



COMPARATIVE EVALUATION OF BIOMORPHOLOGICAL FEATURES OF WINTER BREAD WHEAT GENOTYPES AND NEW CREATED SPECIES

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Article Received on
11 January 2018,

Revised on 31 Jan. 2018,
Accepted on 21 Feb. 2018,

DOI: 10.20959/wjpps20183-11164

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ABSTRACT

The research was conducted on 50 bread wheat samples. There are three samples among the bread wheat varieties (Galaba, Girmizy, Nurjahan), these are first used in our research. It has been noted that there is a multifunctional correlation between 15 features morphological features. Clusters were obtained by statistic analysis based on results.

KEYWORDS: *Triticum aestivum* L., seed quality, genotype, cluster, correlation.

In order to meet the growing demand of the people for bakery and bakery products, development of agriculture is one of the most important issues. Wheat is the main human food crop and is rich in nutrients.

As in many countries, in our republic bread is the main source of food for the population and is a key part of the people's demand for herbal protein. Wheat is considered as 35% of the main food source of people, providing almost 20% of the world's nutritional demand.^[1] In our republic, cereals are grown in all regions - irrigated, non irrigated and mountainous zones. From this point of view, one of the main tasks of the breeders is to create appropriate varieties for each soil-climate condition.

From the time of wheat cultivation, increasing the grain productivity was the main objective of selective breeding. Variety is one of the key factors in continuously obtaining high yields from cultivated crops.^[2] According to A.Juchenkova (2005), from the various agro-technical measures, used to raise productivity, variety plays the key role.^[3] In recent years, in order to

strengthen the food supply and livestock fodder supplies, a number of state programs, laws and decisions have been adopted in our country. Therefore, in our modern times, which are characterized by acute and anomalous climatic variability, the creation and application of cereals varieties with stable yield and grain quality is urgent and important.^[4]

In accordance with the theme, in the Azerbaijan State Agricultural Institute (ASAI) it was conducted one of the major researches "On creation, introduction and distribution of new, quality and ecologically adaptable varieties of wheat by enrichment and hybridization of germplasm of wheat on the basis of local and introduced samples", under irrigation conditions it has been conducted the researches on selection of bread wheat in Ganja. Despite the high productivity of some introduced varieties, the reasons for late adaptation of these genotypes to local conditions are different (lack of soil moisture during vegetation, hot, dry summer, mineral elements and humus-free, saline soils, etc.).

The sharp change of climate indicators from the average perennial norm - excessively soft, moderate winter transition, intense rainfall and low temperatures during the summer and early summer, high temperature during ripening period, the shortening of waxing ripening period in the wheat during the ripening season affect the quantity and quality of the product. Most samples with high productivity are selected and introduced from obtained selection materials of ICARDA, CIMMIT, and etc. as a result of cooperation with international organizations.

In order to increase productivity and quality new innovative technologies, it is important to apply agro technical methods, mineral and organic fertilizers against pests and diseases etc. Establishing varieties with high genetic potential, resistant to biotic and abiotic stress factors, favorable to the conditions for obtaining high quality products from the fields under recorded conditions, is one of the major challenges of the breeders.^[5]

According to the conditions of each region, our country has different zones for its natural climatic conditions. To ensure high yields in those regions it is advisable to cultivate varieties.

The main purpose of the research is to compare of 47 varieties of bread wheat, held in the National gene and evaluation of three types of new perspective species adapted to Azerbaijan and the extension of sustainable varieties.

MATERIAL AND METHODOLOGY

Study was conducted on the 46 bread wheat varieties, grown in the scientific research base of Genetic Resources University and 3 new created bread wheat varieties of the Azerbaijan State Agrarian University (Galaba, Girmizy, Nurjahan). Genebank samples have been collected from different regions of Azerbaijan. The samples used in the experiment, have been sown with the "Randomization" design in two repeats with 50 seeds in each sample. Seed spacing was 4 cm and the distance between the rows was 20 cm. Records have been made on 15 morphological symptoms (plant height, number of common stems, and number of productive stem).

Acquisition of structural elements of the plant was carried out on the basis of appropriate methods. Statistical analysis was calculated and the cluster diagram was given by the SPSS computer program.

RESULTS AND DISCUSSION

In the research, structural elements of productivity of 46 bread wheat genotypes taken from the gene bank of Genetic Resources Institute of ANAS and 3 new created wheat varieties, planted at the Scientific Research Base of the Azerbaijan State Agrarian University have been studied and correlation analyzes on 15 features have been performed.

There is enough information on correlation relations between number of productive stems and the total number of stems (0.969 **), the weight of spikes and number of productive stems (0.831 **), height of plant and number of internodes (0.410 **), length of peduncle and plant height (0.778 **).

Significant correlation dependent has been determined between length of the plant and weight of main spike (0,379 **), 1000 kernels weight and main spike weight(0.455 **), the number of total stems and spikes weight in the plant(0,773**), number of all spikes weight and seeds in the main spike (0,353 **), number of spikelets in the spike and length of main spike (0,652**), number of spekelets and the main spike weight (0,535**), number of spikelets in the spike and the number of kernels in the main spike (0.523 **), the number of kernels in the spikelet and number of kernels in the main spike (0.440 **), the length of the seed and the main spike weight(0.386 **), kernel length and 1000 seeds weight (0.458 **). There is also a significant negative correlation among the signs, including the length of the peduncle and the

number of seeds in the main spike (-0,269 *). There is also a negative correlation between the 1000 seed weight and the number of productive stems (-0,245 *).

It should be noted that the number of grains is of great importance for breeding.^[6] In our newly explored Nurjahan, Girmizy and Galaba varieties, one of the structure elements of productivity, 1000 seeds weight and the number of kernels in the main spike have been of interest. Thus, in the Galaba and Girmizy wheat varieties, the 1000 seeds weight was 38.8 grams and 39.6 grams (correspondingly), the number of kernels in the main spike was 35.2 and 36.2 (respectively), this addiction was normally. However, there was a difference between these figures in variety of Nurjahan, with 1,000 seeds weight was 51.2 grams and number of grains in main spike was 35.4. Taking into consideration that the average figure was 39.7 grams and 39.4 in variety of Nurjahan, compared to others this dependence was different. So varieties of Guneshli and Girmizy gul were distinguished. In the cluster analysis, varieties of Girmizy gul and Nurjahan were in the same (8th) cluster, but variety of Guneshli fell to the fourth cluster. When we focus on the location of new varieties in cluster analysis, we observe that they belong to different clusters. Thus, varieties of Gizmizy bughda and Galaba have been ranked in the closest clusters (4th) due to several factors. The variety of Nurjahan is relatively in the 8th cluster.

Statistically significant differences in yield, length of spike and 1000 seeds weight were revealed. Elements, determining the yield are in a rather complex correlation between each other and with the grain yield.

It is known that there are complicated correlations among the features of yield, but there are many factors affecting to these correlations. In the breeding process, each of these conditions requires a thorough study, as it is of particular importance. In research, correlation relationships amongst many important features have been statistically accurate.

LITERATURE

1. Sozinov A.A. Harvest and quality of grain. M.: Znaniye, 1976; 63-68.
2. Tarchevsky I.A. Basic methods and some results of a comprehensive study of production processes in wheat / I.A. Tarchevsky, V.I. Chikov, Yu.E. Andrianova, A.P. Ivanova, N.N. Maksyutova. Physiological and genetic basis for increasing the productivity of cereals. Moscow: Kolos, 1975; 95-102.

3. Zhuchenko A.A. Adaptive farming. / Fundamentals of agricultural systems in Stavropol. Under the general editorship of VM. Penchukova and G.R. Drozhko. Stavropol, 2005; 73-113. Samofalova N.E, Ilichkina N.P, Lonova E.V, Dubinina O.A Amazonka- a new environmentally resistant variety of winter durum wheat. // Grain economy of Russia, 2010; 3: 5-9.
4. Aliyev J.A., Talai J.M., Musayev A.J., Ahmadov M.G. The contribution of the Agricultural Institute to the country's food security //Scientific proceedings of ASRIA. Bakı: Muallim, 2012; 6-12.
Ahmadov M.G., Hasanova G.M., RustAmov Kh.N., İbadov V.F., Ibrahimov E.R., Musayev A.J. Productivity and quality indicators of wheat learned in the competitive variety testing, XXIV (2013) v, Bakı: Muallim, 2013.
5. Aliyev J.A. Physiological bases of wheat breeding tolerant to water stress. Proceedings of the 6 th International Wheat Conference, Budapest, Hungary, 2000. In: Wheat in a Global Environment (Z.Bedo and Lang L., eds.) Kluwer Academic Publister, Dordrecht-BostonLondon, 9: 693-698.
6. Ear grain content, the mass of the grain of the ear and the 1000 seeds weight in increasing the yield of winter bread wheat. IN AND. Kovtun, doctor of physical and mathematical sciences, L.N. Kovtun, Ph.D. on agricultural sciences, Stavropol Scientific Research Institute Of Agriculture.