

Adapting agriculture to water scarcity at world-scale

WORLD FOOD DAY 2023

Academic seminar on the Adaptation of Agriculture to water scarcity

18 October 2023 | Louvain-la-Neuve

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Food and Agriculture Organization
of the United Nations

... First things first

- what literature says -

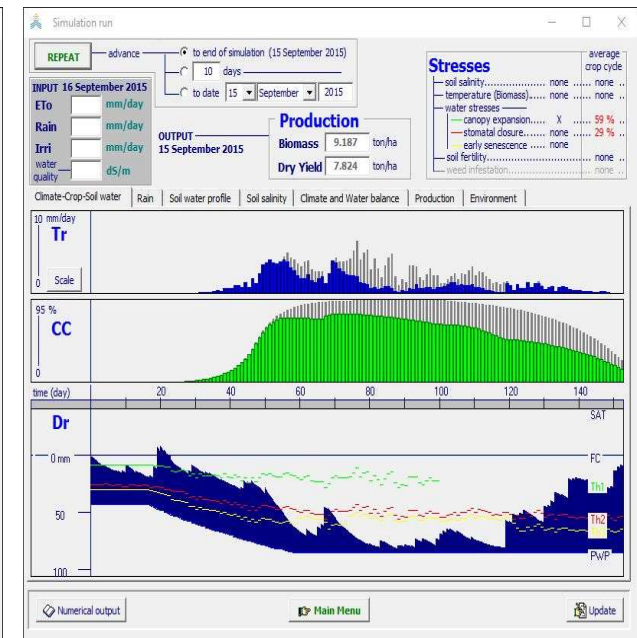
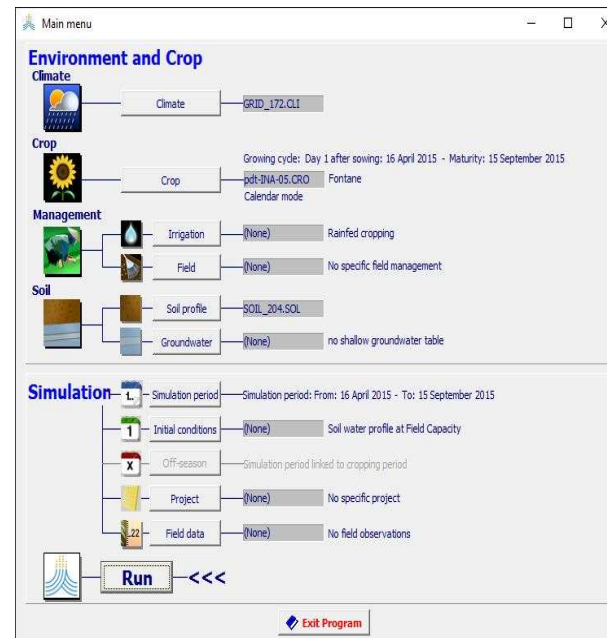
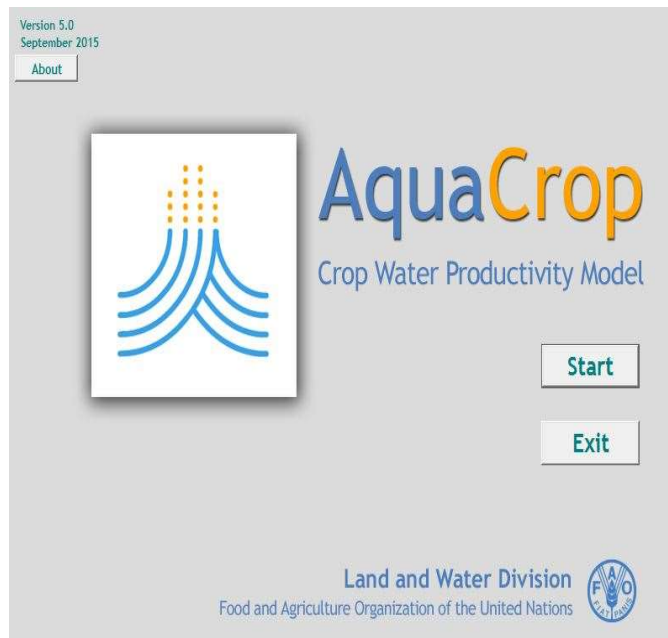


Considerations for improving irrigation performance:

- 1) Technical investments
- 2) Management shortcomings
 - participation in decision-making
 - mutual exchanges of knowledge & learning
- 3) Irrigation = more & more individual 'business'

1.i AquaCrop

- bridging the gap between farmer & modeler (?) -

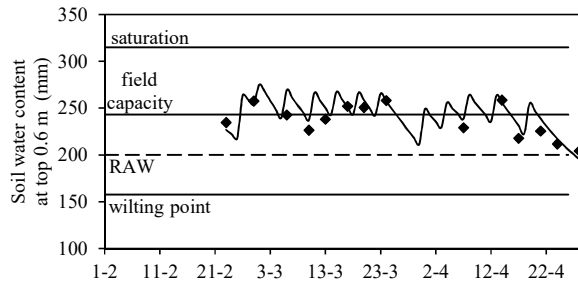


- Field level
- Root and tuber crops
- Fruit/grain producing crops
- Leafy vegetable crops

Calibration / Validation:
minimise observations ↔ simulations
(fCover, soil water content & biomasse)



1.ii AquaCrop - 'blanket' irrigation advice -



①
Inefficient irrigation,
Percolation losses.

Irrigation: 555 mm
Drained: 76 mm
Yield: 52 ton/ha

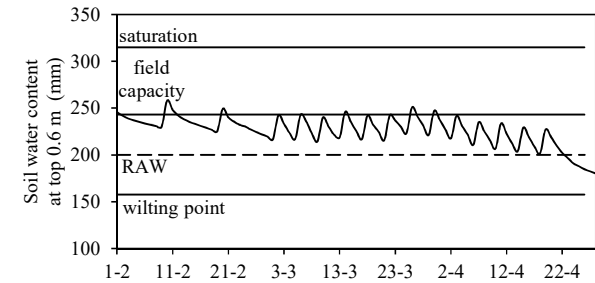
Irrigation guidelines for:
Cabbage:

Soil type: clayish alluvial soil
Irrigation application gross depth: 35 mm

month	February			March			April		
	1	2	3	1	2	3	1	2	3
decade									
interval	10 days			4 days					
crop stage	transplanting						harvest		
	initial			canopy development			mid		late

! : irrigation dose for field preparation
0.6 field application efficiency (Bos and Nugteren, 1990)

②
Irrigation chart for cabbage,
cultivated on a clayish soil,
in the Bobo-Dioulasso region,
Burkina Faso.

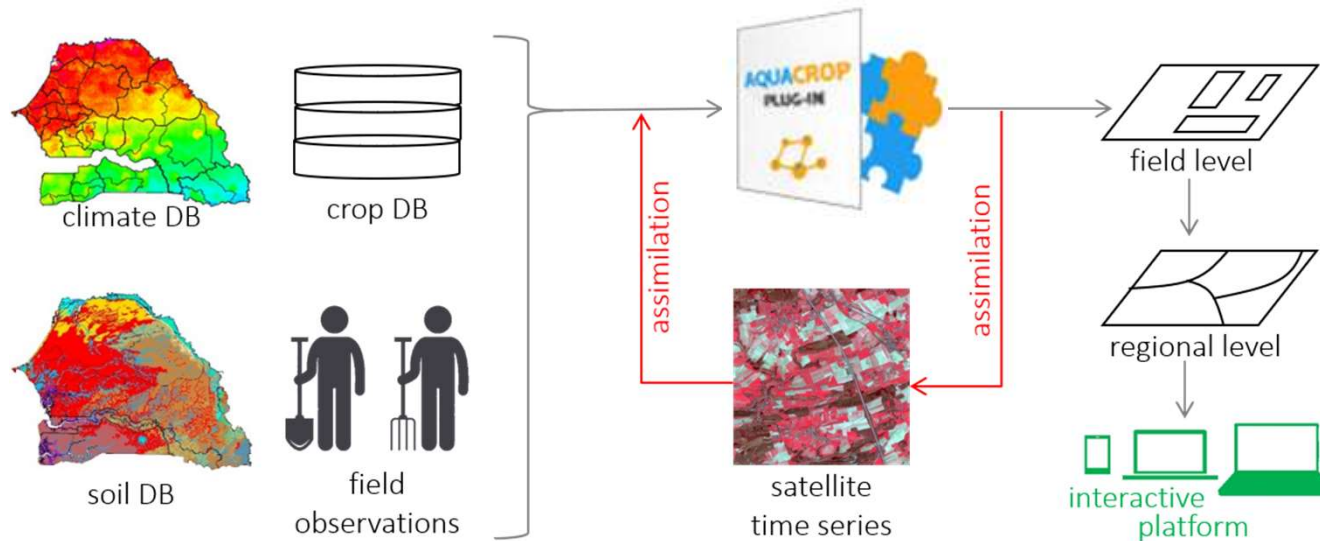


③
Efficient irrigation,
No losses,
Maximum yield.

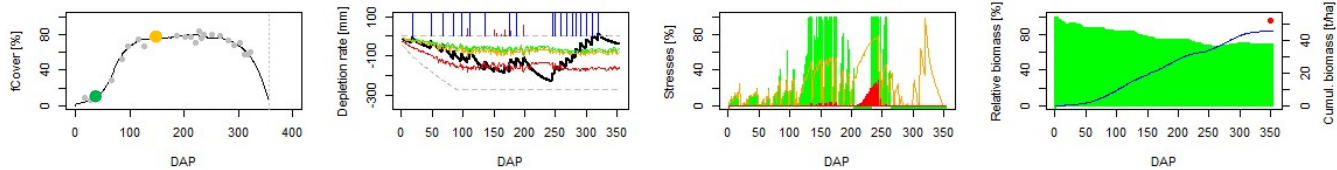
Irrigation: 455 mm (-18%)
Drained: 1 mm
Yield: 53 ton/ha
(same period)

2 Modelling for all (?)

- integrating authoritative & farm sourced data -

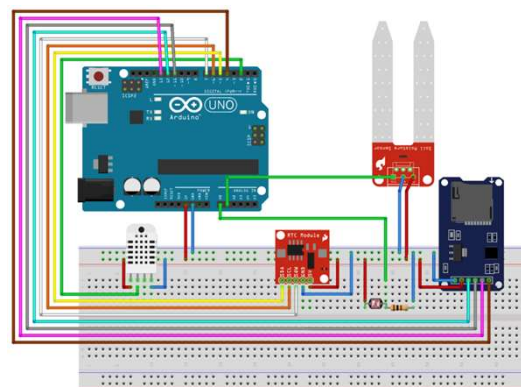


precocy processing chain
 processing chain for parcel & regional crop yield modelling
dashboard



With the support of:



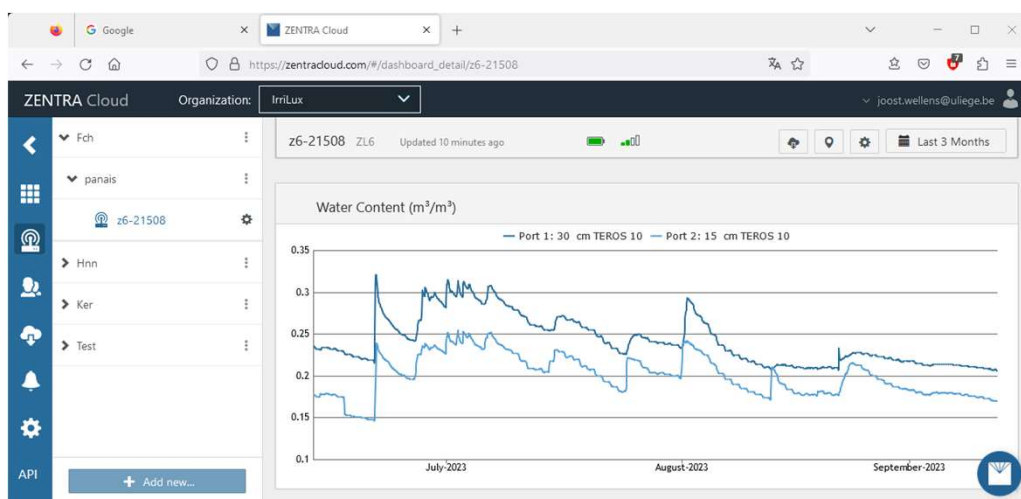


3 Data for & by all

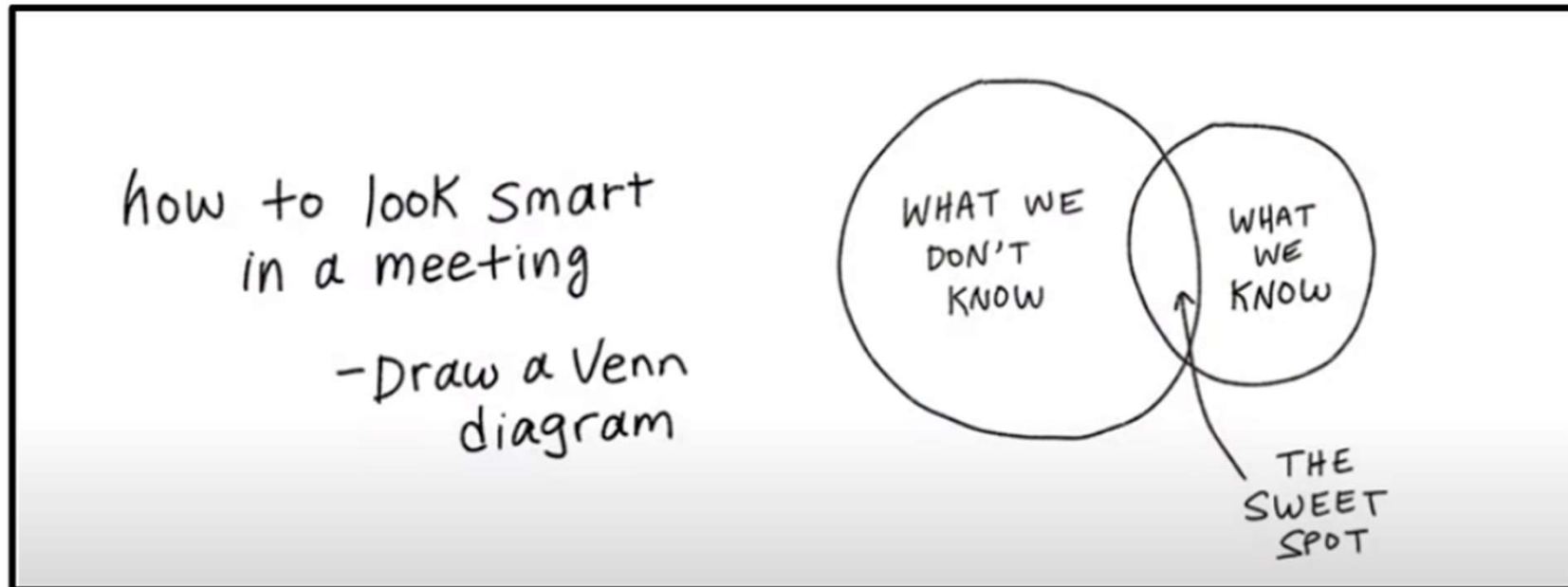
- making the invisible visible* -

* Srinivasan et al., 2022. AWM

- Commercial to amateur soil sensors (1,000 €/field to 200 €/field)
- Improved water use through improved information use !
- Co-learning = cognitive & operational evolution



... Conclusion
some of everything ?



Thank you!

