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Evaluation and Performance of CERES-Wheat DSSAT v4.6 Model for Growth, Development and Yield in Southern Bihar

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Abstract: The DSSAT model v4.6 was calibrated and validated for wheat (cv. HD2733, GW322, K307) using experimental data (2015-2017) of Bihar Agricultural University, Sabour, Bhagalpur (25°50' N latitude and 87°19' E longitude) with two dates of sowing (timely sown, 23 November; late sown, 15 December). The simulated values of growth, development and yield (anthesis, physiological maturity, maximum leaf area index and grain yield) were close to measured parameters for both the years of study. The root mean square error (RMSE) values ranged from 2.70-2.97, 0.34-0.36, 2.34-3.08 and 318-343 for anthesis, LAI, physiological maturity and grain yield, respectively. *D*-index, R^2 and error percentage values were also in acceptable range between simulated and observed values for different phenophases, LAI and grain yield during both years. Based on these results, it can be concluded that the model was very robust in predicting the critical phenological growth stages and yield of different cultivars of wheat under different sowing environment.

Keywords: Crop growth model, DSSAT, Wheat, Simulation, Calibration, Validation