Promoting Food and Water Security through Cooperation and Capacity Development in the Arab Region:

Strengthening Capacity to Assess Impacts of Changing Water Availability on Agricultural Production

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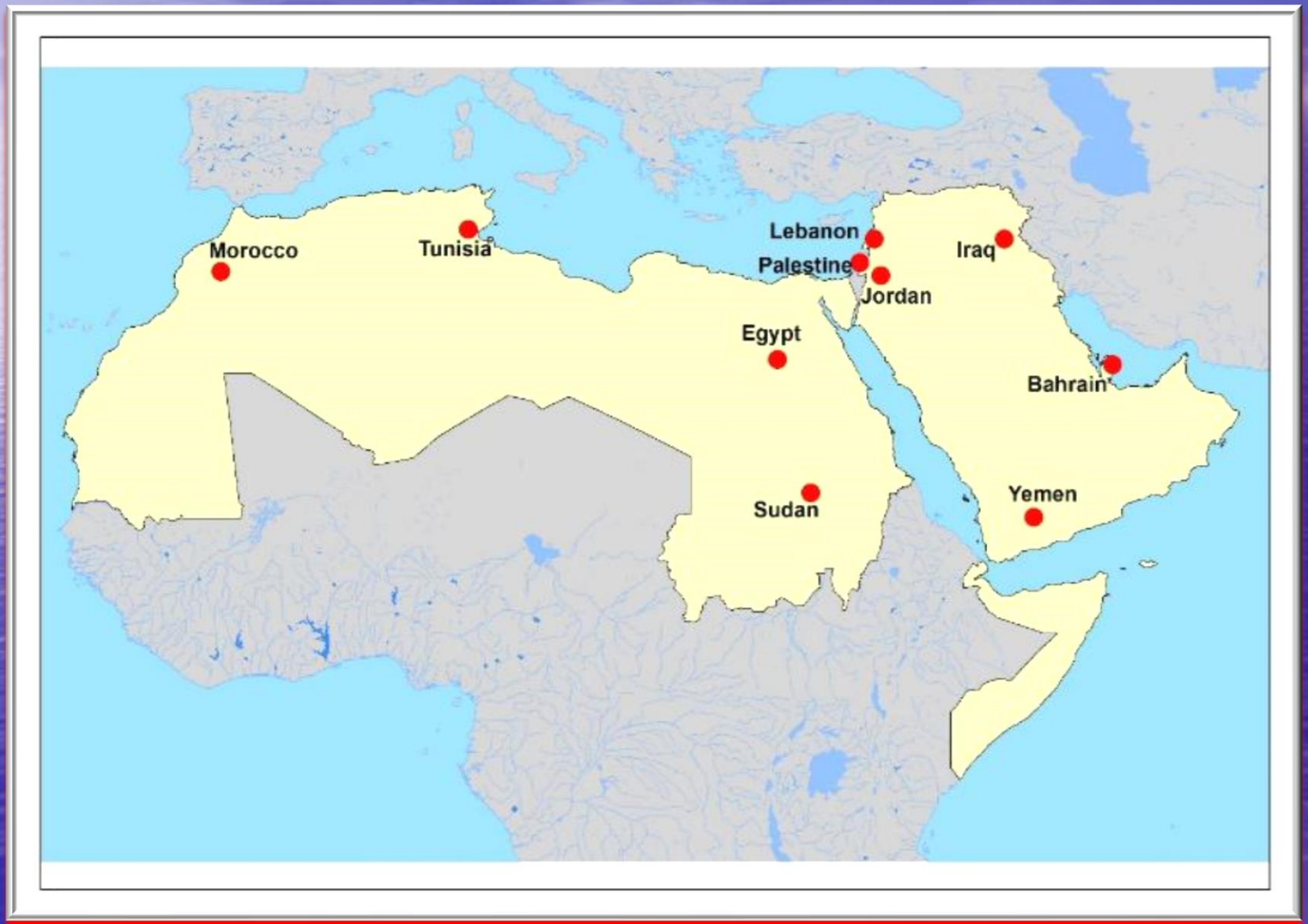
Objectives

- 1 - Contribute for enhancing food and water securities in the Arab region
  2 - Contribute for strengthening the national and regional knowledge base, capacity development and greater intraregional cooperation.
  3 - Contribute for promoting sustainable development and strengthening capacity to assess impacts of changing water availability (climate change) on agricultural production in the Arab countries.

Project partners

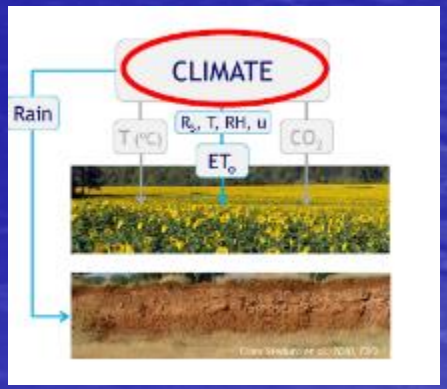
- This project is implemented in a partnership among , FAO, ACSAD, and ESCWA and funded by SIDA

Target countries

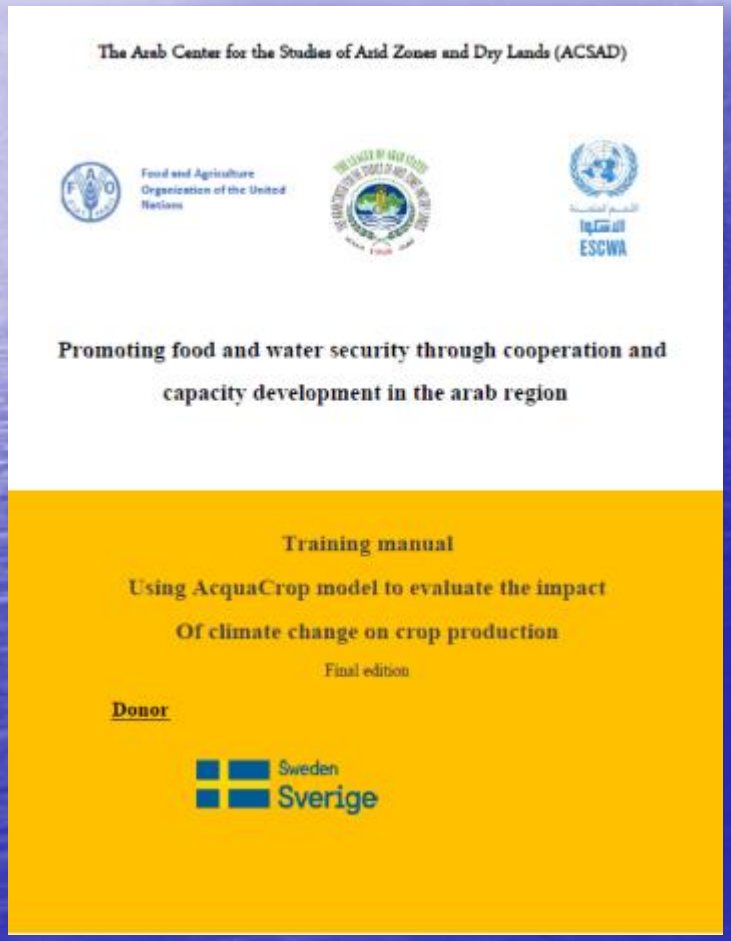


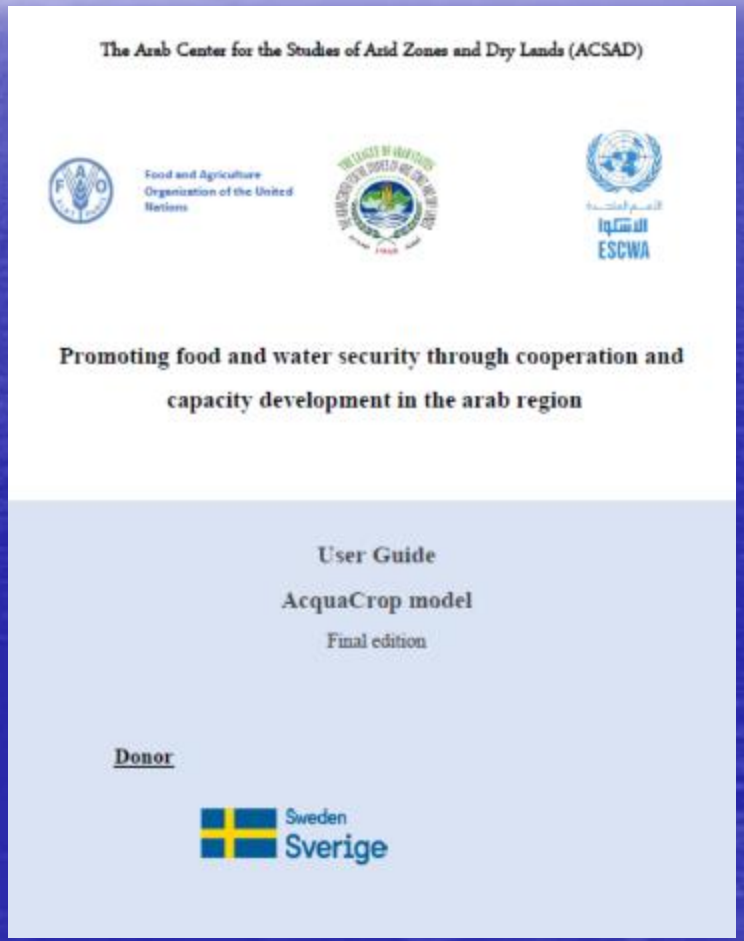
Introduction

- Climate change may affect agriculture due to changes in temperature, precipitation, soil moisture, an increase in the probability of extreme events such as droughts, extreme heat waves, heavy rainfall, cyclones, flooding of the coastal areas, erosion etc



Training manuals





Training activates



6 sub regional and 7 national training sessions for 30 participants from 10 countries



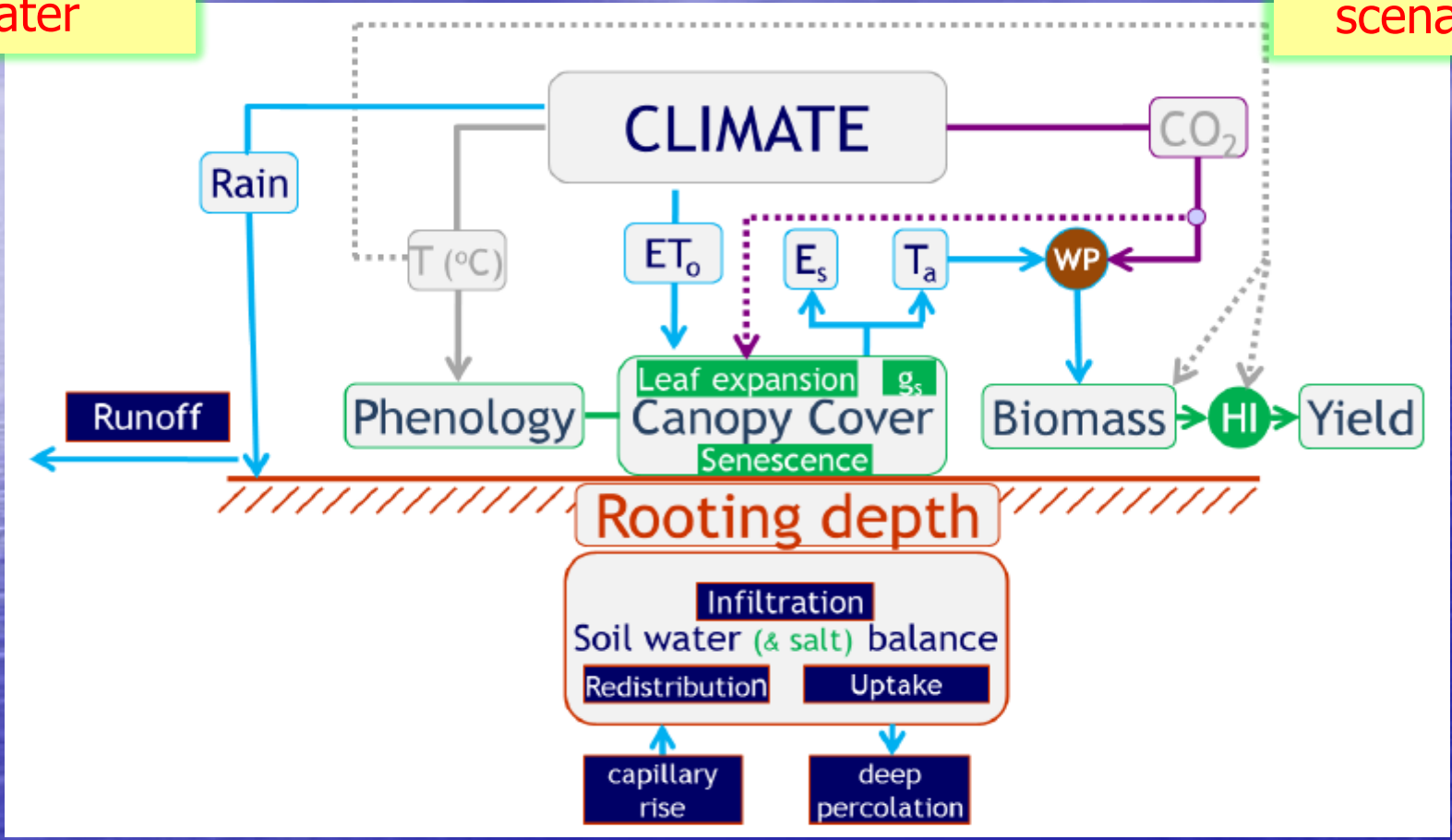
Country	Area	Crop
Jordan	Mafrak	Tomato- Irrigated
	Madaba	Wheat-Rainfed
Lebanon	Beqaa	Wheat-Sup Irrigation
Iraq	Swereh	Tomato- Irrigated
	Swereh	Wheat-Irrigated
Palestine	Jenin	Wheat-Rainfed
	Jenin	Potato-Irrigated
Yemen	Sanaa	Wheat-Irrigated
	Sanaa	sorghum-Sup Irrigation
	Dhamar	Wheat-Irrigated
	Dhamar	sorghum-Rainfed
	Alkod	Maize-Irragated
	Alkod	Sesame-Irragated
Tunis	Shbeka	Wheat-Irrigated
	Koudiat	Wheat-Rainfed
Morocco	Marchouch	Wheat-Rainfed
	Zamamreh	Wheat-Irrigated
	Zamamreh	Sugar beet-irrigated
Sudan	Wad Madany	Wheat-Irrigated
	Gedaref	sorghum-Rainfed
Egypt	Sakha	Wheat-Irrigated
	Sakha	Maize-Irragated
	Nubareih	Tomato- Irrigated

Ten different crops

AquaCrop model simulate yield response to water

AquaCrop model

AquaCrop predict yield under climate change scenarios



Developed by FAO

Dirk RAES, Pasquale STEDUTO, Theodore C. HSIAO, and Elias FERERES

results

Assessment reports

Ranifed wheat yield in Morocco is projected to decrease between 9 and 26 %

Irrigated tomato yield in Iraq is projected to decrease about 7 %

Ranifed Sorghum yield in Sudan is projected to decrease between 7 and 11 %

Irrigated wheat yield in Yemen is projected to decrease between 4 and 7 %

Ranifed Sorghum yield in Yemen is projected to decrease between 8 and 16 %

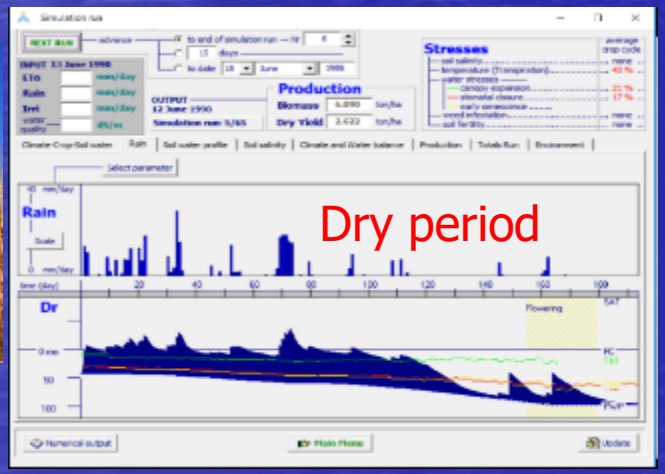
Irrigated potato in Palestine yield is projected to decrease about 3 %

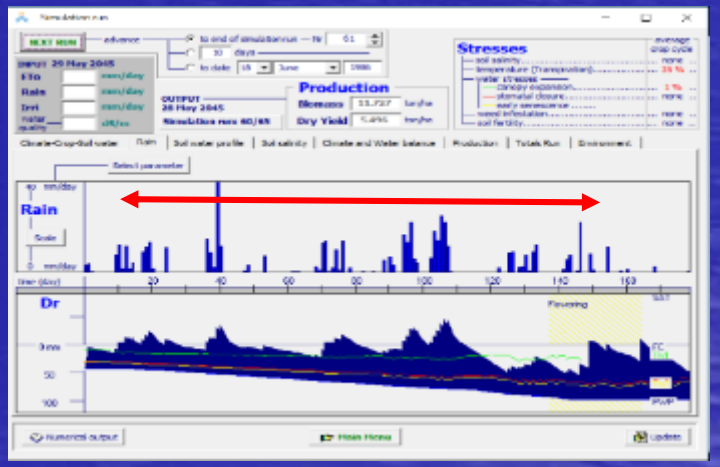
Supplementary irrigated wheat Lebanon

متوسط التغير خلال الفترة (2050-2040)	متوسط التغير خلال الفترة (2030-2020)	
4.19		الإنتاج في سنة الأساس (طن/هكتار)
17% 0.73 ↑	4% ↑ 0.43	التغير المطلق

خلال الفترة 2050-2040	خلال الفترة 2030-2020	خلال فترة الأساس 2005-1986	
173 ↓	↓ 176	181	طول موسم النمو

Supplementary irrigated wheat yield is projected to increase between 4 and 17 %





summary

- The results show that climate change will have several impacts on crops

Crop yields will decline, food production could be affected significantly,

Crop growth cycle will decrease

The shortage of the growing-season length could have a negative impacts on grain yield in terms of quantities and quality.

summary

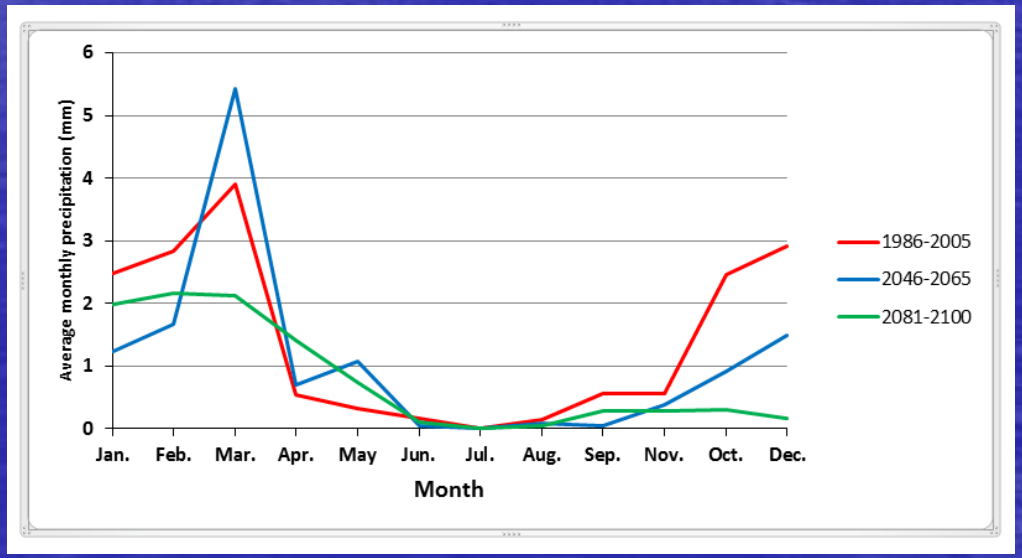
Rainfed crops will be more sensitive to climate hang than irrigated crop

A rise in the need for water of irrigated crops by 7-12 per cent

Adaption measures should be taken to alleviate impact of CC on crops

Proposed adaptation measures

– adjust **sowing dates** according to temperature and rainfall patterns,



Proposed adaptation measures

- use **crop varieties** better suited to new climate conditions (e.g. more resilient to heat and drought)

Proposed adaptation measures

- Apply conservation agriculture:
  - Minimum tillage + land cover + crop rotation
  - CA increase soil moisture and OM content

Proposed adaptation measures

- Rainwater Harvesting & supplementary irrigation

Proposed adaptation measures

- Change fertilizer application rate
- apply crop rotation
- Modify irrigation depth and application time
- Enhancing Water Productivity through Efficient Irrigation systems

Thanks