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# Exploration of calibration strategies for the integration of a new winter wheat cultivar in the STICS crop model

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## Résumé

Crop models are very useful tools to explore crop production. They need to be regularly upgraded with parametrization for new cultivars but this requires calibration, which is a major challenge. With winter wheat cultivar Rubisko as a case study, we propose to apply a calibration protocol to estimate the parameters of this new cultivar with multi-trials experimental data. We tested the calibration protocol in different conditions including or not LAI and/or biomass experimental data and we found that the resulting LAI and biomass dynamics strongly diverge. The structure of the dataset was limiting with a lack of LAI data around maximum LAI and of biomass data near maturity, leading to unbalanced RMSE computation and difficult assessment of the different calibration strategies. However, we found that calibrating only on biomass was the best option for this specific dataset but we recommend not to include RUE parameters. We also explored the effect of temporal availability of LAI and biomass synthetic data on calibration and we found that calibrating around BBCH30 is the best option. However, this result was not reproducible on the actual observed data so we advise caution when exploring calibration practices on synthetic data.

**Mots-Clés:** Calibration, estimation, crop model, winter wheat, varietal parameters

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