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THE EFFECT OF PHYTOMELIORANT CROPS ON THE ACCUMULATION OF SALT IN THE SOIL, NORMS FOR WASHING SOIL BRINE

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Аннотация
The article presents the results of scientific research work carried out to optimize the water and salt procedures of soils in the conditions of moderately saline soils in terms of alluvial, mechanical composition of the Bukhara region with the help of phytomeliorative measures, to economize river waters spent on irrigation and salt washing of agricultural crops

Keywords: Climate change, irrigation desiccation, water resources, water scarcity, land reclamation, salinity, phytomelioration, sizot waters, irrigation standard, saltwater norm, chlorine-ion.

Introduction

In our republic, today 2213.0 thousand hectares of irrigated land are not saline, 1363.3 thousand hectares are poorly saline, 584.9 thousand hectares are moderately saline and 112.2 thousand hectares are strongly saline lands, and comprehensive irrigation and land reclamation measures are being carried out to improve their reclamation status, increase soil fertility, effective use of existing water resources in conditions of climate change and increased water scarcity, and the formation of additional water sources. As a result of these measures, irrigation methods were introduced today using mobile flexible pipes instead of drip on an area of 380 thousand ha and a film bed on an area of 80 thousand ha and readings on an area of 60 thousand ha, land reclamation conditions for 1 million 200 thousand ha were improved, the area of strong and medium-saline lands decreased by 149.4 The water supply of the land was improved by 300 thousand ha, and the yield of wheat increased by 3-4 s/ha on land reclamation and by 4-5 s/ha.

In recent years, the number of years in which there is little water in the Aral Sea basin has been increasing. For example, if the water shortage is repeated every 6-8 years until 2000 years, then in recent times they are observed every 3-4 years.

Due to Global climate change, increased water scarcity, deterioration of the land reclamation situation, the creation of additional water reserves, the development and introduction of water-saving irrigation and salt-washing Technologies is one of the urgent tasks of today.

In our republic there are 4.3 million. 2 million hectares of irrigated land are aging. in Bukhara region, 45 percent of hectares or 274,97 thousand hectares of irrigated land constitute saline areas of varying degrees [2]. It is important to cultivate in Saline and saline prone soils, to increase the effectiveness of phytomeliorative measures in improving the land reclamation situation, to ensure a stable harvest from crops in conditions of water shortage, to develop scientific solutions aimed at the economy of water used for Salt washing [3].

Research method. Field, laboratory research and phenological observations were carried out on the basis of methodological applications of the Research Institute of agrotechnologies of cotton selection, seed growing and cultivation "methods of conducting field experiments" (Uzpiti, 2007), "methodology polevix opitov s zernovimi kulturami" and "method agroximicheskix i agrofizicheskix issledovaniy v polivnix khlopkovix rayonax" [4,5].

The accuracy and reliability of the information obtained is universally accepted B.A.The multi-factor method of dospekhov and the statistical Package for Social Science (SPSS) were analyzed mathematically [6].

According to the mechanical composition of the Bukhara region, the level of the sizot Waters is 1.5-2.5 meters, mineralization is 3,0-5,0 g/l, the meadow is alluvial, under the conditions of medium coarse, moderately saline soils, the soil water and salt procedures are acceptable with the help of phytomeliorative measures, the economy of river water, which is spent on irrigation of the improves.

In field experiments, when plowing after the fall and growing white corn (option 2) and mosh (option 3) as phytomeliorant crops in an uncultivated field (control variant), their effects on Salt regime change and salt washing standards and deadlines were studied.

According to the results of scientific research conducted, the results of scientific research on the irrigation norms of white corn and mosh from drought-and saline-resistant phytomeliorant crops after the fall in the conditions of Bukhara region, the impact of soil on salinity, the levels of sizot water and their mineralization, as well as on the norm and terms of salt washing in the cultivation

In the course of the research, phytomeliorant plants were grown after the autumn cultivation and their effect on the Salt layout of the soil was studied. When analyzing the amounts of salts in the soil under laboratory conditions, initially at the beginning of the vegetation period, the amount of chlorine in the layer of 0-30 cm was 0,015 %, in the layer of 0-100 cm was 0,012 %, by the end of the experiments, the amount of chlorine in the layer of 0-30 cm was equal In the 2nd variant, where white corn was grown, at the end of the vegetation period, the chlorine ion content in the soil was equal to 0,033 % in the 0-30 cm layer, 0,029% in the 0-100 cm layer, and collected less than 0,011-0,012% in the control variant. Also, in the 3rd variant, where the mosh crop was planted, the amount of chlorine ions in the soil increased by 0,020-0,21%

compared to the amount obtained initially, and amounted to 0,036 and 0,032%. This indicates that control - plowing is collected by 0,008-0,009 % less than in the uncultivated field.

When analyzing the results of the studies in order to determine the effect of phytomeliorant plants on the amount of dry residue contained in the soil, in 2009, when initially the dry residue in the haydov (0-30 cm) layer was 0,187 %, in the 0-100 cm li layer was 0,163%, by the end of the growing season, the area without plowing was The field in which white corn was planted was observed to have relatively low concentrations of dry residue compared to other options, in this variant, at the end of the vegetation period, the dry residue in the soil was respectively 0,269 and 0,228 % and collected less than 0,175-0,183 % compared to the control option. Also, in the 3rd variant, where the mash was grown as a phytomeliorant, the amount of dry residue in the soil was 0,312% in the tillage layer, in the 0-100 cm layer its amount was 0,302%, and the plow was collected 0,109-0,123% less than in the uncultivated field

2009-2011 the effects of white sorghum and mung cultivation planted as phytomeliorants on soil water and salt regimes were studied in the experimental fields.Soil for the purpose of studying the dynamics of the movement of salts in 2009-2011 0-10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-70, 70-80, 80-90, 90-100 samples were taken from layers of cm and analyzed in laboratory conditions the amounts of salts that negatively affect the plant for growth and development (CL1, SO4 , HCO3, dry residue).

In 2009, after harvesting winter wheat, field barrels were taken and watered for the purpose of moistening the soil (1100-1150 cbm/ha). As soon as the land was settled, phytomeliorant plants were planted, preparing for field planting. After planting phytomeliorative crops, general soil samples were taken from the field and the amount of salts contained in the soil was determined before and after each watering, after phytomeliorants were collected at the end of the growing season. When we analyzed the change in the amount of salts in the soil, initially the amount of chlorine in a layer of 0-30 cm of the soil at the beginning of the growing season was 0.015%, and in a layer of 0-100 cm li-0.012%, by the end of the experiments, plowing crops increased to 0.045% in In Option 2, where white oats are grown, it can be seen that the amount of chlorine ion in the soil at the end of the growing season is equal to 0.033% in a layer of 0-30 cm, 0.029% in a layer of 0-100 cm, and 0.011-0.012% less than in the control option. Also, in Option 3, where the mosh crop was planted, the amount of chlorine ion in the soil increased by 0.020-0.21% compared to the amount obtained initially, to 0.036 and 0.032%. This indicates that the control - plowing crop was collected by 0.008-0.009% less than in an uncultivated field.

In scientific studies, when analyzing the change in the amount of bicarbonate HCO3 in the composition of the soil, it was observed that in the fields where phytomeliorant plants were planted, its amount increased by up to 50% compared to the beginning of vegetation. In experiments carried out in 2009-2011, phytomeliorant plants accounted for 0.037% in a layer of 0-100 cm, if the amount of HCO3 in the haydov (0-30 cm) layer of the soil before planting was equal to 0.044%. After going to the end of the vegetation, that is, collecting phytomeliorant plants, the amount of HCO3 in the control option was equal to 0.103% in the layer of haydov (0-30 cm), in a layer of 0-100 cm it was equal to 0.085%. Also, in Option 2, where white oats were grown, the amount of HCO3 was 0.077 and 0.058 %, respectively, in layers of 0-30 cm and 0-100 cm, less than 0.026-0.027 % was collected in the control option. In Option 3, where

Mosh was grown, the amount of bicarbonate in the soil increased to 0.034-0.029 % compared to the initial result obtained, making up 0.082-0.070 %.

When the results of the studies were analyzed in order to determine the effect of phytomeliorant plants on the amount of dry residue in the soil, in 2009, the amount of dry residue in haydov (0-30 cm) initially amounted to 0.187 %, in a layer of 0-100 cm-0.163 %, in the field where there was no plowing crop, in can be seen. In the experimental field planted with white oats, it was observed that the amount of dry residue compared to other options was relatively low, and in this option the amount of dry residue in the soil at the end of the growing season was 0.269 and 0.228 %, respectively, less collected by 0.175-0.183 % compared to the control option. Also, in Option 3, where mosh was grown as a phytomeliorant, the amount of dry residue in the soil was equal to 0.312 % in the hay layer, while in a layer of 0-100 cm its amount was 0.302 %, plowing was collected 0.109-0.123 % less than in the field where the crop was not planted.

After the cultivation of phytomeliorant crops, in the field of scientific research on soil saline washing in the autumn-winter season, salt washing was carried out in the autumn and winter months. In the course of scientific research, seasonal salt washing in Option 1 was carried out 5383 cbm/ha in the experimental area and 3 times in the course of the season the Salt washing was carried out.

In the 2nd variant, where white corn (sorgo) was planted as a phytomeliorant of experiments, the standard of salt washing was 2380 cbm/ha and less water was consumed than 3003 cbm/ha compared to the control option. In the case of the 3rd variant where the mash was grown, the seasonal salinity norm was 3403 cbm/ha, compared to the control optionattan 1980 cbm/ha less water was spent, the white corn was spent more on 1023 cbm/ha than on the 2nd variant grown. During the season in the field where the mash was grown as a phytomeliorant, 2 times carried out washing of brine.

Conclusions.

According to the analysis of the effect of water-saving phytomeliorant plants on the Salt regime of the soil, the amount of chlorine ions in the soil was initially equal to 0,015 % in the soil layer, 0,012 % in the 0-100 cm layer, by the end of vegetation, in the plowed field these indicators were 0,045 % and 0,040 %. When white corn is sown as a phytomeliorant crop, these indicators are 0,033 and 0,029 %, when corn is sown 0,036 and 0,032 %, and the chlorine ion is collected less than in the control field 0,008-0,012 %. The seasonal salt accumulation coefficient was 2,3 in the field on which white corn was planted according to the chlorine ion, 2,6 in the field on which the mosh was grown, and 3,3 in the field without plowing and sowing. In the field of experiment, the highest standard of salt washing was made up to 5383 cbm/ha in the control variant, which was plowed. In the 2nd variant, where white corn was planted as a phytomeliorant, the seasonal salting standard was 2380 cbm/ha, while in the 3rd variant where the mosh was planted, the salting standard was 3403 cbm/ha, with 37-56 % or 1980-3003 cbm/ha less water than the control option.

According to the analysis of the effect of water-saving phytomeliorant plants on the Salt regime of the soil, the amount of chlorine ion in the soil was initially equal to 0.015 % in the haydov layer, 0.012 % in the layer of 0-100 cm, by the end of vegetation, in the plowed field, these indicators were 0.045 % and 0.040 %. When white oats were planted as a phytomeliorant crop, these indicators were 0.033 and 0.029 %, equal to 0.036 and 0.032 % when mesh was planted,

indicating that the chlorine ion was collected 0.008-0.012 % less than in the control field. The coefficient of seasonal salt accumulation was 2.3 in the field planted with white oats according to chlorine ion, 2.6 in the field where mosh was grown, and 3.3 in the field where the crop was not planted, plowing.

References

1. Agaltseva N. The impact of climate change on the water resources of Uzbekistan. Uzhydromet. Tashkent. 2019.
2. Mirziyoyev Sh.M. On approval of the concept of development of water economy of the Republic of Uzbekistan for 2020-2030 years. The decree. Tashkent. 2020.
3. Xamidova, S. M., Juraev, U. A., & Atamurodov, B. N. (2022). EVALUATION OF THE EFFECTIVENES OF PHYTOMELIORATIVE MEASURES IN THE TREATMENT OF RECLAMATION OF SALINE SOILS. Web of Scientist: International Scientific Research Journal, 3(6), 835-841.
4. Methods of conducting field experiments, 146 (UzPITI Press, Tashkent, 2007)
5. Jurayev, A. K., Jurayev, U. A., Atamurodov, B. N., Najmiddinov, M. M., & Sobirov, K. S. (2022). EFFECTIVE USE OF WATER IN IRRIGATED AREAS. Oriental renaissance: Innovative, educational, natural and social sciences, 2(6), 810-815.
6. Khamidov, M., Khamraev, K. Water-saving irrigation technologies for cotton in the conditions of global climate change and lack of water resources. IOP Conference Series: Materials Science and Engineering, 2020, 883(1),
7. Methods of agrochemical and agrophysical research in irrigated cotton areas. Tashkent: 1962. – 440.
8. Dospekhov B.A. Methodology of field experience. Moscow. Agropromizdat, 1985. 351.
9. Dagma, B., Hamidov, A., Muhammadkhon, K., & Jurayev, U. Improvement of drainage water quality through biological methods: a case study in the Bukhara region of Uzbekistan. European Science Review.–Ausrtia Vienna.–2016.–№ September-october.(05.00. 00. № 3).
10. Khamidov, M. K., Balla, D., Hamidov, A. M., & Juraev, U. A. Using collector-drainage water in saline and arid irrigation areas for adaptation to climate change. 2020. In IOP Conference Series: Earth and Environmental Science (Vol. 422, No. 1, p. 012121).
11. Jurayev, A. Q., Jurayev, U. A., Atamurodov, B. N., & Najmiddinov, M. M. (2021). Cultivation of Corn as a Repeated Crop. European Journal of Life Safety and Stability (2660-9630), 10, 49-51. Jurayev, A. Q.,
12. Jurayev, U. A., Atamurodov, B. N., & Najmiddinov, M. M. (2021). Scientific Benefits and Efficiency of Drip Irrigation. Journal of Ethics and Diversity in International Communication, 1(6), 62-64.
13. Jurayev, A. Q., Jurayev, U. A., Atamurodov, B. N., & Najmiddinov, M. M. (2021). Aphorisms of Farming in the Method of Kidroponics. International Journal of Discoveries and Innovations in Applied Sciences, 1(6), 133-135.
14. Jo'rayev, U. A., Jo'rayev, A. Q., & Atamurodov, B. N. (2021). Application of Provided Irrigation Technologies in Irrigated Agriculture. International Journal of Development and Public Policy, 1(6), 164-166.