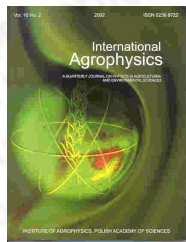




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Spatial variability of soil moisture as information on variability of selected physical properties of soil

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abstract The paper presents a method for the estimation of variability of soil bulk density and of variability of infiltration rate on the basis of easily determinable variability of soil moisture. First, the author put forth the hypothesis that variance of both of the estimated parameters is directly proportional to variance of soil moisture. The hypothesis was then verified for both of the estimated parameters on the basis of a field experiment conducted on a grassland object situated in the locality of Silna Wrony, Wielkopolskie Province, Poland. Independent experimental material obtained from research on another object situated in the locality of Sucha Rzecznka, Warmińsko-Mazurskie Province, Poland, permitted comparative analysis of measured data and data obtained on the basis of the estimations. Data obtained on the basis of the experiment permitted only to compare the estimated variance of infiltration rate with the variance obtained on the basis of direct measurements. The estimated value of variance of infiltration rate differed from the variance obtained from measurements by a maximum of 6.8%.

keywords soil moisture, soil bulk density, infiltration rate, TDR technique

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