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To Study the Botanical Characteristics of the Plant, its Resistance to Stress Factors (Biotic, Abiotic) in Order to Preserve the Gene Pool of Local and Introduced Barley and Wheat Varieties in Soil-Climatic Conditions of the Nakhchivan Autonomous Republic

Abstract

The main goal of the study is to study the ecological origin, lifestyle, species diversity of wheat and barley samples, which are of strategic importance, ensuring the economic security of the country, forming the main and irreplaceable food of people. In the soil-climatic conditions of the Nakhchivan Autonomous Republic, intensive technology elements (fertilizing, soil cultivation, selection of varieties, sowing period, sowing method, sowing norm, irrigation methods and duration, plant protection) are applied both individually and in a complex manner. Biological characteristics, assessment, their comparative characteristic and continuous study of high-quality and productive varieties of wheat and barley, suitable for local soil and climatic conditions, resistant to unfavorable factors of the external environment.

Keywords: *research, yield, sowing rate, grain production, varieties, stress factors*

Introduction

Grain crops are of great importance for providing the population with food, livestock with feed and industry with raw materials. Therefore, increasing grain production both in the world and in our republic is one of the most important problems for modern times. In this regard, in order to meet the needs of the population in food, the volume of grain production should be increased and its quality improved. It is very important to constantly carry out appropriate measures to fully meet the needs of the population in food products. In order to fully meet the needs of the population in our Republic, at the expense of our own production, it is necessary to increase the productivity in grain production. Therefore, in increasing the production of grain, first of all, it is extremely important to create new high-yielding, dormancy, disease and pest, drought and frost-resistant, high-quality varieties and to cultivate them in the necessary agrotechnical manner by applying them to farms.

Research

Research works were carried out in the direction of “study of botanical characteristics of plants, resistance to stress factors (biotic, abiotic) for preservation of gene pool of local and introduced barley and wheat varieties in soil-climatic conditions of Nakhchivan Autonomous Republic” on theoretical and application issues of genetics, selection, seed production and Agrotechnology of plants for the development of Agrarian science, as well The trial experiments, the study of which was carried out by Academician H. Aliyev. It was carried out in the field of practice of Nakhchivan Scientific Research Institute named after Aliyev on irrigated Gray lands, in irrigation conditions. As research material, varietal samples of 8 barley, 9 durum wheat and 41 soft wheat crops were taken.

Local barley, durum wheat, soft wheat samples included in the study were obtained mainly from Azerbaijan ETASI, tartar BTB, Gobustan BTS, Jalilabad BB, Absheron BTS experimental stations and began to be studied in soil-climatic conditions of Nakhchivan Autonomous Republic.

In accordance with the methodology, phenological observations and biometric measurements were carried out on all varieties separately, structural and qualitative analyzes of the studied varietal

samples were studied. The vegetation period of the research experiments was 245-255 days, of which 75 days fell on the day of plant growth (Hamidov, 2008, p. 20).

Each variety of the samples was evaluated with 5 points of dormancy, 5 points of frost and drought resistance, 9 points of disease resistance. In alternating plantings, it is necessary to take into account the placement of winter wheat after better predecessors, ensuring a weakly acidic and neutral reaction of the soil environment, timely implementation of agrotechnical measures. According to the results of our scientific research, the best predecessor plants for winter wheat in soil-climatic conditions of Nakhchivan Autonomous Republic are perennial grasses corn and legumes. After such predecessors, the site must be plowed to a depth of 25-30 cm.

As a result of the research, on October 20, 2023, the arable land was plowed to a depth of 25-30 cm and collected. According to the scheme drawn up on October 21-22, 2023, experimental spots were developed in dimensions of 66 pieces of 2 m² da (2 x 1). Each prepared lakh was divided into 6 rows, the distance between the rows was 16.5 cm. The distance between each spots was 50 cm, the distance between the stripes was 100 cm. (Dospekhov, 1985, pp. 6-7).

According to the indicators of our research, one of the most important agrotechnical measures for obtaining high yields of winter wheat and barley crops is the correct determination of the sowing period. The optimal sowing period for the lowland zone of the Autonomous Republic is the third decade of October. The sowing rate depends mainly on the purity of the seed, the percentage of germination, the mass of 1000 grains, the duration and method of sowing, the provision of soil with nutrients, the biological characteristics of the variety, etc. depends.

On October 25, 2023, seed varieties were treated with Rubin 2 DS fungicide to make them resistant to pre-sowing diseases and each 2 m² (1 x 2) sized spots were sown with 50 grams of barley and 60 grams of wheat seeds. Experimental test plantings were carried out in the size of 2 m² (2 x 1), in 2 repetitions 8 barley varieties in 32 m², in 1 repetition 9 durum wheat varieties in 18 m², in 1 repetition 41 soft wheat varieties in 82 m². Total: on 132 m², experimental plantings of 50 varieties of wheat and 8 varieties of barley were carried out. After sowing, the experimental spots are watered (Dospekhov, 1985, pp. 10-11).

One of the most important measures in the cultivation of winter wheat and barley crops on the basis of intensive technologies is the application of fertilizers. From winter wheat high and to obtain a quality product, fertilization must be correctly determined depending on the ratio of NPK to each other, soil-climatic conditions, predecessors, the degree of soil supply with fertilizers and the biological nature of the variety. So, at the expense of the active substance, potassium should be given under the Plow by 60 kg, phosphorus-by 90 kg. At the expense of the active substance, nitrogen should be supplied under 20 kg of plowing, and 40 kg in the form of two feeding in the spring.

In 2024, in the third decade of April, nitrogen fertilizer was introduced as a feeding norm of 2 grams per 2 M80 spots.

Irrigation works in the Autonomous Republic are carried out by furrow method. During such irrigation, both water is saved and the site is evenly moistened. Timely and high-quality plant irrigation contributes to high yields. In the conditions of the Autonomous Republic, it is important to provide grain with 3 vegetable waters. Growing water should be given during periods when the grain has a greater demand for water. This demand is greater in the phases of the end of the Bush, the beginning of the exit to the pipe, hyacinth and grain filling.

In the course of our research, in April 2024, experimental spots were given the first growing water in early spring, the second growing water was carried out in the pipe exit phase of the grain (in the second decade of may), and the third watering was carried out in the spike and grain filling phase (in the second decade of June).

In the experimental testing area where the research was carried out, from the 3rd ten days of December 2023, until the 3rd ten days of March, phenological observations were started after the plants completed their calm period. An observation Journal has been developed for the registration of phenological observations. As a result of phenological observations of wheat and apa plants, biometric measurements were carried out in the direction of plant development, it was found that

the height of plants is on average 95-100 cm, the development of the root system of plants is 20-25 cm, the formation of 8-12 hyacinths from each grain was observed. The plant was examined under a microscope on plant samples brought from the experimental field in the conditions of laboratory for the study of diseases and pests, which were in the phase of hyacinth formation (pollination phase). Consequently, no diseases or pests were observed in the plants (Gurbanov, 2017, pp. 15-16).

On May 03-10, 2024, in accordance with the individual work plan, many processes taking place in the direction of the development of plants on each variety in the experimental trial area phenological observation studies have been continued to determine.

On May 10, 2024, as a result of phenological observations carried out at the experimental test site, plants were observed to be in the tube exit phase. The plant was not affected by biotic, abiotic factors. On average, the height of the plants was 100-105 cm, the length of the spike was 10 cm. On May 20, 2024, phenological observation work was continued at the experimental trial planting site (Musayev, 2008, p. 88).

It was found that as a result of rains in May 2024, hyacinths were not broken, bushes were crushed and bushes were not lying in the experimental field as a result of regular rains in May 2024, excessive growth of weeds was observed in the experimental field.

To obtain a high yield of grain crops, weed control measures must be carried out. If the control measures are carried out correctly, the yield is 3-5 sen, the amount of gluten in the grain is 2.0-2.5 %, and the protein content is 0.5-1.0 %.

In the conditions of the Autonomous Republic, wild radish, sow thistle, field Buttercup, Compass milking and others are more common in winter grain fields. For chemical control, Hectafermine should be applied at a rate of 2 liters/ha with a working solution of 300 liters, when the height of the weed is 10-12 cm, or by spraying until the period of tubular extraction of the grain (Aghayev, 2017, p. 43).

In the third decade of May in 2024, work was carried out on the intermediate distances of the experiment and cleaning of the surrounding areas from weeds, chemical control measures were carried out with the consumption of 2 liters of working solution per 300 liters of Hectafermin per liter/ha.

Before harvesting, plants and hyacinths on plants in 2 m² (2 x 1) spots were counted and recorded in the field journal. In order to avoid grain loss, harvesting should be completed as soon as possible and without loss in dry weather, when the grain of the grain has a moisture content of 16-17 %.

In the third decade of June in 2024, barley and wheat varieties were harvested at the experimental test site and tied in the form of tailors by varieties separately. Harvesting was done manually. From the tailors we picked up on June 24-25-26, 2024, the final results of the test experiments we carried out by weighing the product and converting it to hectares were determined.

In 2024, in the first decade of June, the tailors harvested from the experimental test site were beaten with molotilka and packed in bags by varieties separately (Dorofeyev, 1977, p. 27).

Conclusion

The final results of the experiments carried out by the tailors taken from the experimental test site, the length of hyacinth, mass of grain in Hyacinth, number of grain in Hyacinth, mass of 1000 grains, weighing of the crop and converting it to hectares were determined by the following indicators: study of botanical characteristics of plant for preservation of local and introduced wheat.

The productivity of varietal samples was between 25 sen and 93 sen.

Low yield barley varieties

Karabakh – 33 48 sen
Karabakh – 32 24,7
Buta – 84 sen
Karabakh – 22 93 Sep
Jamil – 67,8 sen

Upper yield barley varieties

Garagilchigli – 93 sen
Sep Ugur – 88 Sep

Low yield durum wheat varieties

Tartar Kahraba – 47,5
Precious 2 – 17 47 sen
Zangezur – 74,7 sen

Upper yield durum wheat varieties

Sen Parzivan – 1 92 sen
Alinja – 78,5 sen,

Low productivity soft wheat varieties

Sunny – 32 sen
Sanzor-Gobustan – 44 sen
White – 97,5
Sustenance – 84 93,2

Upper yield soft wheat varieties

Dignified – 93 sen
Mirbashir – 72 sen

Research and experimental works of wheat and barley varieties samples in field conditions the study of their characteristics, the main issues and directions of varietal and seed control, varietal control – the methods of field approbation and its implementation, pre-harvest assessment of grain fields, importance of the variety in agriculture, their types, species diversity and varieties, observation and experimental methods in Variety control, seed control, methods for determining seed quality indicators, biochemical and aerodynamic characteristics of seeds, damage to seeds during beating, methods for classifying and determining damage were carried out (Dospekhov, 1985, pp. 17-19).

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