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Res. Agr. Eng.

Tavakoli H., Mohtasebi S.S., Jafari A.: Effects of moisture content, internode

position and loading rate on the bending characteristics of barley straw

Res. Agr. Eng., 55 (2009): 45-51

This study was conducted with the aim to evaluate the effects of the moisture content, internode position, and loading rate on the bending characteristics of barley straw including bending stress and Young ' s modulus. In the study, 9 treatments were performed as randomised complete block design with 5 replications. The characteristics were determined at three moisture levels: 10%, 15%, and 20% wet basis, three loading rates: 5, 10, and 15 mm/min, and free internodes: the first, second, and third internodes. The results showed that both the bending stress and Young ' s modulus decreased with an increase in the moisture content and towards the third internode position. The average bending stress was obtained as 8.41 MPa varying from 6.32 to 12.41 MPa, while the average Young ' s modulus was

calculated as 473.88 MPa ranging from 330.94 to 618.91 MPa. As shown by the results obtained, the values of the characteristics increased with increasing loading rate.

Keywords:
barley; moisture content; loading rate; bending stress; Young ' s modulus

[fulltext]