



Efficacy of Passive Capillary Samplers for Estimating Soil Water Drainage in the Vadose Zone

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The efficacy and accuracy of PCAP samplers were evaluated for continuous estimating of soil water drainage and fluxes below the rootzone of a sugarbeet-potato-barley rotation under two irrigation frequencies. Twelve automated PCAPs with outside sampling surface dimensions of 91 cm length x 31 cm width x 87 cm height were placed 90 cm below the soil surface in a Lihen sandy loam. These automated PCAPs have a greater efficiency than other types of soil water samplers. They also offered a significantly larger coverage area (2700 cm²) than similarly designed soil water samplers. The cumulative manually extracted drainage water was compared with the cumulative drainage water recorded by the datalogger from the tipping bucket using several statistical methods. The five years results indicated that PCAP samplers are accurate, efficient and provided convenient means for estimating soil water drainage and fluxes in the vadose zone. Real-time seamless monitoring and measuring of drainage water was thus possible without the need for costly time-consuming supportive operations.