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Res. Agr. Eng.

Blahovec J., Sobotka J.:

Potato tuber permittivity during

deformation in compression

Res. Agr. Eng., 53 (2007): 79-84

Potato tuber specimens of two varieties (Nicola and Saturna) were deformed in a compression loading/unloading test. The tuber complex permittivity spectrum at frequencies 0.1– 500 kHz was measured repeatedly during the deformation. The results show that both parts of relative permittivity (real and imaginary) decrease with increasing deformation and vice versa. The same trend was observed at all studied frequencies even if it was not equally strong in all cases. The permittivity plots versus frequency were similar in both the tested varieties and in different stages of deformation. The influence of tuber deformation on the permittivity values as well as the reversibility of the permittivity changes during the deformation are changed substantially at strains about 20% in comparison to strains up to 10%. The obtained results support the hypothesis that permittivity measurements can serve as an alternative indication of the internal

structural changes in potato tissue during its loading.

Keywords:

potato; permittivity; frequency; deformation; strain; reversibility

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