



**Food and Agriculture
Organization of the
United Nations**



Module 5

AquaCropPlotter

Riccardo Soldan

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- This presentation will focus on how to visualize and interpret AquaCrop results when running multiple simulations.
- AquaCrop results are txt files with extension OUT. Even with fairly simple experimental designs, such as multiple locations and multiple years of simulations, you can easily find yourself with more than 10 files. This can scale up to hundreds of files.
- We developed AquaCropPlotter, an app that can automatically load and process the results of AquaCrop.



- AquaCropPlotter can be found on [GitHub](#).
- AquaCropPlotter can be run locally after installing the app in R or it can be used online.
- In this tutorial we will use the online version.



- The app works in four steps:
 1. Load the data
 2. Combine the data
 3. Plot the data
 4. Analyse the data



Important: Input requirements

- When you run AquaCrop, you will have PRM and OUT files. Place them in the same folder before uploading the data in AquaCropPlotter.
- **Correctly specify the file name (variables separated by underscore)**

Location_crop_sowingDate



Home

Workflow

Upload_data

Combined_data

Plot

Analysis

Glossary

Help

Workflow

Upload data

- Select AquaCrop programme used (standard or plug-in)

Upload all .OUT and .PRM files from all runs in one batch

Combined data

- Combine all data into one data table
- Rename variables (optional)

download as .csv

Plot

- Plot time series, different variables
- Customise plot

download as .png, .pdf

Analysis

- Time period window summary
- Stress duration across phenological stages
- Regression

download as .csv



Load the data

Home

Workflow

Upload data

Combine data

Plot

Analysis

Glossary

Help

AquaCrop programme used

plugin

Batch upload all files

Upload all files (season.OUT, day.OUT, and .PRM or .PRO)

Browse... 9 files

Upload complete

Seasonal data files

Show 5 entries

Search:

name

1 GreenPeas_Hist_CentrePRMseason.

2 GreenPeas_Hist_NorthPRMseason.

3 GreenPeas_Hist_SouthPRMseason.

Showing 1 to 3 of 3 entries

Daily data files

Show 5 entries

Search:

name

1 GreenPeas_Hist_CentrePRMday.OU

2 GreenPeas_Hist_NorthPRMday.OU

3 GreenPeas_Hist_SouthPRMday.OU

Showing 1 to 3 of 3 entries

Parameter files

Show 5 entries

Search:

prm.file.name

1 GreenPeas_Hist_Centre.PRM

2 GreenPeas_Hist_North.PRM

3 GreenPeas_Hist_South.PRM

Showing 1 to 3 of 3 entries

specify whether you ran AquaCrop in standard or plugin mode



Combine the data

Home

Workflow

Upload data

Combine data

Plot

Analysis

Glossary

Help

Seasonal dataset

Daily dataset

Parameter

Download

Show 5 entries

Search:

	name	RunNr	Day1	Month1	Year1	Rain	ETo	GD	CO2	Irri	Inf
1	GreenPeas_Hist_CentrePRMseason.OUT	Tot(1)	15	3	2011	135.2	289	664	391.63	0	1
2	GreenPeas_Hist_CentrePRMseason.OUT	Tot(2)	15	3	2012	128.2	311.2	808.1	393.82	0	12
3	GreenPeas_Hist_CentrePRMseason.OUT	Tot(3)	15	3	2013	132.8	294	735.5	396.48	0	13
4	GreenPeas_Hist_CentrePRMseason.OUT	Tot(4)	15	3	2014	153	267.7	718.8	398.55	0	15
5	GreenPeas_Hist_CentrePRMseason.OUT	Tot(5)	15	3	2015	105.4	305	666	401	0	10

Showing 1 to 5 of 27 entries

Previous123456Next

5	GreenPeas_Hist_CentrePRMseason.OUT	Tot(5)	15	3	2015	105.4	305	666	401	0	10
---	------------------------------------	--------	----	---	------	-------	-----	-----	-----	---	----

Showing 1 to 5 of 27 entries

Previous123456Next

Rename parameter column

Select column to rename

name.variable3

Rename to

Station

Rename

Here you can select how to rename a column. For example, in this case, name.variable3 was assigned to the different stations

filter dataset

Select column to filter by

name.variable3

Select values to keep

Centre

North

South

Here you can decide whether you want to only keep certain level of a variable

Add labels to historical data by year

Select column to add label to

Select year range to label

0

Label as

historical

Label

Reset



Plot the data

Select plotting variables

Data type to plot

seasonal

Variable to plot on Y axis

Y(dry)

Variable to plot on X axis

Year1

> Next

Select grouping variables

Variable to split into colors by

i

Station

Variable to split into point shapes by

i

Variable to split into line types by

i

Variable to split into subpanels by

i

> Next

Select plot elements

Components of plot to show

i

point line

Plot mean values

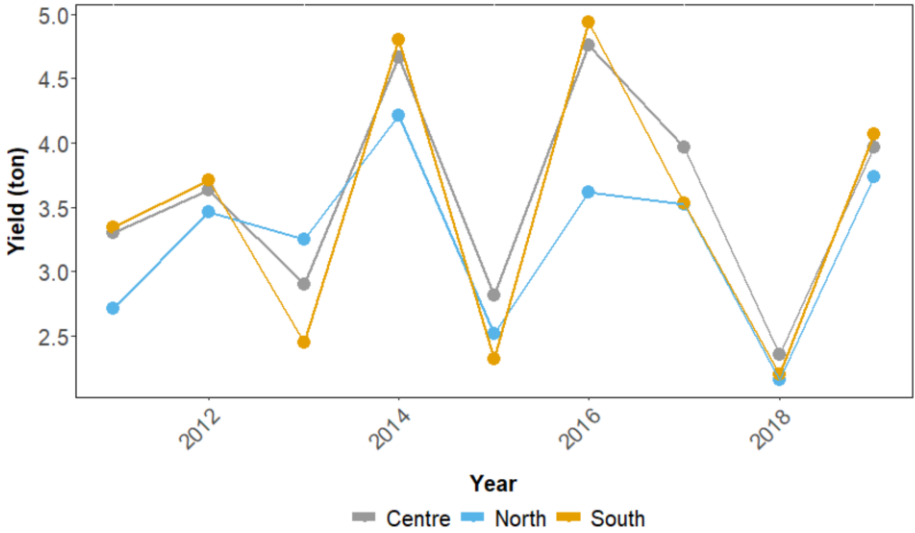
i

No

> Plot

For even more customization

Customise & export plot





Analyse the data

Overall statistics

Time period window

Stress duration

Regression

Select year range to analyse

2011

2019

Select time period window size (years)

1

4

8

Select variable to calculate summary

Y(dry)

Select grouping variable

Station

Show 10 entries

Search:

	Station	time.window	Y(dry).mean	Y(dry).SD	Y(dry).coef.of.variation	n
1	Centre	2011-2014	3.62	0.756	0.209	4
2	Centre	2015-2019	3.57	0.973	0.273	5
3	North	2011-2014	3.41	0.620	0.182	4

Linear regression

Abiotic stresses analysis



Load the data and next steps

- In this tutorial we will be working with AquaCrop simulations for maize grown in 2 locations and 2 RCPs
- The data to be uploaded to the app is found here
- The rest of the tutorial will be about using the app directly
- For additional documentation, [visit our page](#)

Thank you!

Contact details:

jorge.alvarbeltran@fao.org

riccardo.soldan@fao.org