the Utilization of Saline Water in Agriculture - Forage Project

2007

- AOAD course on the Utilization of Saline Water in Agriculture - Forage Project
- Working Group Meeting on Salt-Tolerant Forage Production and Utilization in Animal Feeding

2008

 Regional training workshop on Biosaline Agriculture Technologies for the Arab Region

2009

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region

2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

2012

- Environmental impact assessment and soil and irrigation management associated with the use of marginal water in agricultural production
- Farmers' schools for forage production and utilization techniques under the use of marginal water resources

Research

Title: Harnessing Salty Waters to Enhance Sustainable Livelihoods of the Rural Poor in Four Countries in West Asia and North Africa (WANA)

Duration: 2004 Follow-up 2005-2006

Collaborators: Egypt, Jordan, Syria and Tunisia

Funding: ICBA core, CGIAR

Title: Saving freshwater resources with salt-tolerant forage production in marginal areas of the West Asia and North Africa region - an opportunity to raise the incomes of the rural poor

Duration: 2004–2009

Collaborators: National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia;

and the United Arab Emirates

Funding: IFAD; Arab Fund for Economic and Social

Development; OPEC Fund for International

Development; National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia; and the United Arab Emirates, ICBA core

Title: Regional water flow modeling using NASA's

MENA-LDAS

Duration: 2009–2012

Collaborators: USAID, NASA, ICBA

Funding: USAID

Title: The sustainable use of treated wastewater in

agriculture in the Arab world

Duration: 2010-2013

Collaborators: ACSAD, NARS from Jordan, Oman,

and Tunisia

Funding: ACSAD, IDB, NARS from Jordan, Oman, and

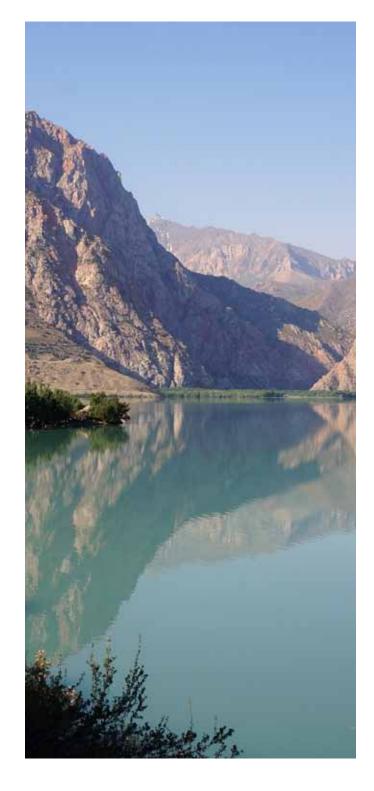
Tunisia

Title: Adaptation to climate change in WANA marginal environments through sustainable crop and livestock diversification

Duration: 2010-2014

Collaborators: NARS in Jordan, Pakistan, Palestine,

Oman, Syria, Tunisia, and UAE **Funding:** IFAD, AFESD, OFID, IDB



TURKEY

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TURKMENISTAN

Capacity Building

2002

- Agro-ecological surveys and germplasm collection 2003
- Biosaline agriculture and sustainable production systems (Tashkent, Uzbekistan)

2004

- Biosaline Agriculture Principles & Applications with reference to Central Asia & the Caucasus Region 2006
- Advances in Biosaline Agriculture with Reference to Central Asia and Caucasus Region

2007

 Production and Utilization of Salt Tolerant Forage Crops/Halophytes

Research

Title: Enabling Communities in the Aral Sea Basin to Combat Land and Water Resource Degradation

through the Creation of 'Bright' Spots

Duration: 2005-2007

Collaborators: IWMI, ICARDA and NARES of Uzbekistan, Kazakhstan and Turkmenistan

Funding: Asian Development Bank

Title: Improving livelihoods of rural communities under

saline desert environments in Turkmenistan

Duration: 2010-2012

Collaborators: DIFF and Turkmenistan

Funding: IDB

UGANDA

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UNITED ARAB EMIRATES

MOU

- Environmental Research and Wildlife Development Agency, 2001
- United Arab Emirates University, 2002 and 2007
- Al Ain Municipality, 2009
- Ministry of Environment and Water, 2009
- Abu Dhabi Farmers Service Center, 2010
- Emirates Institution for Advanced Science and Technology (EIAST), 2010
- University of Sharjah, 2012
- The Canadian University of Dubai, 2013
- Masdar Institute of Science and Technology, 2014

Capacity Building

2000

Design and analyses of laboratory and field experiments

2001

- Irrigation with brackish water
- Propagation and management of halophytes for optimal productivities
- Genebank operations: germplasm and data management

2002

- Design and management of irrigation systems for biosaline agriculture
- Production and management of salt tolerant and halophyte forages and tree species
- Agro-ecological surveys and germplasm collection
- Quality evaluation and utilization of salt tolerant forages

2003

- Salinization of irrigated lands and reclamation
- In-situ conservation of plant genetic resources

2004

Design of irrigation systems

2005

- Management of Salt-Affected Ecosystmes 2006
- Soil Survey Concepts and Framework
- AOAD training on "Train the trainers on water awareness in the Arabian Peninsula"
- Capacity Building in Integrated Management of Saline Water Resources for Forage Production in WANA Region
- Communications Skills
- AOAD Course on the Utilization of Saline Water in Agriculture

2007

- Laboratory Techniques in Soil
- Forage Project Irrigation and Soil Management and Modeling Working Group Meeting
- Working Group Meeting on Salt-Tolerant Forage Production and Utilization in Animal Feeding

2008

 Modeling of floods and their effects on dams and surrounding areas

2009

- Soil Survey and Sustainable Use of Land Resources in Abu Dhabi Emirate
- Agricultural Management under Water and Soil Saline Conditions

 Biosaline Agriculture Technologies in the Arid and Semi-arid Regions

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region

2011

- Introduction to biosaline agriculture: Management of salt-tolerant crops/forages, soil and water
- Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

2012

- Environmental impact assessment and soil and irrigation management associated with the use of marginal water in agricultural production
- Integrated Management Technologies of Saline Water
- Integrated Management Technologies of Marginal Water (Treated Wastewater)
- Farmers' schools for forage production and utilization techniques under the use of marginal water resources

2013

- Guidelines and methods for socioeconomic assessment and farm surveys
- Irrigation Scheduling and Water Consumption
- Utilization of Soil andThematic Maps for Agricultural Development
- Plant Genetic Resources in the UAE
- Production Systems of Non-conventional Forage Crops
- Date Palm Production Systems in Saline Environments
- GIS for Water Resources and Irrigation Management
- Economics and productivity of water in agriculture sector
- Production Systems of Field and Forage Crops in the UAE

Research

Title: Sustainable utilization of saline groundwater and wastelands for plant production

Duration: 2000-2005

Collaborators: International Atomic Energy Agency;

ministry of Agriculture and Fisheries

Funding: International Atomic Energy Agency; Ministry

of Agriculture and Fisheries

Title: Investigation of elite date palm varieties for salt

tolerance-Phase I **Duration:** 2001-2010

Collaborator: Ministry of Agriculture and Fisheries/

MOEW

Funding: ICBA core, Ministry of Agriculture and

Fisheries

Title: Increasing biodiversity of mangrove species in UAE: Introduction and adaptation of new species

Duration: 2002-2004

Collaborator: Environmental Research and Wildlife

Development Agency

Funding: ICBA; Environmental Research and Wildlife

Development Agency

Title: Optimizing management practices for maximum production of two salt-tolerant grasses: *Sporobolus*

virginicus and Distichlis spicata

Duration: 2002-2006 Collaborator: UAEU Funding: ICBA core

Title: Optimizing management practices for maximum production of three Atriplex species under high salinity

levels-Phase I **Duration:** 2002-2010

Collaborator: UAEU Funding: ICBA core

Title: Managing salinity and water logging in coastal

agricultural areas in Abu Dhabi

Duration: 2003-2004

Funding: Sewerage Projects Committee, Abu Dhabi

Municipality

Title: Greening pilot plot of 2000m² with salt tolerant

plants, Qareen Al Eish **Duration:** 2003-2004

Funding: Public works Department Abu Dhabi

Title: Development of salinity-tolerant sorghum and pearl millet varieties for saline lands. (Next phase of Project "Evaluation of salinity tolerance, growth, yield potential and forage quality in selected cultivars/ accessions of pearl millet and sorghum under field

conditions 2002-2003") **Duration:** 2003-2006 **Collaborator:** ICRISAT **Funding:** ICBA core, OPEC

Title: Development of sustainable salt-tolerant forages

for sheep and goat production

Duration: 2003-2006 **Collaborator:** UAEU **Funding:** ICBA core

Title: Application of biosaline agriculture in a

demonstration farm in the Northern Emirates of the UAE

Duration: 2003-2008 **Collaborators:** MAF, MoEW **Funding:** ICBA core, AFESD

Title: Feasibility study for biosaline agriculture in the

United Arab Emirates **Duration:** 2004-2005

Collaborators: Ministry of Agriculture and Fisheries,

UAE

Funding: ICBA core, IAEA, Ministry of Agriculture and

Fisheries (UAE)

Title: Evaluation of salinity tolerance and yield in 280

barley varieties and accessions (Phase II)

Duration: 2004-2006 Collaborator: ICARDA Funding: ICBA core

Title: Response of two prominent grasses: indigenous *Dhai, Lasirus scidus* and introduced African variety of

Cenchrus ciliaris to water salinity

Duration: 2004-2006

Collaborator: Ministry of Agriculture and Fisheries **Funding:** ICBA core, Ministry of Agriculture and

Fisheries

Title: Saving freshwater resources with salt-tolerant forage production in marginal areas of the West Asia and North Africa region - an opportunity to raise the

incomes of the rural poor **Duration:** 2004-2009

Collaborators: National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia;

and the United Arab Emirates

Funding: IFAD; Arab Fund for Economic and Social

Development; OPEC Fund for International

Development; National agricultural research systems in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia;

and the United Arab Emirates, ICBA core

Title: Propagation and development of *Distichlis spicata* var. Yensen-4a (NyPa forage) under arid

environment

Duration: 2004-2013

Collaborator: NyPa International

Funding: ICBA core

Title: Screening for salinity tolerance among large collections of buffel grass (*Cenchrus ciliaris*), fodder

beet and safflower (Phase II)

Duration: 2005-2007

Collaborator: MAF

Funding: ICBA core

Title: Soil Survey of the Emirate of Abu Dhabi

Duration: 2005-2009

Collaborator: Environment Agency—Abu Dhabi **Funding:** ICBA core, Abu Dhabi Government (UAE)

Title: Water Master Plan for Abu Dhabi Emirate

Duration: 2007-2009 **Collaborator:** EAD

Funding: Environment Agency-Abu Dhabi (EAD)

Title: AFG treated water experiments

Duration: 2007-2009 **Collaborator:** First AFG **Funding:** First AFG

Title: Regeneration and dissemination of salt-tolerant

germplasm

Duration: 2007-2013

Collaborators: National and international plant genetic

resources programs **Funding:** ICBA core

Title: Safe disposal of brine from the reverse osmosis

desalination plants of UAE agricultural farms

Duration: 2008-2010

Funding: Ministry of Environment and Water of UAE

Title: Irrigation planning and management for UAE

Duration: 2008-2010

Funding: Ministry of Environment and Water of UAE

Title: Abu Dhabi Genebank and Botanical Garden Site

Assessment **Duration:** 2009

Funding: Environment Agency-Abu Dhabi

Title: International Conference on Soil Classification

and Reclamation of Degraded Lands in Arid

Environments and Launch of Abu Dhabi Soil Survey

Report

Duration: 2009-2010

Funding: Environment Agency-Abu Dhabi

Title: Legal and regulatory framework of Abu Dhabi

Emirate water law **Duration:** 2009-2010

Funding: Environment Agency-Abu Dhabi (EAD)

Title: Establishment of Abu Dhabi Water Council

Duration: 2009-2010

Funding: Environment Agency-Abu Dhabi (EAD)

Title: Recycled Wastewater Strategic Plan for Abu

Dhabi Emirate **Duration:** 2009-2010

Funding: Environment Agency-Abu Dhabi (EAD)

Title: United Arab Emirates Water Conservation Strategy

Duration: 2009-2010 **Funding:** MOEW

Title: Soil improvement through the use of Rhizosphere Bacteria, Fertilizer, and Mycorrhizal fungi to grow

Sweet Corn (Zea Mays var. rugosa)

Duration: 2009-2011 **Collaborator:** IGZ Germany **Funding:** IGZ Germany

Title: The role of Arbuscular Mycorrhiza (AM) Fungi on the establishment of date palm (*Phoenix dactylifera L.*) under saline conditions in the Arabian Peninsula

Duration: 2009-2012

Collaborators: MOEW, BioMyc Funding: MOEW, BioMyc

Title: Soil Survey of Northern Emirates-Soil Analytical

Services

Duration: 2010-2011 **Collaborator:** GRM Int.

Funding: Environment Agency-Abu Dhabi, Ministry of

Environment and Water of UAE

Title: Farming systems, technology transfer and capacity building. Cooperation with Farmers' Service

Center (FSC), Abu Dhabi **Duration:** 2010-2012

Collaborators: ADAFCA, FSC Abu Dhabi **Funding:** ADAFCA, FSC Abu Dhabi

Title: Identification of vegetable and ornamental germplasm suitable for marginal environments

Duration: 2010-2012

Collaborators: AVRDC, IITA, USDA, NARS

Funding: ICBA core

Title: Adaptation to climate change in WANA marginal environments through sustainable crop and livestock

diversification **Duration: 2010-2014**

Collaborators: NARS in Jordan, Pakistan, Palestine, Oman, Syria, Tunisia, and UAE Funding:IFAD, AFESD,

OFID, IDB

Title: Developing federal environmental guidelines and standards to monitor desalinated water industry in the

United Arab Emirates Duration: 2011-2012 Funding: MOEW

Title: Evaluation of DuPont Root Hydration System at ICBA under local conditions Duration: 2011-2012

Collaborator: DuPont Funding: DuPont

Title: Selection of high yielding and stable safflower (Carthamus tinctorius L.), cowpea, guar and sesbania

genotypes under salinity stress **Duration: 2011-2013**

Funding: ICBA, IFAD, AFESD

Title: Optimizing management practices for maximum production of three Atriplex species under high salinity

levels-Phase II **Duration: 2011-2015**

Collaborators: UAEU, NARS of several WANA

countries

Funding: ICBA core

Title: Effect of Mechanical Rejuvenation Techniques on

grass recovery and productivity

Duration: 2011-2015

Collaborators: United Arab Emirates University,

University of Sudan, IFAD, AFESD

Funding: ICBA core

Title: Investigation of elite date palm varieties for salt

tolerance-Phase II **Duration: 2011-2015** Collaborator: MOEW Funding: ICBA core

Title: Evaluation of Salicornia bigelovii and native

halophytes on seawater irrigation

Duration: 2012-2013 Collaborator: Masdar Funding: Masdar

Title: National strategy to improve plant and animal

production in the United Arab Emirates

Duration: 2012-2013 Collaborator: MOEW Funding: MOEW





UZBEKISTAN

Capacity Building

2002

- Agro-ecological surveys and germplasm collection 2003
- Quality evaluation and utilization of salt tolerant forages
- Biosaline agriculture and sustainable production systems (Tashkent, Uzbekistan)

2004

 Biosaline Agriculture Principles & Applications with reference to Central Asia and Caucasus Region

2005

 Germplasm Evaluation, Multiplication and Data Collection

2006

- Advances in Biosaline Agriculture with Reference to Central Asia and Caucasus Region
- Extensive training on biosaline agriculture 2007
- Production and Utilization of Salt Tolerant Forage Crops/Halophytes

2012

· Seed production, maintenance of cultivars and integrated crop management package

Research

Title: Enabling Communities in the Aral Sea Basin to Combat Land and Water Resource Degradation

through the Creation of 'Bright' Spots

Duration: 2005-2007

Collaborators: IWMI, ICARDA and NARES of Uzbekistan, Kazakhstan and Turkmenistan

Funding: Asian Development Bank

Title: Regeneration and dissemination of salt-tolerant

germplasm

Duration: 2007-2013

Collaborators: National and international plant genetic

resources programs Funding: ICBA core

Title: Strategic dual purpose crops of underutilized plants as part of a climate change adaptation strategy

Duration: 2010-2012

Collaborators: ICARDA-CAC, ICBA-CAC, NARS

Uzbekistan

Funding: ICBA core

Title: Sorghum and Pearl Millet for Crop Diversification Improved Crop-Livestock Productivity and Farmers

Livelihood in Central Asia **Duration:** 2011-2014

Collaborators: ICARDA, ICRISAT, Uzbekistan,

Kazakhstan, Tajikistan F**unding:** IDB and ICBA core

Title: Utilization of low quality water for halophytic forage and renewable energy production (PEER)

Duration: 2012-2014

Collaborators: Nevada University, National University of Uzbekistan, Academy of Science of Uzbekistan,

KRASS, and NIGMI **Funding:** USAID

YEMEN

MOU

- Agricultural Research and Extension Authority, 2014
- · Ministry of Water and Environment, 2014
- University of Sana'a, 2014

Capacity Building

2002

Design and management of irrigation systems for biosaline agriculture

2003

Salinization of irrigated lands and reclamation

2006

 AOAD training on "Train the trainers on water awareness in the Arabian Peninsula"

2010

 Biosaline Agriculture Technologies and its Role in the Mitigation of Climate Change in the Arab Region

2011

 Techniques for the use of treated wastewater in agricultural production and its role in food security in the Arab world

2012

- Environmental impact assessment and soil and irrigation management associated with the use of marginal water in agricultural production
- Farmers' schools for forage production and utilization techniques under the use of marginal water resources

2013

- Guidelines and methods for socioeconomic assessment and farm surveys
- Travelling Training Workshop: Variety selection, seed production, soil and crop management practices and on-farm efficient forage utilization

Research

Title: Sorghum and pearl millet for enhanced crop-livestock productivity in saline lands

Duration: 2008-2012

Collaborators: Egypt, Jordan, Oman, Syria, Yemen **Funding:** OFID, IFAD, AFESD and ICBA core

ABOUT ICBA

ICBA – The International Center for Biosaline Agriculture is a non-profit, autonomous international agricultural research center with headquarters in Dubai, UAE. ICBA conducts research and development programs that aim to improve agricultural productivity and sustainability in marginal environments.

The Center was established in 1999 through the visionary leadership of the Islamic Development Bank, the Organization of Petroleum Exporting Countries (OPEC) Fund, the Arab Fund for Economic and Social Development and the Government of United Arab Emirates. The host country, through the Ministry of Water and Environment and the Environment Agency–Abu Dhabi extended the agreement with IDB in 2010 and increased their financial support to the Center.

Over the last 13 years, ICBA has evolved into a world-class modern research facility with a team of international scientists conducting applied research to improve the well-being of poor farmers in marginal environments.

In 2013, the Center developed a new strategic direction addressing the closely linked challenges of income, water, nutrition, and food security.

Our Mission: to work in partnership to deliver agricultural and water scarcity solutions in marginal environments

ICBA's multi-pronged approach to address the closely linked challenges of water, environment, income and food security include research innovations in the assessment of natural resources, climate change adaptation, crop productivity and diversification, aquaculture and bio-energy and policy analysis. ICBA is working on a number of technology developments including the use of conventional and non-conventional water (such as saline, treated wastewater, industrial water and seawater); water and land management technologies and remote sensing and modeling for climate change adaptation. Building capacity and sharing knowledge is an important part of all ICBA does. ICBA's work reaches countries, including least developed countries, in Central Asia and the Caucasus, the Middle East and North Africa (MENA), South and South East Asia, sub Saharan Africa and Gulf Cooperation Council countries.

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