

Impact of projected climate on yield of soybean using CROPGRO-Soybean model in Madhya Pradesh

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ABSTRACT

A field experiment was conducted during *kharif* season, 2016 at Jabalpur, Madhya Pradesh to validate CROPGRO- Soybean model for variety JS 20-29 and assess its productivity under future climate change scenarios. Genetic coefficients were generated and evaluated using two-year (2014 and 2015) datasets and validated with 2016 experimental data under different dates of sowing. A good agreement between observed and simulated seed yield ($D=0.75$, $RMSE = 239.2$) and biological yield ($D = 0.83$, $RMSE = 391.8$) was obtained. The climate change projection scenario of RCP 2.6 and 8.5 were used to assess its impact on seed yield in different districts of Madhya Pradesh. An increase in seed yield from baseline under RCP 2.6 pathway was simulated in all the districts whereas under RCP 8.5 pathway, marginal decline in seed yield was simulated by 2020. By 2050, however, a decline in seed yield was simulated under both RCP pathways, which may be due to increase in the rate of greenhouse gas emissions.

Key words : CROPGRO-Soybean model, DSSAT, genetic coefficients, soybean variety, sowing window, RCP2.6 and 8.5