Training course

Enhancing food security in salt-affected areas in Africa through integrated land, water and crop management

Date: **19 February - 2 March 2018**

Venue: **Golden Tulip Hotel, Accra, Ghana**

Background

Degradation of land and water resources increasingly threaten national and household food security in many developing countries, particularly those in Sub-Saharan Africa (SSA).

Prime and high-potential land occupies about 16.3% of Africa's landmass of 30.7 million km^2, while nearly 55% of it consists of deserts or other lands with major constraints even for low-input agriculture. The medium and low potential lands, which together occupy 28.3% of the surface, have adverse soil physical properties such as surface soil crusting, impermeable layers, soil and subsoil acidity, salinity and alkalinity, and are exposed to high risks of wind and water erosion (USDA, 1996). Low-input agriculture practiced in such areas by resource-poor farmers contributes to soil degradation, which is further exacerbated by climate change factors.

These constraints, in combination with rising food prices, adverse climatic conditions such as droughts and political instability in several countries, have grave implications for food security in the SSA region. Nearly 217.8 million people in SSA are currently undernourished, i.e. one in every four of the region's rapidly growing population that has already exceeded 1 billion (FAO, 2015; World Bank, 2015). This is the highest prevalence of undernourishment for any region and the second highest burden in absolute terms. Moreover, stunting – a manifestation of chronic malnutrition – is affecting 3 out of 10 children under five years of age (FAO, 2015). As a result – despite significant progress made by some individual countries – Africa as a whole, and sub-Saharan Africa in particular, have not been able to achieve the Millennium Development Goal target (1c) of reducing the proportion of undernourished people by half (FAO, 2015).

The need to increase agricultural productivity in the SSA region in order to achieve food security is thus clear. However, in some Sub-Saharan African countries, productivity has declined by over 40 per cent of the cropland area over the past two decades. Yield reduction specifically due to soil erosion may range from 2 to 40 per cent, with a mean loss of 8.2 per cent for the continent (Nellemann et al., 2009). For example, in Ethiopia – where soils are relatively good and rainfall abundant – the unsustainable use of resources and inappropriate farming practices have resulted in nutrient depletion and soil erosion averaging 42 tons/ha/year, which could increase to 300 tons/ha/year in individual fields (IFAD and UNEP, 2013). The lack of public investment in soil rehabilitation and the inability of smallholder farmers to undertake the process themselves traps the latter in a vicious cycle of low yields and low incomes, inadequate access to food and to productive resources.

Urgent action is therefore needed to introduce integrated farming approaches in the SSA region that would decrease land degradation and improve fertility, utilize available water resources in an efficient and sustainable manner, and employ alternative high-value crops that are nutrient-dense and resilient to adverse ecological conditions, including high levels of soil salinity. Such approaches would lead to higher productivity, improved food security and nutrition, higher incomes and therefore more sustainable livelihoods for farming communities in SSA countries, with positive impacts at national levels.

Organizer

International Center for Biosaline Agriculture (ICBA), United Arab Emirates

Funding Agency

Arab Bank for Economic Development in Africa (BADEA), Sudan

Participating countries

Ghana, Botswana, Ethiopia, Gambia, Kenya, Malawi, Seychelles, Swaziland, Tanzania, Uganda and Zimbabwe

Trainers

Dr. Asad Qureshi, Water Management Specialist, ICBA

Dr. Makram Belhaj Fraj, Agronomy Scientist, ICBA

Dr. Dionysia Angeliki Lyra, Halophyte Agronomist, ICBA

Ms. Amal Magzoub, Proposal Development Specialist, ICBA

Course Coordinator

Mr Ghazi Al-Jabri, Capacity Building Specialist, ICBA

The course will address the above challenges and the following topics will be covered:

1. Food security constraints and solutions in Africa in the context of climate change
2. Land and soil salinity development and mitigation solutions
3. Best practices of utilizing non-conventional water resources
4. Alternative crops for degraded lands with poor water resources
5. Crop-per-drop principal to mitigate climate change consequences
6. Complementary farm practices to increase crop productivity
7. Integrated land, water and crop management approach to achieve food security in Africa

Agenda

Monday 19 February 2018	
0830-0900	**Registration**
0900-1030	***Inauguration session*** Welcome addresses Introduction of participants and trainers ICBA presentation and course overview Group photo
1030-1100	**Tea/Coffee Break**
1100-1230	***Session 1: ICBA multidisciplinary research*** **Dr. Makram Belhaj Fraj,** Agronomy Scientist, ICBA
1230-1330	**Lunch Break**
1330-1500	***Session 2: Understanding soil-water-crop relationships*** **Dr. Asad Qureshi**, Water Management Specialist, ICBA
1500-1530	**Tea/Coffee Break**
1530-1630	General discussions on the day subjects
Tuesday 20 February 2018	
0900-1030	***Session 3: Increasing crop water productivity in agriculture*** **Dr. Asad Qureshi**, Water Management Specialist, ICBA
1030-1100	**Tea/Coffee Break**
1100-1230	***Session 4: Crop diversification*** **Dr. Makram Belhaj Fraj,** Agronomy Scientist, ICBA
1230-1330	**Lunch Break**
1330-1500	***Session 5: Calculations of crop water requirements for different crops (Exercise)*** **Dr. Asad Qureshi**, Water Management Specialist, ICBA
1500-1530	**Tea/Coffee Break**
1530-1630	General discussions on the day subjects
Wednesday 21 February 2018	
0900-1030	***Session 6: Crop management systems*** **Dr. Makram Belhaj Fraj,** Agronomy Scientist, ICBA
1030-1100	**Tea/Coffee Break**
1100-1230	***Session 7: Irrigation techniques to improve water use efficiency*** **Dr. Asad Qureshi**, Water Management Specialist, ICBA
1230-1330	**Lunch Break**

1330-1500	***Session 8: Integrated crop-livestock production systems*** **Dr. Makram Belhaj Fraj,** Agronomy Scientist, ICBA
1500-1530	**Tea/Coffee Break**
1530-1630	General discussions on the day subjects
Thursday 22 February 2018	
0900-1030	***Session 9: Irrigation for salinity management*** **Dr. Asad Qureshi**, Water Management Specialist, ICBA
1030-1100	**Tea/Coffee Break**
1100-1230	***Session 10: Cropping systems exercises*** **Dr. Makram Belhaj Fraj,** Agronomy Scientist, ICBA
1230-1330	**Lunch Break**
1330-1500	***Session 11: Calculations of leaching requirements for salinity management (Exercise)*** **Dr. Asad Qureshi**, Water Management Specialist, ICBA
1500-1530	**Tea/Coffee Break**
1530-1630	General discussions on the day subjects
Friday 23 February 2018	
0900-1600	Visit to areas affected with salinity and production farms
1300-1400	**Lunch**
Saturday 24 February 2018	
0900-1600	Visit to historical/landscapes and traditional markets in Ghana
1300-1400	**Lunch**
Sunday 25 February 2018	
Free day	
Monday 26 February 2018	
0900-1030	***Session 12: Agriculture and Food security: Africa's challenges*** **Dr. Dionysia Angeliki Lyra,** Halophyte Agronomist, ICBA
1030-1100	**Tea/Coffee Break**
1100-1230	***Session 13: Group exercise on food security: Identification of the challenges and issues on country basis*** **Dr. Dionysia Angeliki Lyra,** Halophyte Agronomist, ICBA
1230-1330	**Lunch Break**
1330-1500	***Session 14: Sustainable integrated production systems for small holder farmers in Africa*** **Dr. Dionysia Angeliki Lyra,** Halophyte Agronomist, ICBA
1500-1530	**Tea/Coffee Break**
1530-1630	General discussions on the day subjects
Tuesday 27 February 2018	
0900-1030	***Session 15: Alternative crops for degraded lands and their management using marginal water resources*** **Dr. Dionysia Angeliki Lyra,** Halophyte Agronomist, ICBA
1030-1100	**Tea/Coffee Break**
1100-1230	***Session 16: Group exercise: Design an integrated farm*** **Dr. Dionysia Angeliki Lyra,** Halophyte Agronomist, ICBA
1230-1330	**Lunch Break**

1330-1500	***Session 17: Strategic brainstorming session on developing the future agriculture systems that enhance food security at country level*** **Dr. Dionysia Angeliki Lyra,** Halophyte Agronomist, ICBA
1500-1530	**Tea/Coffee Break**
1530-1630	General discussions on the day subjects
Wednesday 28 February 2018	
0900-1030	***Countries presentations*** **Facilitator: Dr. Dionysia Angeliki Lyra,** Halophyte Agronomist, ICBA
1030-1100	**Tea/Coffee Break**
1100-1230	***Countries presentations … continued***
1230-1330	**Lunch Break**
1330-1500	***Countries presentations … continued***
1500-1530	**Tea/Coffee Break**
1530-1630	General discussions on the day subjects
Thursday 1 March 2018	
0900-1030	***Session 18: How to write a proposal?*** **Ms. Amal Magzoub,** Proposal Development Specialist, ICBA
1030-1100	**Tea/Coffee Break**
1100-1230	***Workshop: Develop countries proposals*** **Facilitators: Ms Amal Magzoub,** Proposal Development Specialist, and **Dr. Dionysia Angeliki Lyra,** Halophyte Agronomist, ICBA
1230-1330	**Lunch Break**
1330-1500	***Workshop: Develop countries proposals … continued***
1500-1530	**Tea/Coffee Break**
1900-2100	**Dinner banquet**
Friday 2 March 2018	
0900-0930	***BADEA introduction presentation*** **BADEA representative**
0930-1030	***Countries proposals presentations*** **Facilitator: Ms Amal Magzoub,** Proposal Development Specialist, ICBA
1030-1100	**Tea/Coffee Break**
1100-1230	***Countries proposals presentations … continued***
1230-1330	**Lunch Break**
1330-1430	Evaluation of the training and feedback from participants **BADEA representative**
1430-1530	***Closing session*** Speech of **BADEA** Speech of **ICBA** Word of **participants** Distribution of certificates Group photo
1530-1630	**Farwell Tea/Coffee Break**