EVALUATION OF DROUGHT RESISTANCE DURING SEEDS OF TRITICALE VARIETIES

Amanov Oybek Anvarovich,
Doctor of Agricultural Sciences, professor.
Xidirov Jasur Ernazarovich,
PhD student.
Scientific Research Institute of Southern Agriculture

Abstract: In this article, 11 varieties of triticale were evaluated for drought tolerance in the laboratory, and 2 highly resistant varieties were selected and applied to selection work.

Keywords: Triticale, variety, drought, tolerance.

Introduction. According to R.O. Oripov, N. H. Khalilov, triticale seeds begin to germinate at 3-5 ° C as the temperature rises, the germination period accelerates. The average optimum temperature for germination is 20-22 ° C. The seeds germinate in 6-8 days after sowing. When the temperature rises above 35 ° C, the seeds stop germinating. Autumn triticale can withstand frosts of 18-20 ° C. Frost tolerance is higher than that of winter wheat, and spring forms in Uzbekistan. In Uzbekistan, triticale is mainly harvested in autumn and produces 2-6 stems per plant. When the thickness of the tuber is small, the accumulation increases. [1,2]

According to DT Abdukarimov, triticale in many cases surpasses wheat in yield. However, it is difficult to combine the multiplicity of rye with the multiplicity of grains typical of wheat. The ears of triticale are long, but the number of grains in the ears is less than that of wheat. [3,8]

In the agriculture of the southern arid region of the country, the problem of drought tolerance of crops in recent years has become a factor that increases the likelihood of drought and requires the immediate development of new crop varieties that are resistant and tolerant of drought. In this regard, the use of triticale as a drought-resistant crop is cost-effective, as the new cereal crop, which is compatible with traditional grain farming techniques, combines the valuable qualities of triticale wheat and rye. Triticale can be used intensively in the selection of new genotypes based on an in-depth study of existing diversity in the germoplasm. Obtaining drought-resistant, high-yielding varieties of triticale is very important for agriculture in our country and around the world.

In the face of the growing science of the new Uzbekistan, the optimal solution to reduce the impact of grain problems on the economy is to achieve high yields by growing crops with higher relative resistance than the current crop.

Triticale is a new and underdeveloped cereal crop. Triticale - a promising crop for baking flour, starch, malt, balanced and nutritious fodder, excellent grain hay, biofuels - is not a complete list of crop efficiency. Triticale also exhibits properties not found in the original varieties of wheat and rye.

Abundance of protein and individual amino acids is a common fodder crop due to its resistance to disease. Triticale is one of the greatest achievements of genetic selection. The water retention capacity of triticale leaves is much higher than that of other cereals.

Compared to other related cereal crops, triticale varieties have a higher potential for cultivation in arid zones. An important step in the selection and genetic work in the selection of drought-tolerant varieties is a comprehensive assessment of genotypes according to their genetic, physiological, morphological and biochemical characteristics.

For this purpose, we conducted a physiological assessment of drought tolerance of 11 varieties of triticale.

Experimental Methodology. Seed germination was performed in sterilized Petri dishes, pre-filled with filter paper, in the amount of two cups for control and three cups for each experiment for one variety. A thermostat cabinet, cylinders, pipettes, and various utensils were used for germination.

Results. Analysis of triticale seed germination under drought conditions, long-term weather conditions with constant high air temperatures and low rainfall reduces soil water reserves, which is especially dangerous for cereal crops. This leads to the death of seeds during germination, as well as slowing down the growth and development of the root, and then the whole plant withers. Soil and air drought conditions are very common in the southern part of Uzbekistan, which makes it necessary to cultivate drought-resistant triticale varieties during the germination of seeds.

We analyzed the drought tolerance of plants during seed germination. The ability of seeds to germinate in water shortages is an important biological trait. On the one hand, it reflects a genetically determined germination capacity with a small amount of water, on the other hand, it reflects a high suction power that ensures rapid absorption of sufficient water for germination. This method allows an objective description of the relative resistance of varieties in the early stages of plant development, as well as gives an idea of the degree of resistance of growing seeds to a given stress conditions.

The seeds of the samples were placed in sterilized Petri dishes at a rate of 50 seeds per container. 10 ml of distilled water at a rate of 250 units was added to two control cups and nystatin was added to it. For the experiment (to create a pressure of 16 atmospheres), 10 ml of 17.6% sucrose solution was poured into three cups.

The prepared dishes were placed in a thermostatic cabinet at 21 0C for 5 days.

The germination rate of control seeds was more than 96%. The germination of the experimental variants was determined as a percentage of control, and according to the data obtained, the samples were distributed according to the germination percentage: Group 1 - 0-20% (unstable); Group 2 - 21-40% (weakly resistant); Group 3 - 41-60% (moderately stable); Group 4 - 61-80% (resistant); Group 5 - 81-100% (high resistance).

The work was carried out using the VIR method "Determination of relative drought tolerance of triticale in osmotic solutions by seed germination and seedling growth" (Guidelines - L., 1987. - p. 10).

According to the germination of seeds in conditions that mimic drought, all tested specimens were divided into 4 groups: weakly resistant - 2 varieties, moderately resistant - 3 varieties, resistant - 4 and high resistance - 2 varieties were found to be present. It should be noted that most of the triticale samples studied are resistant and highly resistant. Sardor and Toimili varieties were found to be highly drought tolerant.

In the sucrose solution (16 atm.) It was found that triticale, which is highly drought-resistant, has well-developed roots, and a degree of 100% fertility, is the Sardor and Nutritious varieties. These varieties have been recommended for use in the selection process as donor varieties to create drought-resistant genotypes.

Valentin and GulDu varieties belong to the weakly resistant group, the germination rate of seeds did not exceed 41%.

Conclusion. In conclusion, the germination rate of control seeds was more than 96%. The germination of the experimental variants was determined as a percentage of control, and according to the data obtained, the samples were distributed according to the germination percentage: Group 1 - 0-20% (unstable); Group 2 - 21-40% (weakly resistant); Group 3 - 41-60% (moderately stable); Group 4 - 61-80% (resistant); Group 5 - 81-100% (high resistance).) Was performed by the VIR method.

References:

1. R.O. Aripov, N. H. Khalilov Publishing House of the National Society of Philosophers of Uzbekistan "Botany" Tashkent - 2007
2. www.ziyouz.com library
3. DT Abdukarimov “Grain crop selection and seed production” Tashkent -2010. –P. 85-101
4. Graboves A.I., Fomenko M.A. Sozdanie i vnedrenie sortov pshenisy i tritikale s shirokoy ekologicheskoy adaptatsiey // Nauchno-proizv. Journal "Zernobobovye i krupyanye kultury", 2013. №2 (6) –P.41-4
5. Azizov B.M., Israilov I.A., Khudaykulov J.B. "Scientific Research in Botany." - T .: "TashDAU Publishing House". 2014. –P.105-221.
6. Amanov A. Grain crops. – T.: "Wing of thinking". 2019. - B.39-154.
7. Atabaeva X.N., Khudaykulov J.B. Botany. T. Science and technology. 2018. –P.3-407.
8. Dospexov B.A. Methodology polevogo opyta. Moscow. Agropromizdat. 1985. –P.7-255