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Improving Performance of SWAT Modeling in the Andes

NATALIA URIBE¹, MARCELA QUINTERO² AND RUBEN ESTRADA³

¹ International Center for Tropical Agriculture (CIAT), Colombia

² International Center for Tropical Agriculture (CIAT), Peru

³ Centro Latinoamericano para el Desarrollo Rural (RIMISP), Chile

n.uribe@cgiar.org

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Key Message

The most recent SWAT model offers new hydrological cycle processes and tools that permit the accurate modeling of Andean watersheds. To produce optimum results using the SWAT model, it is necessary to use information about the study area derived from a wide range of disciplinary backgrounds. This ensures that the model provides a comprehensive representation of the hydrologic cycle.

Summary

In order to improve the SWAT model simulations under the conditions of the Andean region (namely in the AN2 trial sites in the Cañete, Quijos, Fuquene and Fomeque waterbasins) it has been necessary to add some process components to the usual version of the SWAT model. These include: climate customization considering elevation bands and snow melt; growth-cycle of land/plant over with management practices based on heat units; calibration of the model using new sensitivity and uncertainty processes (i.e. the SuFi2 method).

The performance of the SWAT model has been improved by the addition of these processes and has been demonstrated to be satisfactory in application under the Andes' regional conditions. Nevertheless, difficulties in the adjustment base-flow indicate that the limited availability of information on soil profiles and spatial distribution has compromised the performance of run-off simulations.

