

INFLUENCE OF A COMPOSITION BASED ON MICROORGANISMS ON WHEAT AND POTATO PRODUCTS

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ABSTRACT

In this article, wheat is one of the important crops grown in our republic. It is no secret that the insufficient introduction of crop rotation systems leads to a sharp decrease in soil fertility, which, in turn, leads to a decrease in productivity and, as a result, to excessive costs for growing plants, and in areas of secondary salinization on irrigated lands of our republic, fallow that in order to increase the efficiency of high yields of sweet potatoes and potatoes, including the creation of new competitive microbial preparations that increase salt tolerance through biotechnological and innovative methods and assess their practical value.

Key words: microbial preparation, salinization, biotechnology, flocculant, soil, rhizobacteria, seeds, vegetation.

INTRODUCTION

The expansion of the areas affected by secondary salinity in the irrigated regions of the world, the sharp decrease in the yield of agricultural crops require the development of new effective biotechnological methods to prevent soil salinization and especially to increase the resistance of crops to salt.

In this place, rhizobacteria adapted to live in different soil salinity conditions are of particular importance, and it is of scientific and practical importance to evaluate their biotechnological potential in increasing the salt resistance of plants and to create competitive microbial preparations based on rhizobacteria, to produce preparations earns. In order to increase the efficiency of obtaining a high yield from cotton in the irrigated areas of our republic, including through biotechnological-innovation methods, the creation of new competitive microbial preparations that increase the salt resistance of cotton and the assessment of their practical value scientifically based results are required. There are several ways to solve such problems in agriculture. Some of them are related to the activation of microbiochemical processes in the soil, coordination of the balance between soil microorganisms and plants using microbial preparations based on soil fertility-increasing microorganisms.

In the course of our research, cultures of microorganisms that effectively affect the growth and development of wheat plants were isolated from the territory of the ToshDAU educational experimental station, and a microbial composition was prepared based on their active species.

RESEARCH METHODS AND CONDITIONS

To carry out research, 4 types of wheat varieties - Turon, Zamin, Shavkat, Sanzar - 8, which are grown in the ToshDAU educational experimental farm, were selected.

In the course of our research, an aqueous solution of 1:100 (10 g per 1 liter of water) was used to treat the microbial composition prepared on the basis of cultures of microorganisms before planting seeds. Treated seeds are planted after 1-2 hours. 5 g of the working solution was used for 1 kg of seeds during pre-sowing treatment. The number of microorganisms in 1 g of microbial composition was 7×10^6 . A diluted working solution of the microbial composition in a ratio of 1:100 was prepared and used in the amount of 2-4 l per 1 m² of the cultivated area during the growing season. According to the results obtained during the experiments, treatment with a microbial composition has an effective effect on the growth and development of wheat plants.

RESEARCH RESULTS AND DISCUSSION

During the growing season, the treated plants differed in the height of the stem, vigor, number of grains from the spikes, compared to the variants treated with the aqueous solution. Such indicators can be interpreted on the basis of the following tables.

Table 1 Effect of "Zamin-M" biopreparation immobilized with hypan flocculant on the height of wheat plants (in sm per 10 plants on average)

Wheat varieties	Control option (when treated with water)	Experimental samples (when treated with flocculant)
Turon	63,4	76,7
Zamin	60,4	72,4
Shavkat	73,6	84,1
Sanzar-8	74,8	76,0

Table 2 The effect of treatment with microbial composition on the number of grains in wheat spikes (average number of grains per 20 spikes)

Wheat varieties	Control option (when treated with water)	Experimental samples (when treated with flocculant)
Turon	874-896	1049-1060
Zamin	965-978	1062-1076
Shavkat	988-1000	1186-1200
Sanzar-8	900-932	990-1000

Table 3 Effect of treatment with microbial composition on above-ground phytomass of wheat plants (dry weight in g/m²)

Wheat varieties	Control option (when treated with water)	Experimental samples (when treated with flocculant)
Turon	175,3	181,5
Zamin	66,9	174,5
Shavkat	92,5	77,7
Sanzar-8	244,5	21,4

The soils of this experimental farm belong to the typical gray soils, which have been irrigated for a long time, and have medium loam mechanical composition. Humus content is on average 1,1%, total nitrogen content is 0,1%, phosphorus is 0,14% and potassium is 2,2%. The amount of mobile nutrients in 1 kg of soil is as follows: N-NH₄-2,2; N-NO₃-10,5; P₂O₅-37,2; K₂O-375

Table 3 Agrochemical characteristics of typical gray soil irrigated from ancient times belonging to ToshDAU educational experimental station

Depth, sm	Common hummus %	General N, %	P ₂ O ₅ , %	K ₂ O %	N-NO ₃ , mg/kg	P ₂ O ₅ , mg/kg	K ₂ O, mg/kg	SO ₂ carbonate s %	SO ₄ gypsum, %
0-42	1,14	0,070	0,945	1,85	10,5	37,2	375	7,6	0,115
42-62	0,89	0,056	0,895	1,75	9,7	37,2	375	7,67	0,115
62-86	0,63	0,048	0,845	1,75	9,3	33,86	375	7,43	0,115
87-108	0,34	0,042	0,745	1,67	9,3	33,86	350	7,64	0,156

CONCLUSION

Based on the research results, it can be concluded that the aqueous extract of the working solution of microorganisms has a physiologically active effect. According to the information presented in the scientific literature, this is evaluated by the positive effect of their complex metabolic products on plants, especially the improvement of root nutrition.

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