Regional Training Course (IAEA Technical Cooperation Project RAS-5072)

Water management and use of crop simulation model (AquaCrop)

Date: October 2-13, 2016

Venue: International Center for Biosaline Agriculture, Dubai, UAE

Background

The purpose of this two-week regional training course is to provide knowledge and training on the use of nuclear and conventional techniques to determine soil water content and the use of crop simulation model (AquaCrop).

This training course covers all aspects of the technique from planning and investigation to presenting the results in a report. The training course will consist of the following lectures, practical sessions and field visit:

1. Presentations and practical sessions on the use of neutron probe (installation and calibration) in soil-water-plant studies and assessment. The training will also focus on the data management and calculation regarding water use and water use efficiency. The use of the neutron probe for irrigation scheduling will be targeted.
2. Presentations on the estimations of crop coefficient (Kc) from crop growth and development of weather parameters to assess the potential evapotranspiration.
3. Presentations on the suitable devices to measure soil water potential for irrigation scheduling.
4. Theory of the AquaCrop model and practical sessions on the use of the model with case studies for all the CPs.

Agenda

Day 1: Sunday, October 2, 2016

0900-0930	**Inaugural session** Opening and welcome remarks by **Dr. Ismahane Elouafi**, Director General, ICBA Opening remarks and briefing about the course **- IAEA representative** Introduction of participants Remarks by **Dr. Shoaib Ismail**, Course Director Group photo
0930-1000	Coffee break
1000-1100	Importance of water management in irrigated agriculture **(ICBA)**
1100-1230	Concepts of water productivity/irrigation efficiencies for irrigated saline lands (**ICBA**)
1230-1400	Lunch and prayer break
1400-1600	Soil water balance/water flow in saturated and unsaturated soil: infiltration rate, hydraulic conductivity **(ICBA)**

Day 2: Monday, October 3, 2016

0900-1000	FANR safety regulatory requirements **(FANR UAE)**
1000-1100	Understanding soil-water-crop relationships **(ICBA)**
1100-1130	Tea/coffee break
1130-1230	Crop water requirements and implications for water demand **(ICBA)**
1230-1400	Lunch and prayer break
1400-1600	Exercise: Estimate irrigation water demand, irrigation scheduling **(Class exercise – ICBA)**

Organizer

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

International Atomic Energy Agency (IAEA), Austria

Partners

Participants from **Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, UAE and Yemen**

Trainers (IAEA)

Mr. Ammar Wahbi - IAEA, NAFA

Mr. Dirk Jules Magdalena Raes, Department of Earth and Environmental Sciences, Belgium

Mr. Jose Luis Arrillaga Pittaluga, Austria

Trainers (ICBA)

Dr. Richard Soppe, Senior Marginal Water Management Scientist

Dr. Asad Qureshi, Senior Water Management Specialist

Dr. Makram Belhaj Fraj, Agronomy Scientist

Course Coordinator

Dr. Shoaib Ismail, Director, Research and Innovation, ICBA

Day 3: Tuesday, October 4, 2016	
0900-1000	Improving crop productivity through nuclear and related techniques
1000-1100	Use of nuclear technologies in soil-water-plant studies and assessment
1100-1130	Tea/coffee break
1130-1230	Neutron probe – introduction and working principle
1230-1400	Lunch and prayer break
1400-1600	Neutron probe - installation, calibration, validation and safety
Day 4: Wednesday, October 5, 2016	
0900-1100	Practice: Field practice with soil moisture neutron probe
1100-1130	Tea/coffee break
1130-1230	Neutron probe – data management and analysis
1230-1400	Lunch and prayer break
1400-1600	Exercise: Data transfer from soil moisture neutron probe to computer and analysis
Day 5: Thursday, October 6, 2016	
0900-1100	Exercise: Getting soil cores for calibration curve
1100-1130	Tea/coffee break
1130-1230	Demonstration of SCADA system **(ICBA)**
1230-1400	Lunch and prayer break
1400-1500	Water conservation for surface irrigation methods **(ICBA)**
1500-1600	Evapotranspiration at daily and hourly time scales **(ICBA)**
October 7-8, 2016 (Free Days)	
Day 6: Sunday, October 9, 2016	
0900-1000	Concepts of AquaCrop
1000-1100	Presentation of AquaCrop user-inter phase
1100-1130	Tea/coffee break
1130-1230	Technology platform: weather station measurements and data acquisition
1230-1400	Lunch and prayer break
1400-1600	Exercise: agro-climatic data collection and processing
Day 7: Monday, October 10, 2016	
0900-1100	Practical: Using AquaCrop and AuqCrop data management
1100-1130	Tea/coffee break
1130-1230	Practical Continued
1230-1400	Lunch and Prayer Break
1400-1600	Practical continued
Day 8: Tuesday, October 11, 2016	
0900-1100	AquaCrop Practical Continued
1100-1130	Tea/Coffee Break
1130-1230	AquaCrop Practical Continued
1230-1400	Lunch and prayer break
1400-1600	AquaCrop Practical Continued
Day 9: Wednesday, October 12, 2016	
0900-1400	Visit to UAE farms (Field visit – ICBA)
Day 10: Thursday, October 13, 2016	
0900-1200	Feedback and general discussion
1200-1230	Course evaluation
1230-1300	Closing ceremony
1300-1430	Lunch and prayer break