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The Be-WetSpa-Pest modeling approach to simulate human and environmental exposure from pesticide application

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This study presents an integrative and spatially explicit modeling approach for analyzing human and environmental exposure from pesticide application of smallholders in the potato producing Andean region in Colombia. The modeling approach fulfills the following criteria: (i) it includes environmental and human compartments; (ii) it contains a behavioral decision-making model for estimating the effect of policies on pesticide flows to humans and the environment; (iii) it is spatially explicit; and (iv) it is modular and easily expandable to include additional modules, crops or technologies. The model was calibrated and validated for the Vereda La Hoya and was used to explore the effect of different policy measures in the region. The model has moderate data requirements and can be adapted relatively easy to other regions in developing countries with similar conditions.