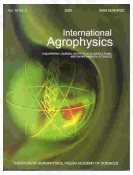

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Binding force and mechanical strength of rice grain

(get PDF)

Szot B.[1], Ferrero A.[2], Molenda M.[1]

[1] Institute of Agrophysics, Polish Academy of Sciences, Doświadczalna 4,20-290 Lublin 27, Poland

[2] Institute for Agricultural Mechanization, National Research Council, Strada delle Cacce 73,10135 Torino, Italy

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abstract Strength properties of rice kernels related to losses of grain during combine harvesting and pos-tharvest treatment were determined for seven varieties of rice cultivated in Italy. Compression tests using an Instron testing machine were conducted to determine: force of first failure F, force of rupture F of entire rice grains and energy required to damage the grain. Statistically significant differences in determined parameters were found among tested rice varieties. An Instron load cell with appropriate attachment was used to measure the force to detach the kernel from the branch (binding force). Tests were conducted on one hundred grains of each of ten varieties of rice. Binding force was found in the range from 1.29ą0.08 N to 2.37ą0.06 N. Statistically significant differences in the values of binding force were found among tested rice varieties. A tendency of binding force to take higher values for the lower locations of the kernel on the branch was observed.

keywords rice, binding force, force at rupture