The Daisy Model Newsletter
Department of Plant and Environmental Sciences
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Daisy Newsletter no. 20

Merry Christmas and Happy New Year

From the Daisy-group at PLEN, UCPH

1 The Daisy code, v. 5.88

2 The version 5.88 is still the last official release on all platforms.

3 Events

3.1 Daisy course

Four students just finished our long Daisy course, using data and cases from their PhD-studies. They are Guanying Chen, PLEN, UCPH, Jorge F.M. Vélez and Saghar Motarjemi, Dept of Agroecology, AU and Giovanna C. Vega, DTU.

Daisy was used to study uptake of water and N at different root depths, water and N-balances of field experiments and breakdown of selected plastic types mixed in compost.

4 Recent articles where Daisy has been used

Nielsen et al. (2019) applied Daisy to establish life cycle inventory factors for application of garden waste products. The values were based on long-term simulations based on turn-over rates established in the laboratory for the investigated compost types. Parameters for the different types of compost are specified in the article. Looking at a 100-year period, the harvested fraction of N applied in compost appears to be low (< 0.2) under N-restricted conditions and even lower (≈0.1) under conditions with high N-availability.

Olesen et al. (2019) investigated the combined effects of changes in land use and climate on nitrate leaching and nitrogen (N) loads to surface waters from two Baltic Sea catchments (Norsminde in Denmark and Kocinka in Poland). The effects were explored using different models; the NLES and Daisy models for nitrate leaching, and MIKE SHE or MODFLOW/MT3DMS for N transport. Land use changes were defined based on three Shared Socioeconomic Pathways (SSP1, SSP2 and SSP5). The climate change scenarios covered 2041–2060 compared with 1991–2010 under RCP8.5, applying four different climate models. Increases in predicted N-load from climate change varied from 20 to 60% depending on climate model. SSPs moderate these N-load changes with small changes for SSP1 to large increases for SSP5, with greater increases for Norsminde than Kocinka due to land use differences.

5 References

Nielsen, M.P., Yoshida, H., Taji, S.G., Scheutz, C., Jensen, L.S., Christensen, T.H and Bruun, S. (2019). Deriving Environmental Life Cycle Inventory Factors for Land Application of Garden Waste Products Under Northern European Conditions. Environmental Modeling & Assessment (2019) 24:21–35. https://doi.org/10.1007/s10666-018-9591-9

Olesen, J.E., Børgesen, C.D., Hashemi, F., Jabloun, M., Bar-Michalczyk, D., Wachniew, P., Zurek, A.J., Bartosova, A., Bosshard, T., Hansen, A.L. and Refsgaard, J.C. (2019). Nitrate leaching losses from two Baltic Sea catchments under scenarios of changes in land use, land management and climate. Ambio 48: 1252-1263.