

AGROBIOLOGICAL EVALUATION OF THE CULTIVATION OF VARIETIES OF WHEAT

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Annotation: The varietal potential of *Triticum aestivum* L. was selected in the State Scientific Establishment «Agricultural research center «Donskoy» at the experimental site of the laboratory for breeding and seed production of winter soft wheat in the Zernograd district of the Rostov Region using the predecessors of pure steam, peas, corn for grain, and sunflower in 2014-2018. Study 12 varieties of winter soft wheat (*Triticum aestivum* L.) Don selection: Don jubilee, Don 93, Don surprise, Tanais, Aksinya, Chef, Ermak, Lydia, Caprisulya, Lilith, Beauty of the Don, Etude. The reactions of varieties to precursors in crop rotation were studied. The height of plants, the weight of 1000 grains, the yield of varieties, the profitability of production were estimated. In the conditions of the southern zone of the Rostov region we recommend to grow varieties with high profitability Ermak and Lydia after a field free of crops; Chef after corn; Beauty of the don and Lilith after peas. Varieties Ermak, Lydia, Lilith, Beauty of the Don after sunflower with a production profitability of not less than 59%. Research materials can be used in the field of agronomy.

Keywords: *Triticum aestivum* L., variety, agriculture, profitability.

Winter wheat has a leading place in grain production, both in Russia and in the Rostov region, where it annually occupies 2-2,5 million hectares. Wheat is the basis of agricultural production. The stability of the gross grain harvest of this crop is determined by the creation of high yielding varieties [1].

The potential yield of agricultural crops shows the possibility of increasing their production in the future. In modern climatic conditions, the yield of wheat can be increased by an average of 70%. In the North Caucasus, its yield is close to the climatic maximum due to large areas of sowing in the Krasnodar and Stavropol territories, Rostov and Volgograd regions [2-3].

This should be preceded by a comprehensive assessment of new varieties in specific conditions [1-4]. In this regard, to determine the suitability of winter wheat varieties to soil and climatic conditions of the southern zone of the Rostov region, we conducted their assessment on the main economic and biological characteristics - this is of urgent importance.

Scientific novelty of the research: the results of our research complement the research of previous years and make it possible to comprehensively use them in production when choosing a variety of winter wheat from the point of view of environmental feasibility and economic efficiency.

Objects of research: 12 varieties of winter soft wheat (*Triticum aestivum* L.) Don selection: Don jubilee, Don 93, Don surprise, Tanais, Aksinya, Chef, Ermak, Lydia, Caprisulya, Lilith, Beauty of the Don, Etude [5].

Scientific work was carried out at the experimental site of the laboratory of selection and seed production of winter soft wheat in 2014-2018. Ermak (S*) was used as a standard. Field experiments, observations and records were conducted in accordance with the methodology of the State test (1989) and the methodology of field experience.

Experience 1. The predecessor - field is free from crops.

Varieties of winter wheat: Don jubilee, Don surprise, Tanais, Aksinya, Chef, Ermak (S*), Lydia, Lilith, Beauty of the Don, Etude.

Experience 2. The predecessor – peas.

Varieties of winter wheat: Don surprise, Tanais, Chef, Ermak (S*), Lydia, Lilith, Beauty of the Don, Etude.

Experience 3. The predecessor - corn to grain.

Varieties of winter wheat: Don 93, Don surprise, Tanais, Chef, Ermak (S*), Lydia, Lilith, Beauty of the Don, Etude

Experience 4. The predecessor – sunflower.

Varieties of winter wheat: Ermak (S*), Lydia, Lilith, Beauty of the Don.

Most varieties of winter wheat (*Triticum aestivum* L.) are medium-early ripening. The early period is characterized by a variety of Aksinya. Etude is an early-maturing variety. By the end of the growing season, the highest height of plants in the years of experiments was in varieties Don 93, Caprisulya after corn for grain (108 and 97 cm). The lowest plant height was observed in varieties Don jubilee on the field is free from crops Ermak, Beauty of the Don and Ermak after sunflower (81-83cm).

The heaviest grain was obtained from the variety Lydia for a couple, the weight of 1000 grains was 46,6 g. Etude and Beauty of the Don were inferior to this indicator – 45,5 g. The lowest weight of 1000 grains was formed by the varieties Tanais (42 g) for corn for grain. The highest yield in the years of experiments was in varieties Ermak and Lydia in the field free from crops (9,73 and 9,74 t/ha, respectively), the lowest in the variety Don jubilee-7,79 t / ha.

Variety Chef after corn for grain formed a yield of 8,57 t/ha, exceeding the standard by 0,9 t/ha. Varieties Don 93, Donskoy surprise and Tanais in this link of crop rotation yield was below the standard by 0,18 - 0,15 t/ha. In the pea - winter wheat crop rotation link, the highest yield was in the varieties Beauty of the Don (8,69 t/ha) and Lilit (8,64 t/ha), exceeding the standard by 0,11 t/ha. According to the predecessor of sunflower, the yield of Lilit, Lydia, Beauty of the Don and Ermak varieties was 6,38, 6,46, 6,45 and 6,41 t/ha, respectively.

Varieties showed the best adaptive properties to growing conditions: after the field free of crops - Ermak and Lydia, after corn - Chef, after peas - Don and Lilith, after sunflower - Lydia, Beauty of the Don and Lilith. Statistical analysis of winter wheat yields showed a significant increase in yields of varieties Don jubilee, Don surprise, Tanais, Aksinya and Etude after the field free of crops. After corn, a significant increase in yield was in the varieties Chef, Lydia, Lilith, Beauty of the Don, Etude and Caprice. After peas, there was no significant increase in yield compared to the standard, and a decrease in the varieties of Tanais and Don surprise. After sunflower, the yield of wheat was within the error of experience. Cultivation of Ermak and Lydia varieties after a field free of crops is highly profitable-86%. After corn, the high profitability of the variety was 98%, more than the standard by 13%; after peas - Beauty of the Don and Lilith - 98 and 99%, respectively. On the predecessor sunflower profitability on grades varied from 59 to 60%.

In the conditions of the southern zone of the Rostov region we recommend to grow varieties with high profitability Ermak and Lydia after a field free of crops; Chef after corn; Beauty of the don and Lilith after peas. Varieties Ermak, Lydia, Lilith, Beauty of the Don after sunflower with a production profitability of not less than 59%.

References:

1. Don wheat: productivity and quality of grain-competition and varietal diversity [Electronic resource] / M. M. Kopus, E. V. Ionova, D. P. Dorokhova, K. A. Miroshnikov // Agrosnabforum. 2018. No. 6 (162). Pp. 62-64. URL: <https://elibrary.ru/item.asp?id=35643789> (date of treatment: 05.12.2019)

2. Implementation of the genetic potential of soft wheat varieties under the influence of environmental conditions: modern opportunities to improve the quality of grain and bakery products (review) [Electronic resource] / E. K. Khlestkina et al. // Agricultural biology. 2017. T.

52. No. 3. Pp. 501-514. URL: <https://elibrary.ru/item.asp?id=29676758> (date of treatment: 05.12.2019)

3. Savin I. Yu. Climate potential of winter wheat yield in Russia [Electronic resource] / I.Yu. Savin, V.S. Stolbovoy, N.V. Savitskaya // Russian agricultural science. 2017. No. 3. Pp. 17-20. URL: <https://elibrary.ru/item.asp?id=29160063> (date of treatment: 05.12.2019)

4. Usyk, L. O. Ecological testing of winter wheat varieties bred at the institute of irrigated farming of the Ukrainian national academy of agricultural sciences in Tigkeu [Electronic resource] / L. O. Usyk, H. H. Bazalyi, N. D. Kolesnykova // Plant Varieties Studying and Protection. 2015. No. 1-2 (26-27). Pp. 77-82. URL: <https://elibrary.ru/item.asp?id=25081897> (date of treatment: 05.12.2019)

5. Federal state budgetary institution «State Commission of the Russian Federation on testing and protection of selection achievements» [Electronic resource]. URL: <http://reestr.gossort.com/reestr/search> (date of treatment: 05.12.2019)

