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Growth, Development and Productivity of Shade Varieties in Medium Salt Soils

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ABSTRACT

Harmful salts in the soil, which are soluble in water, adversely affect the growth and development of plants. As a result, there is a sharp decline in productivity. With this in mind, the authors are conducting research on agro technologies for growing different shade varieties in wheat-free areas under moderately saline soils.

Keywords: shade, saline soil, legumes, Nena, Orzu, Nafis, yield, temperature, repeat crop, planting rate, seedling thickness.

Introduction

It is known that the productivity of a plant depends on its biological properties, sowing norms, planting systems, soil reclamation and agro-technical measures. Because plant species and cultivars differ in their genetic characteristics, duration of vegetation, morphophysiological properties, and hardiness, optimal agronomic techniques are used to make effective use of their biological potential.

In Uzbekistan, 20.7% of agricultural land is irrigated. Today, Uzbekistan has a total of 4.3 million hectares of irrigated land, and as of October 1, 2020, 44.7% of these irrigated lands are at various levels, including 31.0% weak, 11 9% were moderately saline and 1.9% were severely saline.

Research method

The field experiments were carried out in the conditions of moderately saline soils of Fergana region. Fergana region is located in the northern and western part of the Fergana Valley and covers an area of 7.1 thousand km^2. The region is divided into Kokand and Fergana agro-climatic districts. 70% of the total irrigated and cultivated area of the region is grassland and moderately saline gray soils, 20.8% gray soils, 5.2% gravel 2.7% meadow and 1.3% meadow-swamp soils.

The soil of the experimental field is meadow-loam, moderately saline, with heavy mechanical composition. Groundwater (sediment) is located at a depth of 1.6 - 1.8 m. Humus content is around 2%, low in mobile nitrate nitrogen, moderate in active phosphorus and satisfactory in potassium.

The experimental area was irrigated on 12–13 July after the 2020 wheat harvest, plowed to a depth of 27–28 cm using a 2-tier plow on 17–18 July, and the margins and ridges formed during driving were long. leveled using a base leveler. Before plowing, 60 kg of phosphorus and 30 kg of potassium fertilizers were applied per hectare.

Shade in practice “Orzu”, “Nafis” va “Nena” varieties studied. The seeds were treated with nitrogen before sowing. In order to study the effect of planting norms on soybean yield and quality, the experiment was conducted in 10 variants and 3 returns (Table 1). The difference between the planting options was 10 kg.

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Table 1 Experimental system

№ Var	Shade varieties	Planting rate,kg / ha	Planting system	Theoretical seedling thickness, thousand / ha
1.	Orzu	60	60x5x1	300-350
2.		60	60x40-6x1	300-350
3.		70	60x40-5x1	400-450
4.		80	60x40-4x1	500-550
5.	Nafis	60	60x40-6x1	300-350
6.		70	60x40-5x1	400-450
7.		80	60x40-4x1	500-550
8.	Nena	60	60x40-6x1	300-350
9.		70	60x40-5x1	400-450
10.		80	60x40-4x1	450-500

In accordance with the methodology of the experiment, the experimental field was divided into plots for options using measuring instruments, leaving protective corridors on all four sides. Each variant, ie delyanka, is 2.4 m wide, 50 m long, and the area occupied by all variants is 1,200 sq.m. The total area of the experimental plot with 3 reps is 3600 sq.m. formed.

60x40-6x1, 60x40-5x1 and 60x40-4x1 planting systems were used for planting the experimental varieties.

Shadow on July 20, 2020 “Orzu”, “Nafis” va “Nena” The selected seeds of the varieties were sown at an average depth of 4-5 cm with an 8-row pneumatic drill, 60 cm between rows, in the sowing norms given in the experimental system.

Phenological observations were made in all variants of the experimental field. This was followed by the emergence of shade, the formation of the first three leaves, budding, flowering, the formation and ripening of pods.

The experimental area was irrigated 4 times during the growing season, ie July 29, August 5, August 13, September 4, and September 23, with an irrigation rate of 700-800 m3 per hectare. In order to ensure air exchange in the soil, improve heat and water permeability during the growing season, the plant was treated 3 times between rows on August 10, August 18 and September 28, fed 2 times, and weeded once. “Super zelek” herbicide was used.

All agro-technological measures were carried out in accordance with the requirements for field experiments. Phenological observations of the growth and development of the soybean plant, i.e. the determination of the main parameters, were carried out mainly in 3 periods: during the mowing, flowering and ripening phases.

The ripening of soybeans took place in mid-October. The soybean crop was carefully harvested by hand on November 1, when 85-90% of the leaves were shed. The soybeans harvested according to the options and returns were crushed separately in a combine harvester and placed in bags with options and return numbers. The data were processed mathematically to determine the average yield for each variant.

Seed yields of soybean varieties sown as experimental crops are shown in Table 2.

Experiments have shown that the maximum yield of soybean varieties increases with increasing seedling thickness. The yield of Orzu was 20.4 s / ha, Nafis 21.6 s / ha and Nena 22.0 s / ha, respectively.

Table 2 Yield of different shade varieties (s / ha) in moderately saline soils of Fergana region

№ Var	Shade varieties	Planting system	Productivity
1.	Orzu	60x5x1	18,7
2.		60x40-6x1	19,0
3.		60x40-5x1	19,6
4.		60x40-4x1	20,4
5.	Nafis	60x40-6x1	20,3
6.		60x40-5x1	21,6
7.		60x40-4x1	21,1
8.	Nena	60x40-6x1	21,5
9.		60x40-5x1	22,0
10.		60x40-4x1	20,8

Conclusion. When? When the amount of water evaporating from the surface is greater than the amount of water applied to the soil, the amount of salts in the soil increases. The higher the number of plants in the field, the lower the amount of water evaporating from the soil surface. When growing soybeans in saline soils, double-cropping is recommended if the soil surface is adequately covered with vegetation.

As the amount of harmful salts in the soil increases, the shade-producing elements are shed. In our scientific research, the seed yield of different soybean varieties can also be explained by the high content of water-soluble harmful salts in the soil in relatively low variants. The use of double cropping in the re-cultivation of soybeans in moderately saline soils prevents an increase in the amount of salts in the soil. It was found that 60 cm between rows, 20 cm between two rows of plants, and 5 cm between one plant and another plant give good results.

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