

**CHEMICAL AND PHYSICAL QUALITY PARAMETERS OF SPRING
DURUM WHEAT DEPENDING ON SEEDING RATE AND WIDTH
BETWEEN ROWS.**

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Formulation of problem. Grain of durum wheat and its products is a source of protein, vital amino acids, carbohydrates, vitamins and mineral elements extremely useful to humans.

Hard wheat, in compare with soft, less shed its grain, affects by diseases and pests, is more resistant to lodging. On the fertile soils, with compliance of agricultural technology, yields are higher and more stable. However, on soils with average fertility is inferior on yields. This is one of the main reasons of unpopularity durum in Ukraine and in result - manufacture pasta mainly from soft wheat flour and imported durum wheat.

In the global agriculture crop area under durum wheat in the last 15 years was increased from 15.5 to 18.3 million hectares, what is about 5.7 percent of total world wheat production. Production of durum wheat grains over the years were at 30-35 million tons.

To ensure competitiveness of domestic grain production at domestic and foreign markets of grain, including soft and hard wheat, the priority is a quality and safety of products. On thinks scientists and experts, grain quality - the second harvest.

Analysis of recent research and publications in which was started solution of the problem. It is significant that in recent years the share of wheat (3-4th grade) in many regions of Ukraine does not exceed 25%. And according to official data, the share of bread-grain wheat in total volume of grain this crop is 54%, or about 6 million tons. The quality of coarse grains is low also, what leads to higher consumption. Due to this situation the government was forced to import spring wheat for improving bakery production and by government regulations, even, allowed to produce flour from wheat of 5th and 6th grades. Total

proportion of bread-grain wheat reached 3.5 million tons, of which food use is 3.3 million tons, including for producing bakery products - 1.8 million tons for pasta - 70 thousand tons. In addition to low yields in some years, instability of yields and gross yield, a big problem every year is the poor quality of significant amount of wheat, which does not correspond to requirements of food grains, what is causes to low prices on it as on domestic market and on its export to foreign markets as well.

One of reasons for delays was the discrepancy of our grain wheat standard to foreign. Therefore, was emerging a question about developing a new standard for wheat, which would be more harmonized with international standards for grain of this crop. Was developed a new standard of Ukraine ISO 3768: 2009 "Wheat. Requirements specification ", which entered on force 1 July 2009.

The competitiveness of production in market economy gets a particular relevance, especially in connection with Ukraine's accession to the World Trade Organization, and the openness of our economy and increasing competition in the market.

Despite the fact that in recent years volume of Ukrainian grain exports exceed imports, it must be said that it growing due higher prices (50%) and because of the increasing of physical volumes (about 30%).

However, given the fact that prices for grains are characterized by significant uncertainty, we should not expect continuous growth of export price indices. Particular attention should be paid to improving competitiveness of grain products, including improvement of its technical and quality level.

Purpose of research was to establish effect of different seeding rate and row spacing on chemical and physical quality activities of durum spring wheat, first to determine effect on formation of grain products in order to obtain high-quality grain.

Materials and methods of research. Research was conducted in 2012-2014's at experiment of department of crop production in NULES of Ukraine "Agronomic Research Station" (v. Pshenychne Kyiv region). Scheme includes experiment to determine the impact of main fertilizer and foliar feeding

with nitrogen and micronutrients on yield and grain quality of spring durum wheat. Soil research area - a typical low humus black soil. Humus content in topsoil 4,3-4,5% availability by easy hydrolyzed nitrogen - average, exchangeable phosphorus - above average, exchangeable potassium - average. Preceded - soybean. Area of elementary lot - 60 m², of calculated - 30 m², quadruple repetition of experiment, the systematic placement options.

Results of research. In experiment with determining effect of the width between rows and seeding rate on protein content in spring durum wheat the greatest influence had abiotic factors. In our experiments among observable elements of growing technology greater impact on protein content on spring durum wheat of variety Harkivska 27 had seeding rate.

Seeding rate reducing from 6.0 to 3.0 million seeds / ha provides increasing of protein content in grain from 12.9 to 15.1% (2.2%), and with determination of optimal row spacing - only 0.6%.

Wet gluten content in grain at different seeding rates and row spacing was observed the same patterns as protein content. So, if seeding rate reduction from 6.0 to 3.0 million seeds / ha provide increased yield of wet gluten on 1.8% (from 30.9 to 32.7%), for determining of optimal row spacing - only 0.3%.

Grain quality indicators are more changes under the influence of abiotic factors. The greatest influence of weather conditions on natural grain weight is on the X-XII stages of organogenesis, when forming the linear dimensions of grain, its chemical composition. High-grain-unit wheat grains have mass not less than 785 g / l, middle-grain-unit - from 725 to 765 g / l, low-grain-unit - below 725 g / l. So, if seeding rate reduction from 6.0 to 3.0 million seeds / ha ensured increasing of grain-unit of wheat on 14 g / l (from 748 to 762 g / l), determination of optimal row spacing - only on 8 g / l. For full specifications of technological properties of spring durum wheat should determined grain vitreousness, which is the one of most important indicators of grain quality. On vitreousness influenced both studied factors. Significant decrease of vitreousness was observed with increasing seeding

rate from 3.0 to 6.0 million seeds / ha from 71 to 54%. Row spacing had less impact on this figure, and was in range from 60 to 66%.

Conclusion. The highest protein and wet gluten content in spring durum wheat in all years of research was with width between rows 12.5 cm and lower sowing rate. Exit of protein was also the largest with this width, but with seeding rate 5.5 million seeds / ha. This figure increased in comparison with control variant (row distance 12.5 cm seeding rate 4.5 mln. seeds / ha) from 0.499 to 0.516 t / ha. vitreousness and actual weight was increased with row width 12.5 cm.