



Daisy Newsletter no. 19

1 The Daisy code, v. 5.88

2 Version 5.88 has been released for all platforms. The main improvements are:

- Addition of a new “weather” program that deducts the temperature description required for the lower boundary from a Daisy weather file (TAverage, TAmplitude and MaxTDay) [based on a Fourier transformation analysis of the temperature data].
- Addition of a new action: “at”. It specifies exactly when an action should take place. It is different from the “wait” action in that it will skip actions in the past instead of waiting indefinitely.
- You can define your own conversion between DS and BBCH-stages through a table and link each BBCH-stage to a message such as “Beginning of tillering”. If you specify that your conversion should be used with a specific crop, the specified message will be printed in the log file during the simulation, the latest stage in the table will be reported in the last column of the “Crop” log and you can use “crop_stage_after” instead of “crop_ds_after” in management statements.

Please see further details under the news item “Daisy 5.88 released for all platforms”.

3 New Daisy Icon

Our new Daisy icon (see header) has been made to replace older ones with outdated University names etc. It will become available on the Daisy homepage in colour or black and white.

4 Events

4.1 Daisy course

Last week in August, our intensive Daisy course was conducted with 18 participants from Denmark and abroad. Participants presented their different projects on a small workshop during the week, covering an interesting range from calibration of crop models based on satellite data, over very detailed studies of stomatal conductance or water and N-uptake at different depth in the soil, to organic matter turn-over, precision N-application and N-leaching. The studies will cover a range of crops from potatoes to clover grass via both conventional and no-till rotation systems.



Figure 1. Theory in the class room.



Figure2. Pizza and discussions after project presentation.

We look forward to hear about the results 😊.



4.2 Daisy related PhD-defenses

David Nagy will defend his Ph.D. Dissertation: "Quantifying the transport and fate of dissolved nitrogen at different scales in drained agricultural landscapes" on Friday 18 October 2019 at 10:00 in 8814-3075, AU Foulum, Auditorium, Blicher Allé 20, 8830 Tjele

Kasper Jensen will defend his Ph.D. Dissertation: "Drainage and Plant production. Growth, resource utilization and yields of cereal crops under different and fluctuating groundwater depth" on 28th of October 2019 at Frederiksberg Campus (Univ. of Copenhagen).

5 Recent articles where Daisy has been used

Hoeve et al. (2019) performed Life cycle assessments of five different treatments of garden waste (from immature to mature compost and with and without the woody fraction). The fate of C and N after land application of garden waste products were modelled by Daisy. It is striking that the amount of N that ends up in crops at a later stage is rather low.

Jansson et al. (2019) have explored the effect of the Common Agricultural Policy (EU) on eutrophication of the Baltic Sea, using a mixture of models. The CAPRI model captured the impact of CAP on agricultural production on a regional level, Daisy was used for field scale simulations, which were then aggregated and transported, P was added as a function of land use and the BALTSEM model computes the effect of the simulated nutrient loads on selected eutrophication indicators of the Baltic Sea. Their results indicate that if the entire first pillar of the CAP, containing the direct payments, greening and accompanying measures, were to be abolished, production and agricultural land use would be reduced while yields and fertilizer use per hectare would go up. This, in turn, may

marginally improve indicators of good ecological status for eutrophication in the Baltic Sea.

This is what we look like 😊



Present members of the Agrohdrology group responsible for Daisy. First row, left to right: Janna Macholdt (guest researcher), Søren Hansen (founder of Daisy, Prof. emeritus), Carsten Petersen (Group leader, ass. professor), Kasper Jensen (post.doc), Sami Khetib (MSc student), Efsthios Diamantopoulos (ass. Prof), Merete Styczen (affiliated prof.), Maja Holbak (PhD student). Second row, left to right: Anja Weibel (lab. technician), Per Abrahamsen (resp. for Daisy code), Simon Svane (post.doc.), Jeanne Vuaille (PhD student) Daniel B.G. Jørgensen (PhD student), Jacob Gudbjerg (IT and hydrology consultant).

6 References

Hoeve, M. ten, Bruun, S., Jensen, L.S., Christensen, T.H., Scheutz, C. (2019): Life cycle assessment of garden waste management options including long-term emissions after land application. *Water Management* 86: 54-66.

Jansson, T., Höglind, L., Andersen, H.E., Hasler, B., and Gustafsson, B. (2019): The Common Agricultural Policy aggravates eutrophication in the Baltic Sea. Paper prepared for presentation at the 172nd EAAE Seminar 'Agricultural policy for the environment or environmental policy for agriculture?'

<https://ageconsearch.umn.edu/record/289745/>