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Water content determination of soil surface in an intensive apple orchard

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Currently in Hungary, less than 100,000 hectares of orchards can be found, from which cultivation of apple is one of the most dominant ones. Production of marketable horticulture products can be difficult without employing advanced and high quality horticulture practices, which, in turn, depends on appropriate management and irrigation systems, basically. The got out water amount depend on climatic, edafic factors and the water demand of plants as well. The soil water content can be determined by traditional and modern methods. In order to define soil moisture content, gravimetry measurement is one of the most accurate methods, but it is time consuming and sometimes soil sampling and given results are in different times. Today, IT provides the farmers such tools, like global positioning system (GPS), geographic information system (GIS) and remote sensing (RS). These tools develop in a great integration rapidly. RS methods are ideal to survey larger area quick and accurate. Laser scanning is a novel technique which analyses a real-world or object environment to collect structural and spectral data. In order to obtain soil moisture information, the Leica ScanStation C10 terrestrial 3D laser scanner was used on an intensive apple orchard on the Study and Regional Research Farm of the University of Debrecen, near Pallag. Previously, soil samples from the study area with different moisture content were used as reference points. Based on the return intensity values of the laser scanner can be distinguished the different moisture content areas of soil surface. Nevertheless, the error of laser distance echo were examined and statistically evaluated.
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