The Daisy Model Newsletter
Department of Plant and Environmental Sciences
University of Copenhagen

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1 The Daisy code, v. 7.1.0

The Daisy version 7.1.0 is the latest official release. See this guide for installation and configuration for textpad.

We have created an extension for VSCode that is simpler to set up and can be used on all platforms. Instructions for using the extension can be found: daisy/doc/setup-vscode.md at main · daisy-model/daisy

The extension can be downloaded from: Daisy - Visual Studio Marketplace

We recommend all users switch to VSCode.

2 PhD Defence

Maddie Vinkler Schwartzkopff, KU, will defend her PhD "Modelling of low emission crop rotations for reducing agricultural nitrogen and carbon losses" on Wednesday 17 Dec. at 13:00-16:00 in CPSC Auditorium, A2 11.01, Bülowsvej 21, Frederiksberg. The PhD focuses on establishing and evaluating low emission crop rotations combining Daisy modelling and field experiments. We look forward to an interesting presentation and discussion.

3 Courses

Next year's Daisy-PhD-summer-course will take place from 31st of August to 4th of September at University of Bayreuth. Please spread the information to whom it might be relevant.

This year's PhD-summer course was held at Copenhagen University. It was an intense, fun, and enlightening week, and we look forward to seeing how the students will apply Daisy in their future research and projects.

4 Daisy uses meetings

In the autumn we had two user meetings. At the first Simon Fill Svane, KU, gave a presentation on simulating bare soil evaporation using the default Daisy surface parametrization. At the second Magnus Kamau Katana Lindhart, AU, presented his work on simulating agrivoltaics with Daisy.

The meetings are held on the first Wednesday of the month from 12.30-13.30 both physically (Thorvaldsensvej 40, Room T532) and online (write daiys.ku.dk for a link).

We will continue with the meetings in the spring and, among other things, look forward to a presentation from Ryan Douglas, the James Hutton Institute, on Scottish spring barley and optimal N strategies, and a presentation from Anna Leed Madsen, KU, on simulating water and carbon dynamics in conservation agriculture.

You can find information on earlier and coming meetings on: Lunch meetings – University of Copenhagen. If you would like to present a project or have ideas for subjects for the lunch meetings, please write to daisy.ku.dk.

5 Recent article where Daisy have been used

Schwartzkopff et al. (2025) calibrated the crop modules for the main crops—winter wheat, winter rye, and spring barley—and the two catch

crops, oilseed radish and ryegrass, using two Danish field experiments with varying N-fertilizer treatments over six growing seasons. The calibrated crops were subsequently evaluated against two independent field experiments spanning five growing seasons. Crop calibration reduced model errors across all measured variables in the calibration datasets and maintained or further reduced errors in the evaluation datasets. The mean annual N leaching changed in the calibrated crop rotations, clearly highlighting the importance of accurate crop calibration when assessing N dynamics.

Schwartzkopff et al. (2026) investigated how an increasing proportion of cover crops in the crop rotation affect N leaching and if main crop winter cereal-cover could be equally effective at reducing annual N leaching across different soil and climate conditions in Denmark. They found that increasing cover crop coverage led to decreased nitrogen leaching, but the magnitude of the reduction varied depending on cover crop species, soil type, and annual weather variability. In some cases, winter cereal cover was just as effective as cover crops in reducing annual nitrogen leaching.

Grønning et al. (2024) calibrated the cover crops oilseed radish, winter rye, and hairy vetch using two years of experimental field data from sandy soil. The calibrated models were then applied in realistic crop rotation scenarios, demonstrating that cover crops can reduce nitrogen leaching and contribute to soil carbon sequestration.

Turek et al. (2025) evaluated whether pedotransfer functions or model structure drive variance in agro-hydrological model results. Using data from the lysimeter facility at Agroscope Zürich-Reckenholz, they simulated crop growth and water dynamics with 18 different pedotransfer functions and four agro-hydrological models (APEX, CANDY, SWAP, and Daisy). They concluded that differences in model structure had a greater influence on output variance than differences in pedotransfer functions. Furthermore, models integrating Richards' equation (SWAP and Daisy) were more sensitive to variations in pedotransfer functions than models using the reservoir cascade approach (APEX and CANDY).

Pohanková et al. (2025) applied an ensemble of nine crop models, including Daisy in both 1-D and 2-D configurations, to simulate continuous crop production (1961–2080) for two crop rotations: conventional and alternative (with cover crops, organic fertilizers, and all crop residues left in the field). Simulations were conducted across six European sites under eight climate scenarios. They found an average increase in annual yields for the 2051–2080 period compared to 1962–1990 for all crops, rotations, and sites. However, they also predicted greater spatial variability in future yields due to rising air temperatures. Currently drier and warmer sites are expected to experience higher yield variability and possible decreases, while cooler and wetter sites will see yield increases.

6 References

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