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Attempt to determine bean-pod susceptibility to cracking

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abstract The paper presents a study of the effect of bean variety and pod shell moisture content on the susceptibility of bean pods to cracking. Research was conducted on four varieties of beans grown for dry seeds: Bor, Igołomska, Nida and Prosna at three levels of pod shell moisture content (11.9, 17.4 and 21.8%) using pressure method. Pods were filled with compressed air and the value of pressure at the moment of pod opening along their seams was measured. Then a calculation of the values of total bursting force necessary for pod opening and specific force per 1 mm of pod seam was performed. Statistical analysis showed a significant effect of bean variety and pod shell moisture content on the susceptibility of bean pods to cracking. Varying of pod moisture content over a range of 11.9 to 21.8 % caused an increase in the total pod bursting force which is necessary to open pods, from 29.01 to 102.54 N, and a rise in the specific bursting force from 0.28 to 0.87 N mm⁻¹. At the moisture content of 11.9 %, the tested varieties did not differ significantly in the susceptibility of their bean pods to cracking. However, significant differences appeared at higher levels of pod moisture content. Of the tested bean varieties, Igołomska and Bor exhibited the lowest susceptibility of bean pods to cracking while Nida and Prosna were most susceptible.

keywords bean-pod, susceptibility to cracking, pressure method

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