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EVOLUTION TENDENCIES OF THE AGRICULTURAL MECHANICAL PROPERTIES OF WINTER WHEAT VARIETIES

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ABSTRACT – Mechanical proterties of winter wheat varieties
Wheat kernel hardness determines quality, flour yield, flour particle-size, water absorption and other quality characteristics of cereals. The hardness is determined by the degree of adhesion between various components of the starchy endosperm cells of the mature wheat grain, notably between starch granules and matrix (gluten) proteins but also between proteins and cell walls. Hard textured grains require more grinding energy than soft textured grains to reduce endosperm into flour, and during this milling process a larger number of starch granules become physically damaged. We have to know that the kernel hardness is soft or hard, because it determines the milling process, so we have to measure it. (BÉKÉSI, 2001) In our investigation we used two methods to measuring kernel hardness. The Perten Single Kernel Characterization System (SKCS) 4100 device and the Lloyd 1000 R Material Testing Machines were used. We determined the Hardness Index (Perten SKCS 4100), the mechanical properties – Young's modulus, breaking force, break work (Lloyd 1000 R). Our aim was to compare these methods.

Keywords: wheat, kernel hardness, Hardness Index, Young's modulus