

International Agrophysics

Polish Journal of Soil Science

Acta Agrophysica

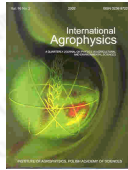
Instytut Agrofizyki

International Agrophysics

General information

Issues

Search



International Agrophysics

publisher: Institute of Agrophysics
Polish Academy of Sciences
Lublin, Poland

ISSN: 0236-8722

vol. 22, nr. 3 (2008)

[previous paper](#) [back to paper's list](#) [next paper](#)

Development of studies on the mechanical properties of winter rape stems

[\(get PDF\)](#) 

Skubisz G.

Institute of Agrophysics, Polish Academy of Sciences, Doświadczalna 4, P.O. Box 201, 20-290 Lublin 27, Poland
vol. 15 (2001), nr. 3, pp. 197-200

abstract In the study the author used a mechanical and an X-ray method for the determination of the strength properties of the stems of winter rape varieties. In a bending process, rigidity and maximum bending stress were determined. Also, were determined the static shearing energy and the dynamic shearing energy, and the shearing energy per unit of a stem cross section area, naturally as well as after the removal of the parenchyma, and density and the DOD parameter in order to define the amount of X-ray radiation energy absorbed by the stem. It was found that the character of the changes in the mechanical properties on the length of the stem is described by a square polynomial. The studies showed that the shearing energy from the static and dynamic tests are identical to the determination of the shearing energy of rape stems. High values of correlation coefficients between the shearing energy from the two test were obtained. It was found, on the basis of an analysis of results concerning the variability of the work required the shearing of a unit of the cross section area of rape stems, that is, a characteristic spot located close to the first branching of the plant. A significant relationship was shown to exist between the mechanical parameters of the stem and the amount of X-ray radiation energy absorbed by the stem. In this study, a close correlation was found between the mechanical properties of stems and the resistance of rape plants to lodging.

keywords rigidity, maximum bending stress, static shearing energy, dynamic shearing energy, shearing energy per unit of a stem cross-section area