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Evaluation of the APSIM model in cropping systems of Asia

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ABSTRACT

Resource shortages, driven by climatic, institutional and social changes in many regions of Asia, combined with growing imperatives to increase food production whilst ensuring environmental sustainability, are driving research into modified agricultural practices. Well-tested cropping systems models that capture interactions between soil water and nutrient dynamics, crop growth, climate and farmer management can assist in the evaluation of such new agricultural practices. One such cropping systems model is the Agricultural Production Systems Simulator (APSIM). We evaluated APSIM's ability to simulate the performance of cropping systems in Asia from several perspectives: crop phenology, production, water use, soil dynamics (water and organic carbon) and crop CO_2 response, as well as its ability to simulate cropping sequences without reset of soil variables. The evaluation was conducted over a diverse range of environments (12 countries, numerous soils), crops and management practices throughout the region. APSIM's performance was statistically