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Assessing adaptation strategies for potato cultivation in Morocco: modeling approaches at the field scale

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Climate change is set to reshape the environmental parameters governing crop growth, necessitating the implementation of revised management practices at the field scale. This study focuses on the adaptation and evaluation of the APSIM model for simulating the phenological growth, development, and yield prediction of potato (*Solanum tuberosum* L.) in response to climate variability in Morocco. Recognizing the critical role of potatoes in global food systems, and the increasing pressures of climate change, the research aims to accurately forecast the growth and yield responses of potato crops to these environmental shifts. The calibration phase of the APSIM model was rigorously conducted using local datasets, including climate patterns, soil properties, plant phenological data, and cropping practices. The model's accuracy was demonstrated through its high determination coefficients in simulating key growth stages and biomass accumulation of the potato crop. The findings showcase the model's capability in predicting potato yield and phenological responses to climate variability, providing strategic insights for enhancing agricultural practice efficiency. Overall, this study underlines the APSIM model's efficacy in developing strategies for climate-resilient potato farming, offering a robust tool for adapting agricultural practices under changing environmental conditions.