

CONNECTION BETWEEN THE KERNEL HARDNESS AND THE FLOUR QUALITY IN HUNGARIAN WINTER WHEAT

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Abstract

Kernel hardness controls by friabilin protein and it depends on the relation between protein matrix and starch granules. Friabilin presents in high concentration in soft grain varieties and it is low concentration in hard grain varieties. The high gluten, hard wheat flour generally contains about 12,0-13,0 % crude protein under Mid-European conditions. The relationship between wheat protein content and kernel texture is usually positive and kernel texture influences the power consumption during milling. Hard textured wheat grains require more grinding energy than soft textured grains.

The aim of our research was to determine the possible relationship between kernel hardness and various other parameters of the flour (dough visco-elastic characteristics, wet gluten, water absorption, flour recovery, alveograph). We used Perten SKCS 4100 to determine the kernel hardness, while the Perten 3303 mill was used to establish Particle Size Index (PSI). Registered and widely used Hungarian wheat varieties (7 of HRWW and 4 of SRWW) were applied in the study. Twin correlations were used to determine the relationship among the various traits.

According to the results, there is a very strong correlation between the milling energy and the kernel hardness ($r=0.99$). The correlation between hardness index and the examined flour parameters was also significant ($r=0.81-0.87$). We found strong correlation between the milling energy and water absorption $r=0.878$ of the flour. The associations found in this study will help to better understanding the wheat grain and flour quality technological aspects.

Key words: wheat kernel, flour parameters, SKCS 4100