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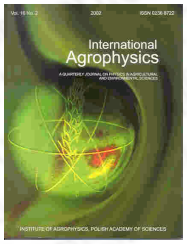

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Measurement of grain surface roughness

(get PDF)

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abstract In the research on the friction of vegetative grain-structure, an essential problem lies in the appropriate determination of the condition of the surface layer of elements in mutual contact. The analysis must define both tensile strength parameters and the surface topography. Most frequently, surface geometry is defined by roughness. Compared to the traditional methods applied for the construction materials, the measurement of roughness in this case is more difficult due to the cellular structure and multifarious shapes of individual skeletons, while low surface hardness (especially at significant humidity) excludes the possibility of applying mechanical methods. For these reasons, an attempt was made to develop a rapid and simple method for the measurement of grain surface roughness relying on the optical procedure. The measurement bench consists of a stereo-microscope with a trinoculare and a camera linked to the computer through an analogue-digital processor. The entire measurement set is equipped with a MultiScan software, where a special picture processing was applied as described below in the paper. A computer analysis of the picture allows to carry out an automatic and precise measurement of the profile roughness in any selected point on the grain surface.

keywords surface roughness, relief surface, grain