O-12 (158)
MEASUREMENT OF SOIL PROFILE WATER CONTENT WITH THE PROFILE PROBE

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The soil water content in the plant root zone can be directly or indirectly measured. In the direct measurement method, a soil sample is taken directly with the help of a screw-like tool, weighed and heated at 105 °C. For this reason, the method is based on gravimetric considerations and is very tedious, laborious and time-consuming. In the indirect measurement methods, soil water content cannot be measured directly. What is done here is to measure another parameter that changes depending on the water content in the sample soil. That is to calibrate it against the soil water content. In this study, it was aimed to determine the soil water content easily and relatively by using an indirect method in greenhouse conditions. For this purpose, the Profile Probe type PR2 was first calibrated on the basis of the gravimetric soil water content method in the greenhouse conditions. Then, in order to evaluate the calibration work, vegetation was done under greenhouse conditions with the use of three different irrigation applications. For plant production, irrigation water was applied to plant root region by drip irrigation method. During one production season, the plant root zone soil water content was monitored with the Profile Probe type PR2. Using the equation obtained from the calibration run, the Profile Probe type PR2 measurements were converted to volumetric water content. In the study, it was found that the profile Probe type PR2 could be used to relatively determine the soil water content. In addition, it was also concluded that a detailed calibration study, taking into account the possible changes such as temperature, salinity, etc. would be more useful and more accurate.

Keywords: Full irrigation, deficit irrigation, calibration equation, gravimetric soil water.