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Res. Agr. Eng.

Grundas S., Skubisz G.:

Physical properties of cereal grain and rape

stem

Res. Agr. Eng., 54 (2008): 80-90

The paper presents the results of a study on the mechanical properties of cereal grain and of rape stems, conducted within the framework of the continuing long-term cooperation between the Bohdan Dobrzański Institute of Agrophysics, The Polish Academy of Sciences (IA PAS) in Lublin, and the Czech University of Life Sciences (CULS) in Prague, Czech Republic. Within the scope of the mechanical properties of cereal grain, the study showed a significant relation between the physical conditions of kernels of common wheat as determined through X-ray detection, and their mechanical properties determined by means of standard tests used in the mechanics of structural materials and of the tests used in the technology of cereal grain processing. The study on the mechanical properties of rape stems demonstrated inter-variety differences between plants with varied resistance to lodging. The estimation of the variability of the mechanical properties along the length of rape stems showed the

existence of a characteristic point located close to the first bifurcation. Significant effects were noted of the density of the canopy expressed in the number of plants per square meter, and of nitrogen fertilisation on the strength characteristics of rape stems obtained on the basis of tests of mechanical properties. At the same time, a relation was proved between the mechanical properties of the stems and absorption of X-rays

Keywords:

Keywords: wheat grain; rape stem; physical properties; utility value

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