Geophysical Research Abstracts
Vol. 19, EGU2017-19612, 2017
EGU General Assembly 2017

Forecast model for a water table control system in cranberry production

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Water table control is gaining popularity in cranberry production. Cranberry plants require specific soil moisture conditions to enhance crop yields. In fact, water table control systems installed in the fields allow the plants to respond efficiently to the daily demand for evapotranspiration by capillarity rise and also regulate the soil water excess in drainage conditions. The scope of this study is to develop a forecast hydrological model at the field scale, able to simulate water level for water table control operations. In this work, the finite element CATHY (CATchment Hydrology) model associated with sequential data assimilation with an ensemble Kalman filter (EnKF) method will be used to simulated the soil water dynamics and perform model calibration in real-time. The study is conducted in cranberry fields located in Québec, Canada. During the last five years, these fields were extensive characterized regarding hydrological, pedological, and geological processes. Data collected from LIDAR and Ground Penetrating Radar (GPR) surveys and in-situ soil sampling have been used to define the domain geometry and initial soil properties. First results are promising and in agreement the in-situ water table measurements.