Calibration of new crops

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Extended core group meeting on AquaCrop

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AQUACROP

Food and Agriculture Organization of the United Nations

New crops

calibration & validation

1. Cassava
2. Alfalfa
3. Cabbages

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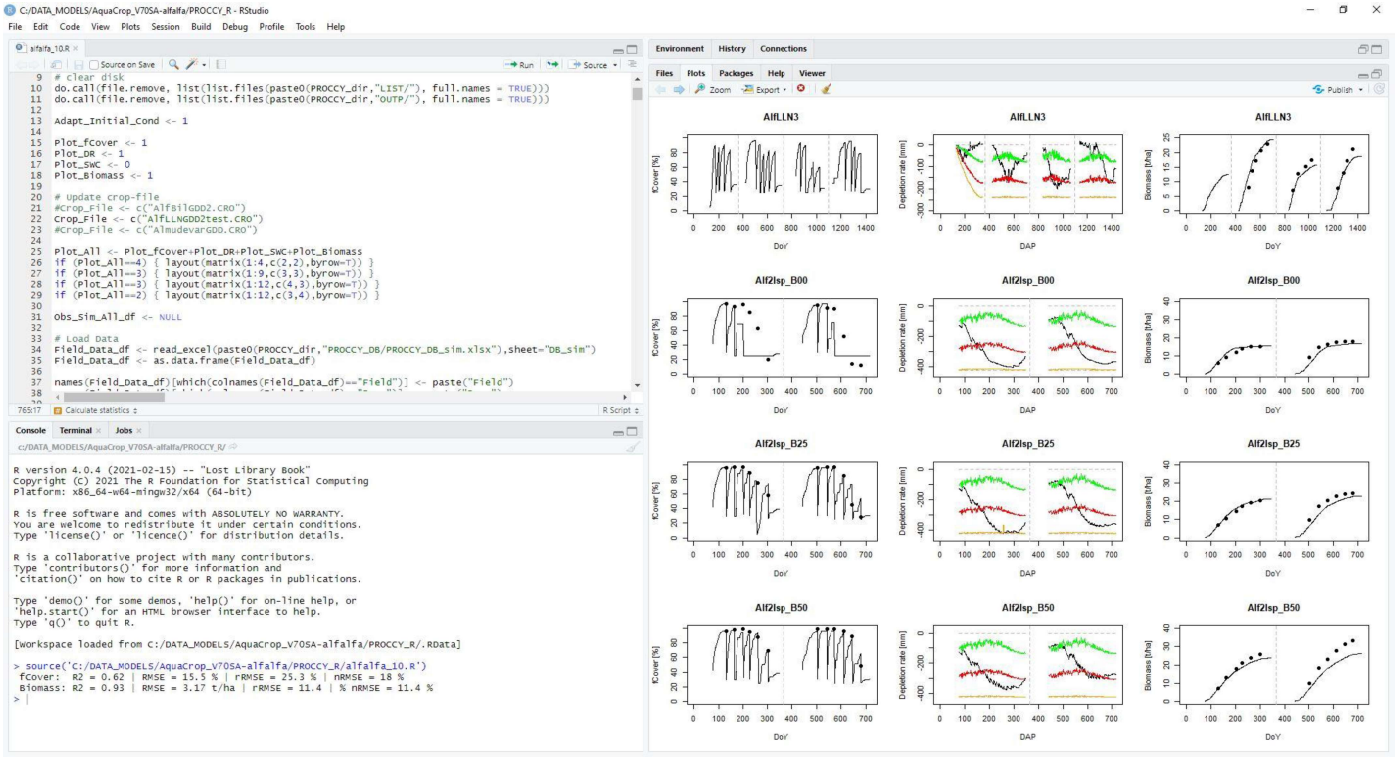
Calibration / Validation tool

≠ fields; 1 database; AquaCrop SA; 1 click = overall assessment



Calibration / Validation tool

≠ fields; 1 database; AquaCrop SA; 1 click = overall assessment

1/2 Cassava

data received from ≠ authors

Columbia:	3 years; 4 trials/year; irrigated & rainfed; ≠ varieties.	Veltkamp, H.J., 1985. Physiological causes of yield variation in cassava (*Manihot Esculenta* Crantz). PhD Dissertation. Wageningen University, The Netherlands. 132 p.
Togo:	2 years; 2 trials/year; rainfed; = variety.	Ezui, K.S., 2017. Understanding the productivity of cassava in West-Africa. PhD Dissertation. Wageningen University, The Netherlands. 183 p. Ezui, K.S., P.A. Leffelaar, A.C. Franke, A. Mando, K.E. Giller, 2018. Simulating drought impact and mitigation in cassava using the LINTUL model. Field Crops Research, 219, 256-272.
Nigeria:	2 years; 3 trials/year; rainfed; = variety.	Adiele, J.G., Schut, A.G.T., van den Beuken, R.P.M., Ezui, K.S., Pypers, P., Ano, A.O., Egesi, C.N., Giller, K.E., 2021. A recalibrated and tested LINTUL-Cassava simulation model provides insight into the high yield potential of cassava under rainfed conditions. European Journal of Agronomy, 124, 126242.

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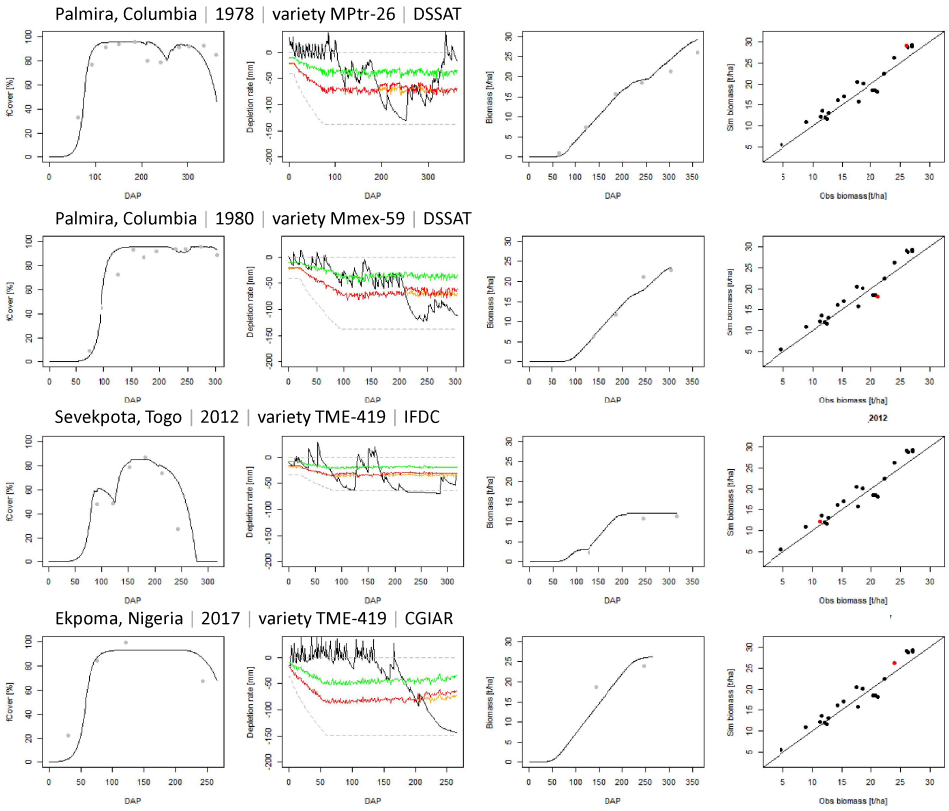

2/2 Cassava

Biomass:

R^2 = 0.93 | RMSE = 2 t/ha

rRMSE = 3.5% | nRMSE = 11%

~~Yield:~~

~~R^2 = 0.76 | RMSE = 4 t/ha~~

~~rRMSE = 9.8% | nRMSE = 45%~~

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1/2 Alfalfa

2 sets of field data + grabbed from article

Belgium:	3 years; 1 trial/3 years; farmer's field; rainfed.	Data received from farmers' association. No publication available.
Turkey:	2 years; 5 trials/2 years; experimental trials; ≠ irrigation schedules.	Data received from research institute. No publication available.
Canada:	3 years; 1 trial/3 year; farmer's field; rainfed.	Jing, Q., Qian, B., Bélanger, G., VanderZaag, A., Jégo, G., Smith, W., Grant, B., Shang, J., Liu, J., He, W., Boote, K., Hoogenboom, G., 2020. Simulating alfalfa regrowth and biomass in easter Canada using the CSM-CROPGRO-perennial forage model. European Journal of Agronomy, 113, 125971.

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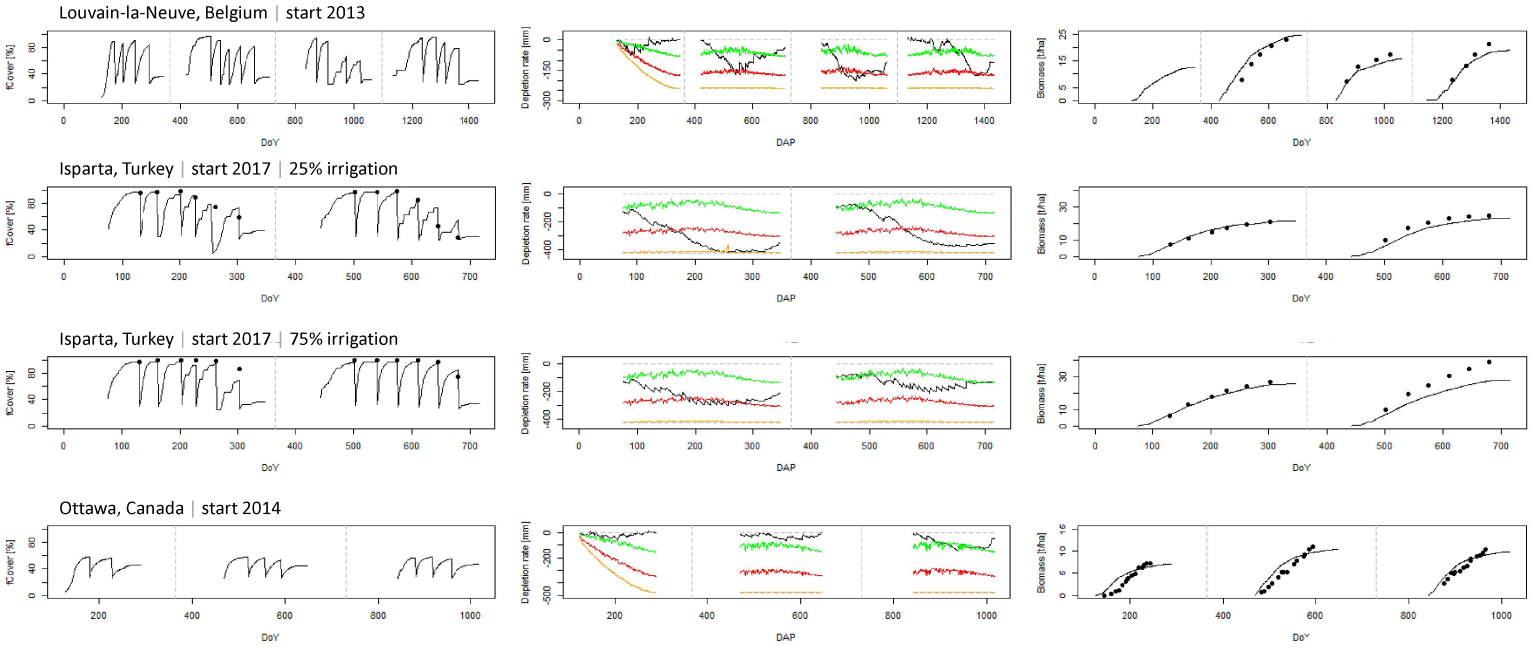
2/2 Alfalfa



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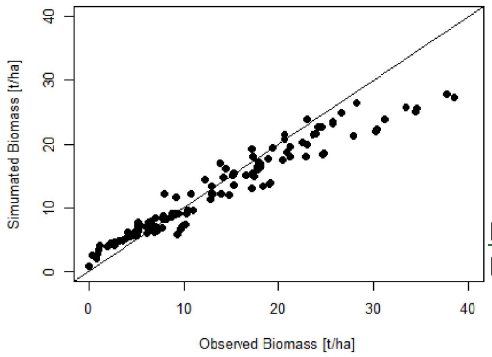
2/2 Alfalfa



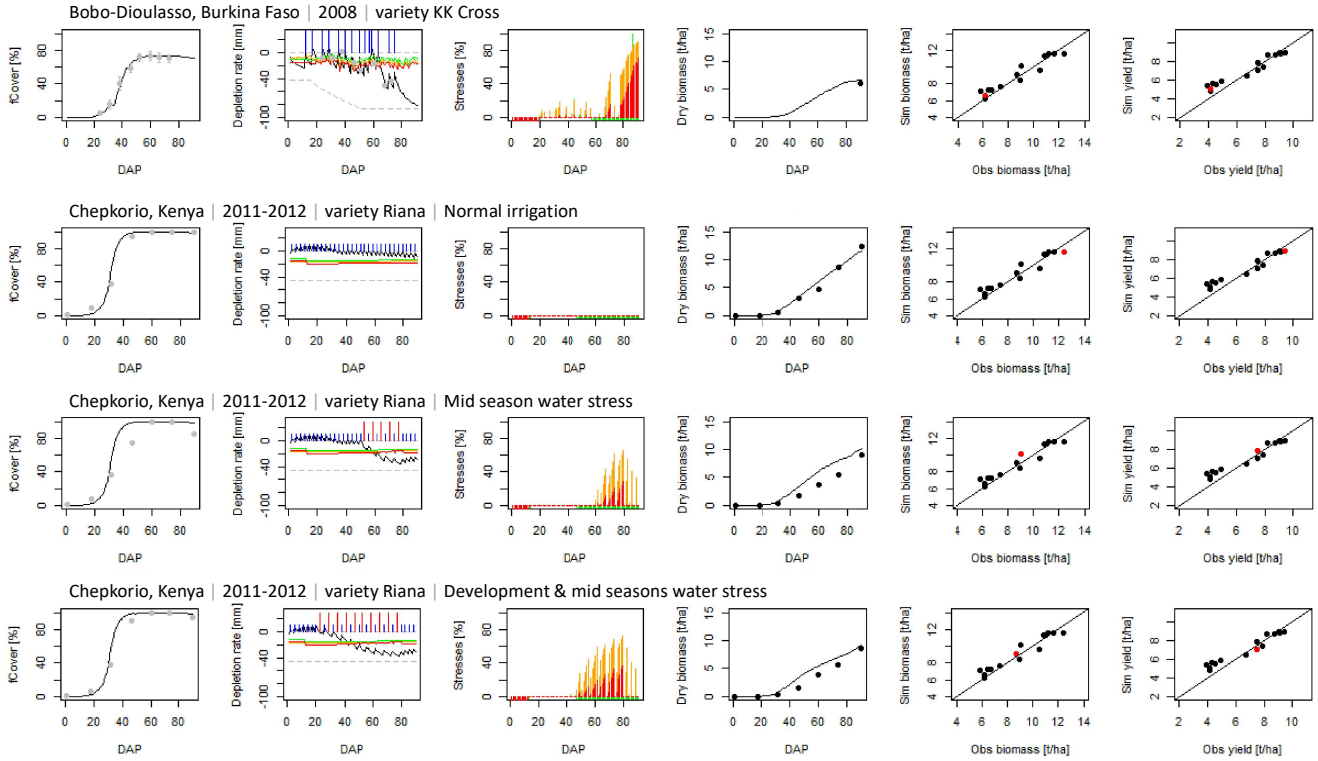
Biomass:
R^2 = 0,93 | RMSE = 3,17 t/ha | rRMSE = 11,4 %

1/2 Cabbages

data received from ≠ authors

Burkina Faso:	2 years; 4 & 2 trials/year; farmers' fields; irrigated.	Wellens, J., Raes, D., Traore, F., Denis, A., Djaby, B., Tychon, B., 2013 Performance assessment of the FAO AquaCrop model for irrigated cabbage on farmer plots in a semi-arid environment. Agricultural Water Management, 127, 40-47.
Kenya:	1 year; 9 trials/year; experimental trials; ≠ irrigation schedules.	Kiptum, C.K., Kipkorir, E.C., Munyao, T.M., Ndambuki, J.M., 2013. Application of AquaCrop model in deficit irrigation of cabbages in Keiyo Highlands. International Journal of Water Resources and Environmental Engineering, 5(7), 360-369

2/2 Cabbages



2/2 Cabbages

Biomass:

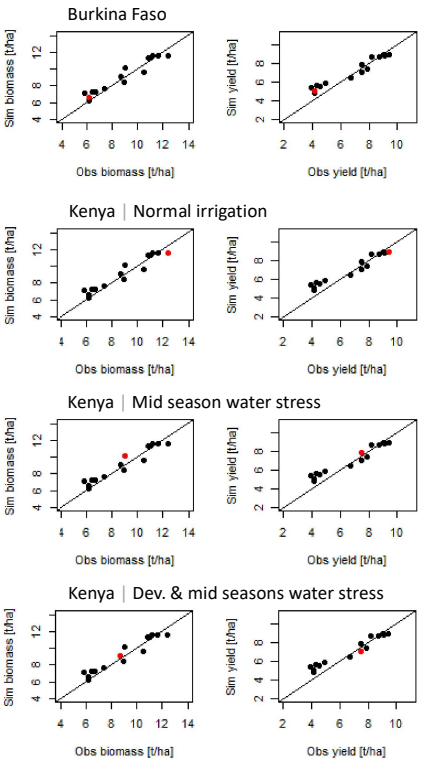
R^2 = 0.93 | RMSE = 0.6 t/ha

rRMSE = 1.7% | nRMSE = 7.3%

Yield:

R^2 = 0.94 | RMSE = 0.7 t/ha

rRMSE = 2.0% | nRMSE = 11.3%



Thank you!

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