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IMPROVEMENT OF METHODS FOR THE RESTORATION OF DEGRADED PASTURES BASED ON LAND MANAGEMENT PROJECTS

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Abstract
This article explores modern approaches to the restoration of degraded pastures through the use of land management projects. Special attention is given to methods of rational land use and the implementation of comprehensive measures aimed at increasing pasture productivity. The causes of land degradation are analyzed, and scientifically grounded methods for their restoration are proposed, taking into account the natural and climatic conditions of the region. Practical examples from land management in the Kashkadarya region are provided, where successful methods for improving pasture conditions have been implemented.

Keywords: Degraded pastures, land management, land restoration, rational land use, Kashkadarya region, agriculture, land monitoring.

Introduction

In the context of population growth and increasing demand for livestock products, the issue of pasture degradation is becoming increasingly relevant. In the territory of the Republic of Uzbekistan, particularly in the Kashkadarya region, a significant portion of pasture lands has undergone degradation due to irrational land use, climate change, and insufficient application of agrotechnical measures. This, in turn, negatively affects agricultural productivity and the ecological condition of the land.The restoration of degraded pastures requires a systematic approach that includes planning, scientifically grounded land management, and the implementation of modern technologies to improve the forage base. Land management projects play a key role in organizing effective and sustainable land use, allowing for the consideration of terrain features, soil and climatic conditions, as well as the economic needs of the region.

The present study is aimed at examining and improving methods for pasture restoration based on land management projects, with the goal of increasing their productivity and ensuring the sustainable development of the agricultural sector.

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Degraded pastures represent one of the most pressing environmental and economic challenges for the agricultural sector of Uzbekistan. The causes of pasture degradation include overgrazing, water and wind erosion, soil salinization, and a lack of an integrated approach to land resource management. This problem is particularly acute in arid regions such as the Kashkadarya region. One effective solution is the development and implementation of land management projects that include measures for the rational use and restoration of pasture lands. These projects make it possible to approach the problem of degradation systematically by conducting land inventory and classification, determining the degree of degradation, and selecting optimal restoration methods.

Among the methods for restoring degraded pastures, the following can be highlighted:

Agrotechnical measures: include harrowing, loosening, application of organic and mineral fertilizers, and sowing of perennial forage crops (such as alfalfa, sainfoin, etc.).

Biological methods: involve sowing resilient forage grasses and applying microbiological preparations to improve soil structure and restore vegetation cover.

Hydrotechnical measures: include the construction of water-retaining structures and systems for drip or localized irrigation, especially in areas with low precipitation levels.

Organization of pasture rotation: involves alternating grazing plots, limiting pasture load, and establishing protected and rest zones to allow for natural vegetation recovery.

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In addition, an important direction is the integration of digital technologies in pasture condition monitoring. The use of satellite imagery, GIS technologies, and unmanned aerial vehicles (drones) allows for more accurate assessment of degradation levels and the effectiveness of restoration measures.

Pilot projects for pasture restoration were implemented in the Kashkadarya region with the participation of local farmers and land management specialists. As a result, there was a significant improvement in vegetation cover, a reduction in erosion processes, and an increase in the forage value of the lands.

A comprehensive approach to land management—applying agrotechnical, biological, and administrative methods—contributes to the successful restoration of degraded pastures and the improvement of the ecological condition of the land. This includes:

The development of regional land management programs that incorporate specific measures for pasture improvement, taking into account local conditions.

Training and professional development of specialists in the fields of land monitoring, agronomy, ecology, and geographic information systems (GIS).

Involving local communities and farmers in the planning and implementation of land management projects, and motivating them through subsidies and incentives.

The use of innovative solutions—such as bioengineering technologies, resilient forage crop varieties, and digital monitoring tools (remote sensing, drones, GIS)—also plays an important role. Another crucial step is the legislative and institutional strengthening of the pasture protection system. It is necessary to improve the legal and regulatory framework governing sustainable land use and degradation prevention, including the introduction of mechanisms of accountability for violations related to grazing and agricultural practices.

1. The application of land management projects also enables:
2. Rational distribution of grazing pressure on pasture lands;
3. Identification of priority areas for restoration;
4. Integration of pasture restoration with other types of agricultural activities (e.g., agroforestry);
5. Increased livestock productivity through the improvement of the forage base.

The implementation of a comprehensive approach based on land management projects can not only prevent further degradation of pastures but also ensure the sustainable development of the agricultural sector, especially in arid regions such as the Kashkadarya region.

Conclusion:

The restoration of degraded pastures is a crucial task for ensuring food security, sustainable land use, and environmental protection. The conducted analysis shows that the use of land management projects allows for the effective systematization of pasture restoration efforts, taking into account the natural, economic, and social characteristics of the region.

The key factors for successful restoration include rational planning, the use of modern agrotechnical and biological methods, the implementation of digital monitoring technologies, and the active involvement of local land users and farmers.

For the Kashkadarya region, as well as for other arid regions, measures to improve pastures, reduce erosion processes, and increase land productivity are particularly relevant. In the long term, this contributes to the improvement of the ecological situation, the development of agriculture, and the well-being of rural populations.

The improvement of pasture restoration methods based on land management should become a priority direction of national and regional agricultural policy.

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