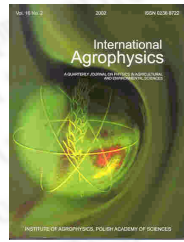




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Some physical parameters in relation to water extraction by roots of pigeonpea genotypes

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abstract In modeling water extraction by roots and in whole crop model selection of the factors for their parameterization which could differ from genotype is a prerequisite. Some physical parameters of soil hydraulic conductivity, root length density, yield and some yield components in relation to water extraction by roots of two pigeonpea genotypes (ICPL 87 and ICP 1-6) were investigated in the field. Soil hydraulic resistance was found to be negligible in the top soil layers but concentrated where there was maximum root length density. Lower soil hydraulic resistance and higher rate permeability was found in ICPL 87 (short duration) than in the medium duration pigeonpea, ICP 1-6. Permeability was found to be closely associated with the position of the root in the soil profile. The most effective part of the root for water extraction was found to be determined by the degree of aeration at the root tip, plant density, lower soil hydraulic conductivity, and higher root conductivity.