



Food and Agriculture Organization  
of the United Nations

## **Chapter 5**

# **Training videos**

# **AquaCrop**

*Version 7.1*

# **Reference manual**

**August 2023**

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## Training videos

**AquaCrop**  
*Version 7.1*

# Reference manual

**August 2023**

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**Chapter 1. AquaCrop – FAO crop-water productivity model to simulate yield response to water**

**Chapter 2. Users guide**

**Chapter 3. Calculation procedures**

**Chapter 4. Calibration guidance**

**Chapter 5. Training videos**

## **Table of Contents**

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<b>Unit 1. Introduction.....</b>	<b>1</b>
<b>Unit 2. Climate – conditions at the upper boundary .....</b>	<b>2</b>
<b>Unit 3. Soil – soil profile and lower boundary conditions .....</b>	<b>3</b>
<b>Unit 4. Crop.....</b>	<b>4</b>
<b>Unit 5. Management .....</b>	<b>5</b>
<b>Unit 6. Simulation.....</b>	<b>6</b>

### **Annexes**

**I. Crop Parameters**

**II. Indicative values for lengths of crop development stages**

**III. Indicative values for soil salinity tolerance for some agriculture crops**

**IV. ETo calculation procedure**

# Chapter 5. Training videos

The (43) training modules (MP4 videos) are posted in an ‘AquaCrop Training’ channel of YouTube.

For the playlist go to FAO AquaCrop website <http://www.fao.org/nr/water/aquacrop.html> or find the playlist and videos at the following link:

<https://www.youtube.com/playlist?list=PLzp5NgJ2-dK7H85cyEmGc8KSodqm8gCf2>


## Unit 1. Introduction

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<b>Unit 1. Introduction</b>		
<b>Video</b>	<b>Learning objective</b>	<b>Length [min:sec]</b>
<b>01. Introduction to AquaCrop</b>	Discover AquaCrop	-
– Part 1. Need for Models		05:16
– Part 2. Practical applications		04:00
– Part 3. Calculation scheme		22:58
– Part 4. Input requirements		05:24


## Unit 2. Climate – conditions at the upper boundary

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Unit 2. Climate - Conditions at the upper boundary		
Video	Learning objective	Length [min:sec]
02.1 Required weather data	Know the required weather data	08:33
02.2 Reference evapotranspiration	Understand the concept of the reference evapotranspiration (ET <sub>o</sub> )	10:21
02.3 Determination of reference evapotranspiration	Become familiar with the determination of reference evapotranspiration	19:49
02.4 Import climatic data	Know how to import climatic data	19:35

# Unit 3. Soil – soil profile and lower boundary conditions

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Unit 3. Soil - Soil profile and lower boundary conditions		
Video	Learning objective	Length [min:sec]
<b>03.1 Water retention and movement</b>	Understand how AquaCrop describes water retention and water movement in the soil profile	-
- Part 1. Soil physical characteristics		06:18
- Part 2. Soil water content		09:28
- Part 3. Soil water retention, soil water balance and required physical characteristics		15:36
- Part 4. Soil water movement and required physical characteristics		10:01
<b>03.2 Soil profile characteristics</b>	Know the required soil profile characteristics	10:23
<b>03.3 Depth and quality of the groundwater table</b>	Know the required conditions at the lower boundary	04:56



**Soil profile**




**Groundwater table**




## Unit 4. Crop

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<b>Unit 4. Crop</b>		
<b>Video</b>	<b>Learning objective</b>	<b>Length [min:sec]</b>
<b>04.1 Crop parameters</b>	Know the required crop parameters	-
– Part 1. Type of crop parameters		06:23
– Part 2. Tuning of crop parameters		15:59
– Part 3. Crop development adjustment to temperature regimes		08:15
<b>04.2 Stress coefficients</b>	Understand the way the stress is simulated	06:52
<b>04.3 Crop development</b>	Understand how AquaCrop simulates crop development	13:23
<b>04.4 Crop transpiration</b>	Understand how AquaCrop simulates crop transpiration	09:22
<b>04.5 Biomass production</b>	Understand how AquaCrop simulates biomass production	10:59
<b>04.6 Yield response to water</b>	Understand how AquaCrop simulates yield and adjust the Harvest Index to stresses	-
– Part 1. Reference Harvest Index, Period of potential vegetative growth		07:35
– Part 2. Stresses affecting yield formation		17:19
<b>04.7 Water productivity</b>	Understand the concept of water productivity	06:56

# Unit 5. Management

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Unit 5. Management		
Video	Learning objective	Length [min:sec]
<b>05.1 Irrigation management</b>	Know the required irrigation management parameters	-
- Part 1. Determination of net irrigation requirement		08:56
- Part 2. Evaluation of an irrigation schedule		12:11
- Part 3. Generation of an irrigation schedule, Deficit irrigation		19:54
<b>05.2 Field management</b>	Know the required field management parameters	-
- Part 1. Estimate of surface runoff, Practices affecting surface runoff		18:59
- Part 2. Mulches		05:19
- Part 3. Soil fertility		12:05
<b>05.3 Calibration for soil fertility</b>	Understand the procedure to calibrate the crop response to soil fertility stress	17:42




**Irrigation management**



**Field management**

## Unit 6. Simulation

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Unit 6. Simulation		
Video	Learning objective	Length [min:sec]
<b>06.1 Initial conditions at start of the simulation period</b>	Know the required initial conditions at the start of the simulation period	17:30
<b>06.2 Start of the growing season</b>	Understand how to determine the start of the growing cycle	06:40
<b>06.3 Soil salinity</b>	Understand how AquaCrop simulates soil salinity	under development
<b>06.4 Climate change</b>	Understand how AquaCrop simulates the effects of climate change on crop production	09:44
<b>06.5 Evaluation of simulation results</b>	Understand how to evaluate simulations with field data	-
– Part 1. Green canopy cover		12:46
– Part 2. Crop transpiration		10:46
– Part 3. Above ground biomass production, Yield		05:37
<b>06.6 Applications</b>	Grasp the kind of applications that can be developed	-
– Part 1. Deficit irrigation		05:03
– Part 2. Scenario for policy makers		03:06
– Part 3. Improving water productivity		04:18
– Part 4. Scenario analysis for optimizing field management		under development
– Part 5. Effect of climate change		06:26
– Part 6. Yield forecast		04:59
– Part 7. Regional applications		07:41

