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Complex of Anti-Erosion Measures to Increase the Efficiency of Irrigated Lands

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Abstract: *In this article, anti-erosion measures to improve the efficiency of irrigated lands, which are the first in the conditions of typical gray soils subject to irrigation erosion, maintain and increase soil fertility in farming in accordance with the market economy, and reduce the negative effects of irrigation erosion information on the elements of irrigation techniques that reduce the consequences.*

Keywords: *irrigation, erosion, soil, land, reclamation, nitrogen, phosphorus, potassium.*

Introduction.

Land is a national wealth, the basis of the life, activity and well-being of the people of Uzbekistan, the most important natural resource. Therefore, ensuring the rational, effective and purposeful use of land, land protection, and maintaining the unified system of State cadastres, which are integrally connected with land, are among the most important tasks of the state [1-3].

The use of natural resources in all eras is accompanied by the creation of powerful resources that provide them with rapid mapping, increasingly perfect and meaningful cartographic images - production, science and education with visual spatial social and professional information about the earth. It's done. land resources, their administrative-territorial affiliation, categories of land, subjects of land relations and legal regime, quality and ecological condition, types of land, modern and prospective use. If we look at the experiences of the Russian state from foreign countries, it is related to the main role of Russia in the optimization of the use of systematic cartographic data on land resources in market relations and in the implementation of land reform.

Technical tools used in processing and mapping, cartographic method of research and general development of the theory of mapping of land resources, its content, depending on the needs of production, the level of accumulated scientific knowledge and preliminary data about land as the main natural resource was also changed [4-10].

In the past centuries, it had a statement-registration direction; in our century, it has become predictable and prophetic; In the years of Russia's entry into the market economy, the implementation of the agrarian reform, and the beginning of the equal development of all forms of land ownership, the cadastral approach was taken according to the "social order", and in the near future it should be transferred to a systematic methodology.

There are 851.2 thousand cultivated areas affected by irrigation erosion in the irrigated farming areas of the Republic of Uzbekistan, a lot of humus, nitrogen and phosphorus necessary for the growth and development of plants are removed from the slope of the field under the influence of erosion. , potassium and many other nutrients are washed away, soil fertility and the yield of cotton, wheat and other crops grown in such conditions decreases by 30-40% and has a negative impact on the environment and ecology [11-15]. Restoring soil fertility in such conditions is a difficult task that requires a lot of time and labor.

After Uzbekistan gained independence, attention was paid at the level of state policy to increase the productivity of irrigated lands, improve land reclamation, and protect against water and wind erosion. First of all, a solid legal framework has been created regarding the rational use of irrigated lands and their protection. The laws of the Republic of Uzbekistan "Land Code", "On Farming", "On the Use of Water and Water Resources", and "On Nature Protection" are among them.

Currently, 851.2 thousand hectares of the irrigated lands of our republic have been subjected to irrigation erosion, 2.09 million hectares are silted to varying degrees, and the level of groundwater in 448.7 thousand hectares of cultivated areas is acceptable for the comfortable development of agricultural crops. It is located at a shallow depth (up to 1.5-2 meters).

Literature analysis.

Taking into account that there are specific characteristics of irrigation erosion in different soil and climate conditions of our republic, it is very important to develop systems of effective use of intermediate crops as a siderate to the elements of irrigation techniques in the strict fight against erosion in irrigated agriculture. Although, in farming experience, in regions with different soil-climatic conditions, protection of soils from erosion, improvement of farming culture, soil fertility, ultimately increasing the volume of products per hectare of land, improving quality, and lowering costs, despite reducing erosion processes and soil fertility insufficient attention is paid to the elements of irrigation techniques of growing cotton and the issues of using intercrops as siderates [16-20].

Many scientific studies have been conducted to develop a number of measures to combat water erosion in the cotton industry of our republic (Hussak, 1965; Hussak, Maksudov, 1968; Mirzajonov, 1973, 2000; Khamdamov, 1975, 2001; Maksudov, 1981, 2003; Hoshimov, 1985, 1990; Gafurova, 1994, 2004; Nurmatov, 1995, 2006; Mominov, 1997, 2005, 2010; Hoshimov, 2006, 2012).

Results.

For the first time, in the conditions of typical gray soils subjected to irrigation erosion, the elements of irrigation techniques, which preserve and increase soil fertility in farming in accordance with the market economy, and reduce the negative consequences of irrigation erosion, and types of siderate crops were identified.

Discussion.

As a result of the implementation of state programs aimed at improving the melioration of irrigated lands of our republic, a number of achievements have been achieved in agriculture, the level of productivity of irrigated soils has stabilized, and their productivity is increasing significantly [21-25].

These opportunities should first of all be focused on preventing and eliminating the consequences of negative processes taking place in irrigated soils.

To eliminate such negative processes:

1. It is necessary to apply ameliorative, agrotechnical and agrochemical measures in a stratified manner, taking into account the soil-climatic region of the republic, their diversity, their development conditions, genetic characteristics, structural structure, and agronomic properties and characteristics.

Agricultural crops must be classified according to the natural-geographic location of the regions, the level of water supply, and the quality of the soil. Irrigation standards, periods and periods should be carried out in each soil-climate region, strictly taking into account the properties and characteristics of the soil.

2. It is necessary to enrich the soil with organic matter-humus. One of the most important problems is the replacement of nitrogen, phosphorus, and especially potassium, which are taken out of the soil by agricultural crops every year, and the issue of providing agricultural crops with nutrients in optimal proportions.

Taking into account that the irrigated soils are in most cases moderately supplied with nitrogen, low with phosphorus, and very low with potassium, taking into account that their optimal proportions for crops have been violated, phosphorus, especially potassium fertilizers are used at the required level. It is necessary to apply. In places where there is a lack of potassium and phosphorus fertilizers, the main attention should be focused on the preparation and use of organic and organo-mineral fertilizers, composts from livestock and poultry, agricultural, industrial and household waste, natural agro-ores [26-30]. At the same time, it is advisable to organize the application of mineral fertilizers on the basis of agrochemical cartograms, taking into account the soil conditions and the needs of plants.

3. It is necessary to introduce efficient crop rotation systems. The correct placement of agricultural crops is the basis for maintaining and restoring soil fertility and increasing the effectiveness of agrotechnical and land reclamation measures [31-35].

As a result of using alternate planting, the soil is enriched with organic matter - humus, all its agronomic properties are improved, and at the same time, the soil is protected from water and wind erosion. The inclusion of alfalfa and intermediate crops in the systems of crop rotation and placement of crops will develop the fodder base of livestock breeding, as a result of which there will be opportunities to expand the production of valuable organic fertilizer - manure, which is currently in short supply [36-40].

Conclusion.

According to the field experiments that have gone to remove the effects of irrigation capacity and irrigation maintenance techniques on the production of g produced on the potential yield of a typical gray that is subject to water erosion, it can be used. :

1. Irrigation erosion leads to a decrease in the amount of humus in the soil and a lack of food production (nitrogen, phosphorus, potassium and others). In the fields where cotton is planted, the amount of soil fertility is 40-42.8 tons per hectare.

2. All the green mass of intermediate crops improves the water permeability of the soils plowed as fallow, after rye and rapeseed+rye it increases by 25-36 m³/m, rainfall and irrigation water penetrates well into the soil, soil leaching is reduced, and the cultivation of goza is improved. conditions are created for

3. The amount of humus in the fields where the quality of rape, rye, and sorghum is affected by erosion is 0.04 according to the regulation according to the previous view. By 0.03 and 0.06%, nitrogen 2.3-4.5 mg/kg and phosphorus 1.8-3.4 mg/kg were provided, and its plant and root residues it was noted that the

amount of humus, nitrogen and phosphorus in the soil of plowed fields changed very little compared to the load index.

References.

1. Arabboevna A. M., Shavkat o'g'li Y. S. The Use of Geoinformation Systems in the Study of the Land Fund of Household and Dekhkan Farms //Texas Journal of Multidisciplinary Studies. – 2022. – T. 8. – C. 163-164.
2. Khakimova K. R. et al. SOME TECHNOLOGICAL ISSUES OF USING GIS IN MAPPING OF IRRIGATED LANDS //Galaxy International Interdisciplinary Research Journal. – 2022. – T. 10. – №. 4. – C. 226-233.
3. Zokir A., Sherzodbek Y., Durdona O. THE STATE CADASTRE FOR THE REGULATION OF INFORMATION RESOURCES FOR THE FORMATION AND IMPROVEMENT //Educational Research in Universal Sciences. – 2022. – T. 1. – №. 1. – C. 47-53.
4. Arabboyevna A. M. Biological Activity of Typical Irrigated Gray Soils //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 285-289.
5. Axmedov B. M. et al. Knauf Insulation is Effective Isolation //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 298-302.
6. Marupov A. A., Ahmedov B. M. General Characteristics of Zones with Special Conditions of use of the Territory //Middle European Scientific Bulletin. – 2021. – T. 18. – C. 446-451.
7. Shavkat o'g'li Y. S., Zuxriddinovna M. S., Qizi O. D. S. ARC Create an Agricultural Card in GIS and Panorama Applications //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 429-434.
8. Abduvaxobovich A. A. Methods of Improving Physical and Mechanical Properties of Light Concrete on the Basis of Chemical Additives //Texas Journal of Multidisciplinary Studies. – 2022. – T. 8. – C. 165-167.
9. Abduraxmonov A. A. et al. DAVLAT YER KADASTRIDA GIS TEXNALOGIYALARIDAN FOYDALANISH //INTERNATIONAL CONFERENCES ON LEARNING AND TEACHING. – 2022. – T. 1. – №. 8. – C. 228-233.
10. Мадумаров Б. Б., Манопов Х. В. НАЧАЛО РАБОТЫ С ARCGIS. ARCMAP //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 325-333.
11. Makhmud K., Khasan M. Horizontal Survey of Crane Paths //Middle European Scientific Bulletin. – 2021. – T. 18. – C. 410-417.
12. Турдикулов Х. Х., Қосимов М. Численный Анализ Напряженно-Деформированного Состояния Высокой Грунтовой Плотины С Учетом Данных Натурных Наблюдений //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 349-357.
13. Турдикулов Х. Х. Анализ Устойчивости Аякчинской Грунтовой Плотины При Сейсмических Нагрузках //CENTRAL ASIAN JOURNAL OF THEORETICAL & APPLIED SCIENCES. – 2022. – T. 3. – №. 6. – C. 1-6.
14. Nomonov J. O. O. FARGONA VILOYATIDAGI MADANIYAT VA ISTIROHAT BOGLARI //Science and Education. – 2020. – T. 1. – №. 8. – C. 27-30.
15. Kasimov M., Habibullaev E., Kosimov L. Determination of the chimney roll //An International Multidisciplinary Research Journal. – 2020. – T. 10. – №. 6. – C. 1313-1318.

16. Abbasxonovich M. A., Abduvaxobovich A. A. Measures for the Protection of the Historical and Cultural Heritage of Fergana and the Mode of Monitoring of Cultures with the Help of Geoinformation Systems //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 342-348.
17. Ogli Y. S. S., O'G'Li A. P. A. KOSMIK MA'LUMOTLAR YORDAMIDA YER TUZISH LOYIHA ISHLARINI OLIB BORISH //Ta'lim fidoyilari. – 2022. – T. 25. – №. 5. – C. 23-25.
18. Abbasxonovich M. A. et al. Introduction of GIS Technology for Soil and Ecological Monitoring of the Foothill Areas of the South of the Fergana Region //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 334-341.
19. Mamatkulov O. O., Numanov J. O. Recycling of the Curve Planning in Gat Technology (Auto Cad) Program //Middle European Scientific Bulletin. – 2021. – T. 18. – C. 418-423.
20. Ugli M. O. O. RECYCLING OF THE CURVE PLANNING IN GAT TECHNOLOGY (Auto CAD) PROGRAM //Galaxy International Interdisciplinary Research Journal. – 2021. – T. 9. – №. 11. – C. 480-483.
21. Shavkat o'g'li Y. S., Avazbek o'g'li A. A. Ways to Improve the Application of Cartographic Research Method in the Development and Equipment of Land Resources Cards //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 7. – C. 139-145.
22. Khakimova K. R. et al. DEVELOPMENT OF CADASTRAL MAPS AND PLANS IN THE GEOINFORMATION SYSTEM //Galaxy International Interdisciplinary Research Journal. – 2022. – T. 10. – №. 4. – C. 212-216.
23. Khakimova K. R. et al. THEORETICAL AND METHODOLOGICAL QUESTIONS OF MAPPING THE ENVIRONMENTAL ATLAS //Galaxy International Interdisciplinary Research Journal. – 2022. – T. 10. – №. 4. – C. 240-245.
24. Yusufovich G. Y. et al. Formation of a Personal Database of Data in the Creation of Soil Science Cards in GIS Programs //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 303-311.
25. O'G'Li S. Y. S., Zuxriddinova M. S., Qizi A. S. B. THE USE OF MAPINFO PROGRAM METHODS IN THE CREATION OF CADASTRAL CARDS //Science and innovation. – 2022. – T. 1. – №. A3. – C. 278-283.
26. Abdukadirova M. A. The Role Of Builder And Building In The Development Of The Country Is Invaluable //The American Journal of Interdisciplinary Innovations Research. – 2021. – T. 3. – №. 05. – C. 81-84.
27. Sherzodbek Y., Sitara M. THE ESSENCE OF CARTOGRAPHIC MAPS IS THAT THEY ARE USED FOR CARTOGRAPHIC DESCRIPTION OF THE TERRAIN. GENERALIZING WORKS IN THE PREPARATION OF MAPS //RESEARCH AND EDUCATION. – 2022. – T. 1. – №. 4. – C. 27-33.
28. Mukhriddinkhonovich A. Z. Actual Issues of Design of Small Towns in Uzbekistan //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 576-580.
29. Kh T. K. et al. Strength Evaluation of the Charvak Earth Dam in a Plane Formulation //Middle European Scientific Bulletin. – 2021. – T. 18. – C. 424-434.

30. Salyamova K. D., Turdikulov K. K. Stress state of an earth dam under main loads considering data from field observations //Journal of Physics: Conference Series. – IOP Publishing, 2021. – Т. 1926. – №. 1. – С. 012004.
31. Mamanazarovna E. M., Abbosxonovich M. A. Analysis of Agricultural Soils Designation of Different Linear Protected Zones using GIS Technology //CENTRAL ASIAN JOURNAL OF THEORETICAL & APPLIED SCIENCES. – 2021. – Т. 2. – №. 11. – С. 188-192.
32. Raximjonovna X. K. et al. The Composition of the Lands Used in Agriculture and their Electronic Cartography //Central Asian Journal of Theoretical and Applied Science. – 2022. – Т. 3. – №. 7. – С. 65-70.
33. Turdimatova G. M. et al. IMPROVING THE ORGANIZATION OF TOPOGRAPHIC AND GEODETIC WORKS IN THE CADASTRAL SERVICE //International Journal of Advance Scientific Research. – 2022. – Т. 2. – №. 04. – С. 1-6.
34. Sherzodbek Y., Durdona O. THEORETICAL BASIS FOR THE USE OF MODERN GIS TECHNOLOGIES IN THE CREATION OF NATURAL CARDS //RESEARCH AND EDUCATION. – 2022. – Т. 1. – №. 4. – С. 4-10.
35. Khakimova K. R., Ahmedov B. M., Qosimov M. Structure and content of the fergana valley ecological atlas //ACADEMICIA: An International Multidisciplinary Research Journal. – 2020. – Т. 10. – №. 5. – С. 456-459.
36. Marupov A. THEORY OF MARS COLONIZATION BY AQUEOUS MICROORGANISMS AND PARASITES //Збірник наукових праць ЛОГОΣ. – 2021.
37. Hakimova K. R., Abdukadirova M. A., Abduxalilov B. K. Development of innovative methods in cartographical description of ecological status //Actual Science,(11). – 2019. – С. 34-38.
38. Abdukadirova M. A., Mirzakarimova G. M. The importance of installation of base gps stations in permanent activity in Fergana region //Asian Journal of Multidimensional Research. – 2021. – Т. 10. – №. 9. – С. 483-488.
39. Хакимова К. Р., Абдукадирова М. А., Абдухалилов Б. К. РАЗРАБОТКА ИННОВАЦИОННЫХ МЕТОДОВ В КАРТОГРАФИЧЕСКОМ ОПИСАНИИ ЭКОЛОГИЧЕСКОГО СОСТОЯНИЯ //Актуальная наука. – 2019. – №. 11. – С. 34-38.
40. Salyamova K. D., Turdiqulov X. X. Analysis of stability of ground dams under seismic loads //Scientific-technical journal. – 2020. – Т. 3. – №. 1. – С. 37-41.