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Online irrigation service for fruit und vegetable crops at farmers site

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Agrowetter irrigation advice is a product which calculates the present soil moisture as well as the soil moisture to be expected over the next 5 days for over 30 different crops. It's based on a water balance model and provides targeted recommendations for irrigation. Irrigation inputs according to the soil in order to avoid infiltration and, as a consequence thereof, the undesired movement of nitrate and plant protectants into the groundwater. This interactive 'online system' takes into account the user's individual circumstances such as crop and soil characteristics and the precipitation and irrigation amounts at the user's site. Each user may calculate up to 16 different enquiries simultaneously (different crops or different emergence dates). The user can calculate the individual soil moistures for his fields with a maximum effort of 5 minutes per week only.
The sources of water are precipitation and irrigation whereas water losses occur due to evapotranspiration and infiltration of water into the ground. The evapotranspiration is calculated by multiplying a reference evapotranspiration (maximum evapotranspiration over grass) with the so-called crop coefficients (kc values) that have been developed by the Geisenheim Research Centre, Vegetable Crops Branch. Kc values depending on the crop and the individual plant development stage. The reference evapotranspiration is calculated from a base weather station user has chosen (out of around 500 weather stations) using Penman method based on daily values. After chosen a crop and soil type the user must manually enter the precipitation data measured at the site, the irrigation water inputs and the dates for a few phenological stages. Economical aspects can be considered by changing the values of soil moisture from which recommendations for irrigation start from optimal to necessary plant supply.
Previous comparative measurements carried out by the Agricultural Administration of Baden-Württemberg relating to potatoes, onions, vine stocks, and strawberries agreed very well with the calculations.