



Gulf Research Centre Cambridge

Knowledge for All

Workshop 11

Environmental Cost and Changing Face of Agriculture in the Gulf States

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Abstract

The combination of water scarcity, poor soils, hyper-arid environment and projected climate change impact in the Gulf Cooperation Council (GCC) countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates) constrain local agriculture production in meeting the food demand of the current and growing population. This has raised serious concerns about food security in food-insecure but capital-rich countries, and thus food security has emerged as a goal to achieve in most GCC countries. There are various options to achieve food security, including but not limited to local agriculture intensification using technological innovations, food import, and leasing farmland abroad. Currently, over 70 percent of food is imported by GCC countries, the reasons being the large deficit between the current biocapacity (resources generated) and the ecological footprint of consumption (resources used). Such high food import poses a risk to food security when there are political instabilities, wars and famine in countries from where the food is being imported. It is, therefore, important to increase local production to reduce food import dependency and to create a food reserve. In doing so, local agriculture production would be at the forefront. Many view that agriculture in the region comes at some environmental costs as all the countries use much more water

in agriculture than what is renewable. All GCC countries are currently at various levels of water stresses.

In this workshop, emphasis will be given to various options to increase local agriculture production and to examine their impact on the environment and to discuss alternate sound ways to achieve food security in the GCC countries.

Workshop Description and Rationale

The GCC countries (we call them Gulf States-GS) are capital-rich nations and have no foreign exchange limitation for food import. The region has also benefitted from the recent increase in oil prices and has almost one quarter of the world's proven natural gas reserves. Despite the GCC region being capital-rich and despite all government efforts and support to increase local agriculture production through financial assistance and subsidies, in 2008 agriculture input to GDP was less than 1 percent in Bahrain, Qatar, Kuwait, and 2.0 percent, 2.8 percent and 3.9 percent in Oman, UAE and Saudi Arabia, respectively. The population engaged in agriculture varies e.g., in Qatar, it is 0.8 percent, Bahrain 1 percent, Kuwait 1.1 percent, UAE 3.2 percent, Saudi Arabia 5.5 percent and Oman 29.2 percent. In the GS, annual population growth rate of 3.5 percent was reported in 2008.

The GS are located in a water-scarce region. There is a shortage of freshwater resources, the groundwater is brackish, and thus most water demand is met through non-conventional water resources, that is from high-cost desalination. Water scarcity, poor soil resources, low rainfall and high evapotranspiration, climate change impact (rise in temperature and sea levels, decline in rainfall etc.) can greatly impact agriculture in the the region. Due to various impacts, the arable land has declined from about 0.2 ha per capita in 1961 to less than 0.15 ha per capita in 2003. Most of the GS have completed national soil maps. They identify areas [(Saudi Arabia 13.7 percent); Oman (7.07 percent), Kuwait (35 percent), Abu Dhabi emirate (5.4 percent) and Qatar (3.9 percent)] as highly to moderately suitable for large-scale irrigation farming. The question is: do the GS have sufficient water resources to farm these areas?

In 2007, global humanity's total Ecological Footprint (EF) was 18 billion global ha (gha); with world population at 6.7 billion people, the average person's footprint was 2.7 gha, with 11.9 billion gha biocapacity (1.8 gha per person). Thus, it is apparent that humanity uses the equivalent of 1.5 planets to provide the resources we use and absorb our waste. This means it now takes the Earth one year and six months to regenerate what we use in a year. Today, more than 80 percent of the world's population lives in countries that use more resources than what is renewably available within their own boundaries. In the GS, such figures are astonishing, where the nominal difference between the EF and biocapacity in gha per person is: Kuwait 5.92; Oman 2.85; Qatar 8.0; Saudi Arabia 4.29; and UAE 9.83 compared to the world 0.92. There is a net deficit between ecoresources generated and that consumed and wasted. This difference is compensated through food import, and in GS the total bill of food import ballooned from \$8 billion to \$20 billion from 2002 to 2007.

Given these existing and predicted challenges, the GS are seeking new options for food security. There are many ways by which they can achieve food security, like intensification in local food production using high-tech multi-pronged approach (rationale use of soil resources, modern irrigation systems, protected agriculture, water conservation, sector wide water reforms, use of alternate water sources); continuing food import; outsourcing food production to countries which have comparative advantage for agricultural expansion; leasing farmland abroad, and through creation of a GS-Food Reserve to be used in case of emergency for at least two years. There are, however, strengths, weaknesses, opportunities and threats in achieving food security by the above means.

There are three main driving forces for land lease abroad: 1) to secure food supply by increasingly food-insecure nations; 2) the surging demand for agrofuels and other alternate energy sources and; 3) the sharp rise in investment in both the land market and the soft commodities market. Some view leasing prime land in poor developing countries as a threat to their food security, as over 35 countries live on food aid policies. Others view it as an opportunity as the GS have increased access to food resources and “host” nations benefit from investments in the form of improved agricultural infrastructure and increased employment opportunities. Acquisition of farmlands in resource-poor countries may provoke food insecurity. Some are of the view that if land lease is the potential way to meet food demand, then it is sensible to lease land where there are resource surpluses (abundant soil and water resources) concentrated in ecological creditor countries, which currently do not utilize their full biocapacity and where production cost is lower. However, this is not the present scenario and there have been GS land deals in poor developing countries.

To avoid provoking food insecurity in poor developing countries and for GS to achieve food security, another school of thought is: *“if GS acquire marginal lands (saline land resources) which are set aside and currently either not under production or cannot be brought into production due to poor economic resources of the host countries, and the investors bring them into production through integrated soil reclamation approach, with the condition that the prime agricultural lands are left for host country, and this practice does not upset the local market, farmers rights and food policies, and arrangements are properly negotiated, local manpower receive training on high-tech in agriculture production, practices are sustainable, and benefits are shared by the investors and the host countries, it is only then the investment abroad has a positive case and both the investors and the host countries are in a win-win situation”*. If this scenario is widely supported and accepted, then there are worldwide opportunities for Gulf States to lease marginal lands (over 1 billion ha worldwide available) to achieve food security.

The above issues will force policy-makers into rethinking about agriculture in the Gulf and to seek ways for food security. The workshop welcomes multi-pronged approaches; these can enhance local agricultural production and help resolve issues related to bridging the gap between local food production and food import to meet GS food demand. The

workshop expects a range of issues relevant to GCC countries to be debated including but not confined to the topics given below:

- Agricultural policies
- Agriculture and water governance
- Sustainable agriculture: problems and possibilities
- Agriculture and implications on the environment
- Climate change impact on agriculture
- Prospects of using reclaimed water (treated wastewater) in agriculture
- Biosaline agriculture and food security
- Socio-economic aspects of agriculture production
- Investment in farmland abroad
- Ecological footprint and biocapacity
- Role of international organizations in agricultural research
- Government interventions (subsidies) in agriculture and implications
- Food import policies
- Creation of Gulf States' food reserve

Anticipated Participants

The papers to be presented at the workshop will cover agriculture activities in the Gulf States and other practices to meet food demand. The agriculture policies of the Gulf States and the rethinking by policy-makers following the changing face of agriculture due to multifaceted constraints in local production and environmental costing will be discussed. The strengths, weaknesses, opportunities and threats of leasing land in poor developing countries for food and biofuels as well as its socio-economic aspects will be debated.

The workshop encourages researchers, professionals, educators, policy-makers, and agriculture practitioners from the Gulf States and the wider international scientific community to participate in the workshop. Those who are currently involved in agriculture research and extension in the ministries of agriculture and agriculture research institutes in the Gulf States are highly encouraged to share their experiences in the workshop.

Workshop Director Profiles

Dr. Shabbir Shahid is a Senior Scientist at the Dubai-based International Center for Biosaline Agriculture (ICBA). He earned a Ph.D. degree from the University of Wales, Bangor UK in 1989. He joined ICBA in 2004 and has over 30 years experience (Pakistan, UK, Australia, Kuwait and United Arab Emirates) in agriculture-related RD & E activities. He has been Associate Professor, University of Agriculture Faisalabad, Pakistan; Associate Research Scientist in Kuwait Institute for Scientific Research, Kuwait; and Manager of Soil Resources Department, Environment Agency – Abu Dhabi, UAE. He has worked in applied agriculture projects in many countries (e.g., Pakistan,

Kuwait, UAE, Qatar, Oman, Niger, Morocco, Jordan, Spain, and Syria). He has been working in the GCC region for the last 15 years and is familiar with agriculture activities and food security issues in the region. He is a prolific author with over 150 publications in peer reviewed refereed journals, proceedings, books and manuals. He is currently life member and Councilor of the World Association of Soil and Water Conservation, member advisory board of the World Forum on Climate Change, Agriculture and Food Security (WFCCAFS) and Editor in-Chief of the journal *Climate Change Outlook and Adaptation* to be published by WFCCAFS in 2012. Dr. Shahid has been a member of several scientific committees, international advisory boards of international conferences, editor of scientific books, and reviewer of scientific journals.

Dr. Mushtaque Ahmed obtained his Ph.D. from Iowa State University, USA in 1988. He is currently the Director of the Center for Environmental Studies and Research (CESAR) as well as an Associate Professor of the Department of Soils, Water and Agricultural Engineering of Sultan Qaboos University (SQU), Oman. He joined SQU in 1996. Prior to that, he worked for various organizations in Australia (Land and Water Conservation Department-NSW; CSIRO-Perth; Department of Water Resources-Griffith, NSW). His current research interests include biosaline agriculture, managed aquifer recharge, climate change and adaptability. He has published scientific papers in peer reviewed refereed journals, book chapters, conference proceedings, and manuals, and has served as editor of various publications. He is well experienced in organizing workshops, conferences and symposiums at national and international levels.

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