

prove significantly during the first months of dry storage (control group) compared to storage under cooled conditions.

It is advisable to store winter wheat grain with moisture content within the critical range and good

initial quality indicators in a dry state for no more than 9 months; for longer storage periods, such grain should be stored in a cooled state. Under this storage regime, quality indicators are more stable and undergo fewer changes.

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THE GLUTEN QUALITY OF WINTER WHEAT GRAINS DEPENDS ON STORAGE CONDITIONS AND VARIETAL CHARACTERISTICS

Determining gluten quality in Ukraine, unlike in other regions of the world, is of critical importance. This is because the harmful grain weevil is very widespread in Ukraine, causing damage to up to 20% of the grain in some years. The maximum permissible damage level is 2–3%.

Gluten quality is characterized by its physical properties—toughness, extensibility, elasticity, water absorption and gas retention capacity.

Winter wheat grains of the varieties 'Poliska 90', 'Natsionalna', 'Smuglyanka', 'Podolyanka', 'Myronivska 65', and 'Perlyna Lisostepu' were studied. The wheat grains were stored for 12 months in an uncontrolled environment (in warehouse conditions) and under controlled temperature conditions (at 5–10°C) in linen bags.

This study employed previously established methods for assessing wheat grain quality that are most commonly used in industrial practice and scientific research.

Based on gluten quality, the samples of the studied varieties can be conditionally divided into two groups. Samples in Group A ('Smuglyanka', 'Poliska 90', 'Myronivska-65'), which had 101–105 units on the VDK instrument, and Group B ('Podolyanka', 'Perlyna Lisostepu', 'Odeska 267') with 82–90 units on the VDK instrument. Gluten quality varied during storage.

Grain samples of Group A varieties strengthened their gluten during storage under controlled conditions for up to 12 months by 4.7 units on the VDK scale, under uncontrolled conditions for up to 9 months, and during further storage, the gluten weakened by 1.7–2.0 units on the VDK scale compared to the previous storage period. In grain samples of Group B varieties, gluten strength increased by 9 units on the VDK scale over 12 months under controlled conditions, while under uncontrolled con-

ditions, gluten strength increased for up to 9 months and subsequently decreased by 2.0–3.7 units on the VDK scale.

The gluten quality of the Group B grain samples was suitable for bread baking, and further storage was not recommended. The quality of grain with weak gluten improved during storage under controlled conditions, and its quality consequently increased.

The gluten quality in flour, compared to that in grain, increased slightly by an average of 4 units on the VDK scale. The change in the quality of flour gluten during the storage of soft winter wheat varieties of Group A under controlled conditions strengthened slightly and gradually from 96 units on the VDK scale to 94 units on the VDK scale by the 6th month, and in the following months, it weakened slightly compared to the previous ones (by 1.0–1.3 units on the VDK scale). Under uncontrolled conditions, during the first months of storage, gluten strength increased by an average of 3 VDC units over 2 years, followed by a decrease of 0.7–1.7 VDC units compared to the first month of storage.

In flour made from Group B wheat varieties, gluten strength increases slightly and gradually under uncontrolled conditions, and by the 12th month of storage, it had increased by 5.3 units on the VDK scale. In storage, gluten strength increased by 4.7 units on the VDK scale during the first month and remained unchanged thereafter. Gluten quality in flour was stronger compared to grain, averaging 4.7 units on the VDK scale for Group A and 2.0 units on the VDK scale for Group B.

Thus, based on our research, it can be concluded that storing grain with weak gluten – provided the grain is not damaged by the shell bug – should be carried out under controlled temperature conditions, while grain with strong gluten can be stored in a silo, as this is more cost-effective.