WATER EXCHANGE PARAMETERS OF SOYBEAN CULTIVARS UNDER SALINE CONDITIONS

Khamrokulova Nargiza Kamolovna
PhD Student, Bukhara State University, Bukhara, Uzbekistan

Norbayeva Umida Toshtemirovna
Doctor of Biological Sciences, Professor,
Bukhara State University, Bukhara, Uzbekistan
E-mail: utnorboyeva@buxdu.uz

In order to obtain a stable and high-quality grain harvest from the soybean plant, it is necessary to create, and introduce into production, new, fertile, fast-growing, high-quality varieties that are resistant to adverse factors of the external environment, diseases and pests, suitable for the soil and climate conditions of each region, territory, and imported varieties. selection and planting of varieties adapted to local conditions, the establishment of their seed production system, and the improvement of agrotechnologies for growing high yields are one of the urgent tasks [1].

One of the important issues is the study and scientific justification of the technological properties of soybean cultivation and their use in the food and processing industry. The value of soybeans is the presence of all amino acids in their composition - lysine, arginine, leucine, methionine and other non-exchangeable amino acids.

It is known that the growth and development and productivity of plants depend on their genotype and environmental factors. Varieties of soybean plant require the use of agrotechnical measures adapted to the soil-climatic conditions of each region. Timely and high-quality implementation of agrotechnical activities, taking into account the biological characteristics of soybean varieties, ensures a high and stable yield of soybeans [2].

The production and reproduction of plant protein are one of the most urgent problems of agriculture. One of the main solutions to solve this problem is to rapidly increase the cultivation

of leguminous crops. Among these crops, the soybean plant stands out due to its good quality and quantity of protein.

Soybean is one of the most important sources in solving the main problem of today - protein deficiency. Because soy protein is similar to animal protein in terms of its chemical composition, great attention is paid to soy cultivation in all developed countries. A lot of scientific research and practical work on soy has been carried out in our republic. To obtain a high yield from soybeans, it is necessary to select varieties suitable for certain soil-climatic conditions and to use methods of their cultivation, taking into account their biological characteristics, in addition to creating a sufficient agro background [4].

Soybean is one of the most widespread crops in the world. According to scientists, the homeland of soy is the southeastern region of Asia. Soy has been cultivated as a food crop in Eastern countries since ancient times. Soya was planted in China 6 thousand years ago. India is the second most widespread homeland of soybean after China. Soybean has been planted in the lands around the Ganges since ancient times. Investigations show that in countries such as Japan, Korea, Vietnam, and Indonesia wild types of soybeans are not found, which means that cultivated soybeans have spread to these countries as a result of trade [3].

It has been 100-120 years since soybeans began to be planted in large areas in other countries of the globe. Over the next 30 years, soybean acreage will increase rapidly. In Japan, after rice and vegetable crops, the land occupied by soy occupies third place in terms of its size. Japan is also buying large amounts of soybeans from abroad. The grains are used for different purposes. Currently, soybean protein is used in keeping silkworms.

The artificial food made by Japanese experts consists of 67% soy protein, 2% soy oil, citric acid, B group vitamins and various other additives. In Japan, silkworms are fed five times a year, and artificial feed made from soybeans plays a major role in this. High-quality food products are also made from soybeans. Soybean varieties created in Japan differ from soybean varieties grown in other countries due to their high protein content [5].

Studying the effect of soil salinity on the physiological and biochemical parameters of soybean varieties will help to reveal the ability of these soybean species to adapt to salt stress and create

new varieties. At the same time, it is of great importance to reveal the specific characteristics of the salt stress effect on the physiological and biochemical processes of grain crops, including soybean.

Abiotic stressors have a strong negative effect on agricultural plants, reducing plant growth and productivity. Water scarcity, soil salinity, and high temperature are one of the main reasons for the decline of crop yields and food products all over the world. To obtain a high, stable and high-quality grain yield from soybeans, each region, region, soil and climate conditions have a new, fertile, quick-ripening variety. , the creation and introduction into production of varieties resistant to adverse factors of the external environment, diseases and pests, high grain quality, selection and planting of imported varieties adapted to local conditions, the establishment of their seed breeding system, and improvement of agro-technologies of high-yield cultivation are one of the urgent tasks [1].

One of the important issues is the study and scientific justification of the technological properties of soybean cultivation and their use in the food and processing industry. The value of soybeans is the presence of all amino acids in their composition - lysine, arginine, leucine, methionine and other non-exchangeable amino acids.

It is known that the growth and development and productivity of plants depend on their genotype and environmental factors. Varieties of soybean plants require the use of agrotechnical measures adapted to the soil-climatic conditions of each region. Timely and high-quality implementation of agrotechnical activities, taking into account the biological characteristics of soybean varieties, ensures a high and stable yield of soybeans [2]. The production and reproduction of plant protein are one of the most urgent problems of agriculture. One of the main solutions to solve this problem is to rapidly increase the cultivation of leguminous crops. Among these crops, the soybean plant stands out due to its good quality and quantity of protein. High-quality protein and fat in grain, food, fodder,

In order to obtain a high yield from soybeans, it is necessary to select varieties suitable for specific soil and climate conditions and to use methods of their cultivation, taking into account their biological characteristics [4]. According to scientists, the homeland of soy is the

southeastern region of Asia. Soy has been cultivated as a food crop in Eastern countries since ancient times. Soya was planted in China 6 thousand years ago. India is the second most widespread homeland of soybean after China. Soybean has been planted in the lands around the Ganges since ancient times [3].

The artificial food made by Japanese experts consists of 67% soy protein, 2% soy oil, citric acid, B group vitamins and various other additives. In Japan, silkworms are fed five times a year, and artificial feed made from soybeans plays a major role in this. High-quality food products are also made from soybeans. Soybean varieties created in Japan differ from soybean varieties grown in other countries due to their high protein content [5].

Studying the effect of soil salinity on the physiological and biochemical parameters of soybean varieties will help to reveal the ability of these soybean species to adapt to salt stress and create new varieties. At the same time, it is of great importance to reveal the specific characteristics of the salt stress effect on the physiological and biochemical processes of grain crops, including soybean.

During our experiments, soil salinity had a strong negative effect on the water retention properties of leaves of all soybean varieties studied (Viktoria, Oyjamol, Slovia, Vestochka, Nafis). Especially, as a result of the effect of salinity, drastic changes occurred in the process of water exchange in soybean varieties. In Oyjamol, Slovia, and Nafis varieties, which have a strong mechanism of adaptation to such unfavourable factors, metabolic processes are activated and they have the characteristic of quickly changing their homeostasis. Such characteristics observed in plants were noted based on the experiments, in which the changes depend on the influence of stress factors and the biological and individual properties of the varieties.

According to the data obtained during the experiments, it was found that the coefficient of stability of the level of turgor of soybean leaves is different depending on the growth and development stages of the varieties and their biological and individual characteristics. Soybean varieties with a high level of adaptation to salt have a higher value of this indicator.

In the course of the conducted experiments, the negative effect of salinity on the physiology of water exchange of all studied varieties was observed in the conditions of saline meadow-

alluvial soils. It was proved based on experiments that this negative influence is less evident in Oyjamol, Slovia, and Nafis than in the other studied Victoria and Vestochka varieties. In the course of the research, some physiological indicators related to salt tolerance of soybean varieties were determined - transpiration rate, total, the metabolic and bound water content in leaves, water storage capacity of leaves, density of cell sap, the viscosity of protoplasm of leaf cells, daytime and residual water deficit in leaves,

References

1. Мякучко Ю.П. Баранова В.Ф. Соя. М.: Колос.1994.-158 с.
2. Баранов В.Ф., Березовская С.М., Давыденко О.Г. Агрономическая тетрадь. Технологии высокобелковой сои. Краснодар: Информ Лайн, 2005. - 107 с.
3. Lowry O.H., Rozenbrough N.J., Farr A.L., Randall R.J. Protein measurement with the Folin phenol reagent // J. Biol. Chem. – 1951. –v. 193. –N1. –P. 265-275.
4. Wijewardana C., Reddy K.R., Alsajri F.A., Irby T., Krutz J., Golden B. Quantifying soil moisture deficit effects on soybean yield and yield component distribution patterns // Irrig Sci. 2018. 36: – P. 241–255.
5. Lutz J.A., Jones G.D., Hole E., B.Chemical composition and yield of soybean as affected by irrigation and deep placement of lime, phosphorus and potassium. c.f // Field Crop Abst., 28: 5626, 1973. – P. 1975.