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DIVERSIFICATION OF AGRICULTURAL CROPS, CULTIVATION TECHNOLOGY

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A R T I C L E I N F O.

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Abstract

The diversification of agricultural crops through the introduction and integration of various agricultural practices on saline and degraded lands contributes to increasing the productivity of agricultural products, which significantly increases the income of farmers. The introduction of grain and leguminous crops into local crop rotations will reduce soil salinity and enrich them with important nutrients, as well as restore the soil structure. To date, due to developing ecological and economic situations, the issues of restoration and productivity improvement of degraded landscapes based on the use of patterns of adaptive strategy of productive potential, natural environment-forming and environment-optimizing functions of plants of different ecological specialization have not been sufficiently studied. All this requires constant attention to the environmental situation in the region and scientifically-based measures aimed at rational use, conservation and restoration of the natural potential and fertility of the soil cover.

The diversification of agricultural crops through the introduction and integration of various agricultural practices on saline and degraded lands contributes to increasing agricultural productivity. The introduction of unconventional and underused forage grains and legumes into the culture in local crop rotations will reduce soil salinity and enrich them with important nutrients, as well as restore the soil structure. Currently, serious problems of preserving and restoring the land resource potential of agriculture are becoming more acute all over the world, associated with the loss of soil fertility, pollution and degradation of soils on significant land masses, and large-scale land disturbance. A number of laws have been adopted in the Republic of Uzbekistan in order to accelerate and stabilize agricultural reforms. It is noted that salinization of soils leads to physical degradation of lands and their further withdrawal from agricultural use. High doses of mineral fertilizers proved to be one of the causes of soil degradation and environmental degradation. After harvesting, legumes and other crops with a short growing season are cultivated as repeated crops. However, scientific research in this direction has been started relatively recently. In this regard, the development of agricultural techniques for growing (including its individual elements) of repeated crops in the country is an urgent issue.

Material and methods of research

The research was conducted in 2021-2022 at the experimental field of the Khorezm experimental Station of Cotton Breeding, Seed Production and Agrotechnologies Research In stitute. Field experience with soybean (Glycine hispida) on irrigated meadow alluvial soils of the desert zone of Uzbekistan. The main purpose of the research was to develop, study and scientifically substantiate agricultural methods of cultivation of soybeans crop rotation, ensuring the preservation of soil fertility, improving its agrophysical properties, as well as increasing productivity and increasing the economic efficiency of its cultivation. We also monitored the growth, development and yield of legumes. The repetition in the experiments is 4-fold, the placement of variants is randomized. In our experience, the soybean variety "Orzu" was sown at a rate of 60 kg / ha in the first decade of July, after harvesting winter wheat. The soybean harvest was harvested in the phase of physiological ripeness of grain (R8). Statistical processing of the results was carried out in the SAS 9.2 environment.

Research results and discussion

All processes related to agricultural production cause environmental changes. At the same time, the transformation of compounds entering the ecological system primarily occurs in the soil. Inoculation of soybean seeds with an active strain of Nitragin-137 was carried out before sowing the crop. The results show that inoculation of soybean seeds with the Nitragin-137 strain has a significant effect on the yield and quality of soybean grain. The yield increases compared to the nitragine-free option.

Table 1. Indicators of the effect of nitragine on soybean yield in repeated crop rotation

№№	Variation	Dry aboveground biomass at maturity, t/ha	Grain yield, t/ha	Yield index %
1	N_{30}–without nitrogen	$2,29^{c}$ (0,08)§	1,47b (0,02)	0,47b (0,01)
2	N_{30} + with nitrogen	$2,49^{b}$ (0,02)	1,59a (0,03)	0,56a (0,01)

§ Standard deviation

Harvest soybeans in making $N_{30}P_{120}K_{100}$ kg/ha, but without inoculation nitrogen was 1,47 t/ha with a yield of 0,47 index. At the same rate of fertilizer ($N_{30}P_{120}K_{100.}$) and inoculation nitrogen showed a significant increase in grain yield by 0,12 t/ha, where the harvest index was 0,56. The experiments have shown that the use of nitragine leads to the development of agriculture based on effective plant protection and obtaining high yields with respect for the environment and concern for human health.

Conclusions.

The results of our research in the conditions of irrigated meadow soils of the desert zone of Uzbekistan showed that during the summer cultivation of soybeans after harvesting winter wheat, a relatively favorable ratio of the dry mass of vegetative and generative organs of soybeans with the use of nitragine and low nitrogen norm (N_{30}) against the background of $P_{120}K_{100}$ kg/ha, the resulting yield was 1,59 t/ha, dry aboveground biomass 2.49 t/ha, and the mass of 1000 seeds was 124.9 g. Thus, the thrifty attitude and preservation of land fertility and its scientifically-based use is of paramount importance in the intensification of agriculture, in increasing yields, increases the value and importance of land not only as an object of production activity, but also as one of the main components of the biosphere as a whole.

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