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Cite This: Acad. Res. J. of Nat. and Pub. Health. 2022, 1, 35-42

Sciforce

Academic Research Journal of Nature and Public Health

Journal homepage: www.sciforce.org

Improving Pasture Management

Prof.Dr. Z.H.Aliyev and Mr. Dr. S.Sh. Savalan Seyfeddinov

Scientific-Research Agricultural Institute of the Ministry of Agriculture of the Republic of Azerbaijan

ARTICLE INFO

Article history:
Received: 20211110
Received in revised form: 20212110
Accepted: 20211210
Available online: 20220320

Keywords:
Pastures;
erosion of biodiversity;
reduction of soil fertility and soil erosion

ABSTRACT

Referring to the author's comments and the results of research conducted in the article, it is stated thatexisting problems in pastures: overgrazing, biodiversity erosion, reduction of soil fertility and reduction of soil organic matter and CO_2 emissions, soil salinization and alkalinization, development of erosion process, etc.), elimination of their multifunctional characteristics, pasture management. It is known that pastures are a supplier of many agricultural products, it protects soil fertility and biodiversity, protects the soil from wind and water erosion, carbon dioxide in the soil compared to arable land and forests. has good potential for storage, It has a protective effect on the restoration and regulation of groundwater levels, maintaining the quality of irrigation water and creates conditions for its leakage. Seed propagation of local species, soil softening - germination of seeds of perennial grasses and shrubs, conversion of slopes and arable lands into permanent pastures, inclusion of temporary pastures in crop rotation,feed production to support roduction - meat, milk, wool, etc. Given that pastures support agriculture and are a source of livelihood for the population. Restoration and protection of pastures (recreation, surface softening, surface and capital improvement works, creation of temporary pastures, conversion of sown areas on slopes into pastures, etc.) are of special importance;Action Plan of the "State Program approved by the Order of the President of the Republic of Azerbaijan No. 222 dated May 22, 2004" and "Strategic Road Map on production and processing of agricultural products in the Republic of Azerbaijan" approved by Decree No. 1138 of December 6, 2004; 2016 As a result, it has contributed to and is an integral part of the Sustainable Food Program in the country.Based on the above, taking into account the urgency and special importance of the issue, conducting scientific and experimental research on measures to determine pasture management by increasing the efficiency of pasture use (increasing productivity and quality and increasing the efficiency of use). improving non-productive pastures in the regions. For this purpose, in 2021, scientific and experimental research was conducted in the pastures of Guba region.As a result of experimental research conducted in the field of control (Control), the average yield per hectare was 26.6 s / ha, green mass or 6.8 s / ha of dry grass, (without fertilizer) grass seeds and other variants. increasinglydiverse.In the H60P60K40 variant, this indicator averaged 39.9 sen / ha of green mass compared to the meadow seed + sowing (control) variant. or 13.3 cents / ha or 15.0 percent more than the green mass, or 10.0 quintals of dry grass or 3.2 cents / ha or 14.7 percent more dry grass. In each of the tested options, the quality of feed produced (green mass or dry grass, nutritional value and digestibility) was higher than the control option. The accumulation of large amounts of vitamins and minerals, which are important for the animal's body, is characterized by improved management (increased productivity per hectare, improved feed quality and digestion). At the same time, it has reduced labor costs, reduced feed consumption per unit of output, and increased economic efficiency.

Key words: Pastures, and pastures, overgrazing, erosion of biodiversity, reduction of soil fertility and soil erosion, reduction of organic matter in the soil and CO2 release, salinization and alkalinization of soil,etc**.**

*Corresponding author. E-mail: zakirakademik@mail.ru

Introduction

As it is known, Azerbaijan is one of the low-soil countries and the per capita area of agricultural land in the country is 0.46 hectares, including 0.19 hectares of arable land and 0.26 hectares of pastures and hayfields.

As a continuation of the "State Program on Rational Use of Summer and Winter Pastures, Hayfields and Prevention of Desertification in the Republic" approved by the Presidential Decree No. 222 of May 22, 2004, in 2018-2022 and

The Action Plan of the "Strategic Roadmap for the production and processing of agricultural products in the Republic of Azerbaijan" approved by the Decree of the President of the Republic No.1138 dated December 6, 2016 envisages the implementation of "Improvement of pasture management".

Elimination of existing problems and improvement of the regulatory framework for the development of the field; Necessary measures are being taken to ensure the efficient use of land, water and other natural resources, and the development of livestock and agriculture.

Within the framework of the programs, land maps were compiled in the regions of the republic (summer and winter pastures), field and chamber works on salinization were carried out, geobotanical researches were conducted, protective forest strips were laid to reduce the negative impact of natural and anthropogenic factors on pastures and improve irrigation water supply. , construction and rehabilitation of irrigation and drainage networks.

However, due to the lack of pasture management, there are problems with the purposeful and efficient use of pastures. Thus, winter pastures are used without complying with the relevant standards, cattle are allowed to graze in violation of the established rules, as well as measures to restore soil fertility are not carried out at the required level.

Figure 1. Summer pastures

According to the data, in 2010-2020, the area of rural pastures decreased by 225.7 thousand hectares; winter pastures decreased by 180.9 thousand hectares from 1332.7 thousand hectares to 1151.8 thousand hectares.

In accordance with the norms established by the legislation, the demand for winter pastures of 8.6 million heads of small horned cattle is met only by 35.6%, and the demand for summer pastures is met by 17.3%.

As a result of overloading of pastures, grass cover has significantly decreased, dry grass productivity of pastures has decreased to 3-4 quintals.

The rapid development of the economy and raising the socio-cultural level of the population, the efficient use of the republic's natural resources and the formation of a new environmental consciousness should be the main focus of the new management method.

Long-term observations show that when pastures are grazed, their productivity and quality remain unchanged, and there is no significant change in the deterioration of pasture vegetation.

Pasture load: The maximum grazing rate that allows animals to reach the desired level of productivity. This norm is grazing in the grazing system for a certain period of time without damaging the pastures.

One of the main components of management - systematic grazing - is to identify and follow the headwaters of animals that fall into the pasture area.

Keeping cattle in the pasture within the norm is one of the important elements in improving and restoring pastures. Thus, in the pasture, the herds graze by selecting their favorite forage from the field, during which the plant (pruning) is done, and the bottom is emptied (dibbosaltma-ryxleniya), while also crushing and destroying harmful and poisonous plants with their nails, to grow and seed. The main thing is to have a high digestibility of the food they eat with love.

Proper organization of pasture management results in increased nutrient-rich biodiversity and productivity in pastures and improved quality, which ensures high productivity of animals, normal reproductive function and health.

1.Improving The Legislative Base Of Pastures

Improving the management of pasture use is one of the key factors in the efficient use of pastures, hayfields and hayfields, preventing their degradation, maintaining and increasing productivity potential.

The measures to be taken for this purpose are aimed at restoring productivity, preserving the natural landscape and biodiversity, and ensuring sustainable development by using the seeds of special pasture plants adapted to geographical conditions.

In order to achieve the goal, the main tasks in accordance with the Program must be performed:

-ensure the efficient use of pastures and hayfields;

- Improving the regulatory framework for the use of pastures and hayfields;

-creation of scientific support and human resources in the use of pastures and hayfields;

- minimization of harmful effects of anthropogenic factors;

-Application of innovative technologies in geobotanical research;

- Carrying out superficial and fundamental improvement measures in pastures and hayfields;

-rehabilitation and reconstruction of amelioration systems;

-creation of pasture user associations;

-increasing the efficiency of use of land, water and other natural resources in order to create a guaranteed fodder supply;

-ensure sustainable development of villages.

2.Awareness In Management

Farmers in the country are still in transition to a free economy, renting pastures from the state for a long time, but do not consider themselves fully responsible for the land.

They try to make the most of the land, regardless of the purpose of long-term use, which results in the degradation of both soil and vegetation.

The situation can be changed by creating a reliable legal framework and providing consulting services.

It is important to increase farmers' knowledge in pasture management, fodder production, environmental protection, and animal husbandry. These are important factors in the successful implementation of the Programs:

Consulting support: grazing and vegetation assessment, rehabilitation methods and grazing management.

Information provision: optimization of grazing norms, restoration of pastures, methods of planting mixed fodder crops (selection of species and varieties, sowing method), fertilization, improved methods for protection of fodder crops, etc., dissemination of good practi

3.Pasture Protection, World Experience

Agro-environmental measures are designed to encourage farmers to protect and strengthen the environment on their farms by paying for their environmental services. These measures reimburse farmers for the services they provide - they fulfill their environmental obligations by applying good farming practices. (European Commission, 2005).

Farmers are committed to adopting and applying environmentally friendly agricultural practices in the shortest possible time. In return, farmers are paid to compensate for additional costs and lost income arising from the application of agricultural methods that are considered environmentally friendly in accordance with the terms of the agro-ecological agreement.

Agro-environmental payments encourage farmers to adopt agricultural activities that lead to positive environmental results or methods that maintain the intensity of production, and do not set short-term profits as the main goal.

In the European Union (EU), the budget of the General Agricultural Policy (GAP) for agro-environmental activities for 2007-2013 is € 34 billion. 45% of farmers in the 27 EU member states are included in the program, and 30% of agricultural land is subsidized. The main costs are related to pastures. In addition to the rules prohibiting the destruction of pastures, the main issues supported by agro-ecological measures (AET) in pastures are compliance with grazing norms, conservation of rare species, protection of certain plant species in pastures, control of grazing frequency, date and frequency of mowing, fertilizer limiting the amount, banning the use of herbicides, protection of the natural landscape and the creation of its individual elements. AET is voluntary for farmers; they may or may not choose to take action. They aim to increase farmers' incomes by having a positive impact on the environment.

The contract is concluded between official government agencies and farmers for a minimum period of 5 years.

The contract contains details of the farmer's obligations to part or all of the farm.

Control is carried out proportionally by each EU member state (inspections of 2-3% of the economy per year are considered the basis for the poor to say that the agreement has been complied with) and payment is made annually.

Agro-ecological programs:

It should be flexible for farmers: they should be able to choose one of several options in the program;

The program should include an approach that applies to “the whole farm” or “part of the farm” or both;

Must be adapted to the regional situation;

It must compensate for production losses and may even help increase revenue;

It should determine whether payments are made on a case-by-case basis.

The following points are crucial for the success of agro-environmental programs: (BirdLife, nd):

Since the program creates a public product (property), it must compensate farmers;

Sufficient budget must be behind the program to achieve the goals;

The creation of the program should be based on science;

The required management must be agronomically feasible and practical;

The idea of the program should be a repetitive process;

Programs should initially target the interests of existing biodiversity or demonstrate sites with real potential for habitat restoration or plant resettlement;

Monitoring the environmental impact of agro-environmental programs is essential, and the results should be used in the preparation of the next phase;

Stakeholders, including farmers and environmental experts, should be consulted in the development and implementation of the program.

In Baden-Wirttemberg, Germany, the entire Bundesland is classified into three sensitive areas for different purposes: erosion control, groundwater pollution control, and cultural landscape preservation.

The mowing of meadows and pastures in forest-dominated areas is a feature of this cultural landscape.

The program aims to expand pastures and maintain traditional agricultural practices. One measure is aimed at protecting pastures with a sensitivity of more than 25%.

As more efforts are required to manage pastures in the steppe ecosystem, they will most likely be left to fend for themselves. The purpose of this event is to preserve the ashug structure of the cultural landscape - a traditional mixture of forest and pasture - and to stimulate tourism. Another measure aims to implement and / or maintain extensive pasture management: a maximum of two uses per year (mowing or grazing, or both), and one use per year for grazing.

Extensive pasture management preserves the cultural landscape, as well as protects various flora and fauna.

The third measure aims to preserve extensive orchards in the pastures, combining traditional and ecologically valuable features of the Baden-Wirttemberg landscape. Recently, new types of agro-ecological measures have been implemented.

This event is 'result-oriented'.

The program offers a fee of € 50 per hectare for the grazing of at least 4 of the 28 target plant species on the list. Recommendations are flexible because the results of this program are clearly defined and monitored, and farmers can choose the management that best suits their farms.

Botanical monitoring shows that the money spent results in the enrichment of biodiversity. The program covers 70,000 hectares.

In the United Kingdom (UK), a government program to implement agro-ecological schemes (i) has value for the rural environment but is declining or threatened, (ii) has significant potential to gain new value and create new opportunities, (iii) prioritizes areas, characteristics and resources that need positive management to maintain and strengthen values.

More than half of the budget for rural development policy is spent on agro-environmental issues.

Semi-natural and natural pastures combine important features of Slovakia's natural landscape, and the program aims to protect, expand and maintain the vegetation and quality of these pastures by paying farmers € 135 per hectare.

Management requirements include limiting the use of fertilizers and pesticides, setting grazing rates and restricting haymaking to ensure efficient pasture grazing.

In Cyprus, farmers are paid to implement a number of activities and management recommendations that help maintain the natural and traditional nature of the farm landscape.

Recommendations include planting trees such as hazelnuts, carob (Ceratonia siligua) and almonds, as well as traditional flowering and fragrant shrubs.

Funds are also paid for the construction and maintenance of terraces by building stone walls.

In the Czech Republic, the program aims to maintain the diversity of plant species and bird populations in the pasture by paying farmers to manage their pastures in harmony with the environment and in a more appropriate way. Management recommendations include maintaining a grazing rate of 0.5-1 HV / ha, limiting fertilizer application, and mowing non-grazed pastures twice a year. In return, farmers are paid € 95 / ha, and € 165 / ha in protected areas.

The existing pasture conservation program in Poland supports the conservation of important grassland plant species and a number of valuable meadow birds. To implement these recommendations, the program pays farmers € 67-89 per hectare per year.

It is not allowed to plow, sow seeds, apply fertilizers or pesticides, and the farmer must graze the pasture from May 20 to October 20 at a rate below 1 HV / ha.

Similar programs are available in 27 EU countries, as well as in the United States, Canada and Japan (Peeters 2008).

The essence of the agro-ecological program in Azerbaijan should be slightly different, because here the level of development of agriculture and the ecological problem are different.

Agriculture is still relatively extensive.

Production must be increased and the agricultural sector must be modernized. The program should focus on the protection of natural resources (pasture quality, soil fertility, water quality and quantity).

Giving subsidies to farmers will help them increase their incomes, improve infrastructure and purchase new equipment

can give white opportunity.

Examples of commitments covered by agro-environmental programs adapted to the conditions of Azerbaijan are:

Improving the quality of vegetation restoration of existing pastures and landscapes

Prevention of overgrazing (control of grazing norms).

Production of fodder crops in temporary pastures.

Prevention of erosion on mountain slopes

Prevention of salinization in irrigated areas.

Pastures and natural landscapes support the rural economy and are a source of livelihood for the rural population.

Any successful policy on the subject includes regulatory issues (for example, regulation of maximum grazing rates for each agro-geographical area) and incentives for farmers to improve the system (for example, subsidies for farmers to rest their pastures and sow grass seeds as part of pasture improvement programs).) should be provided.

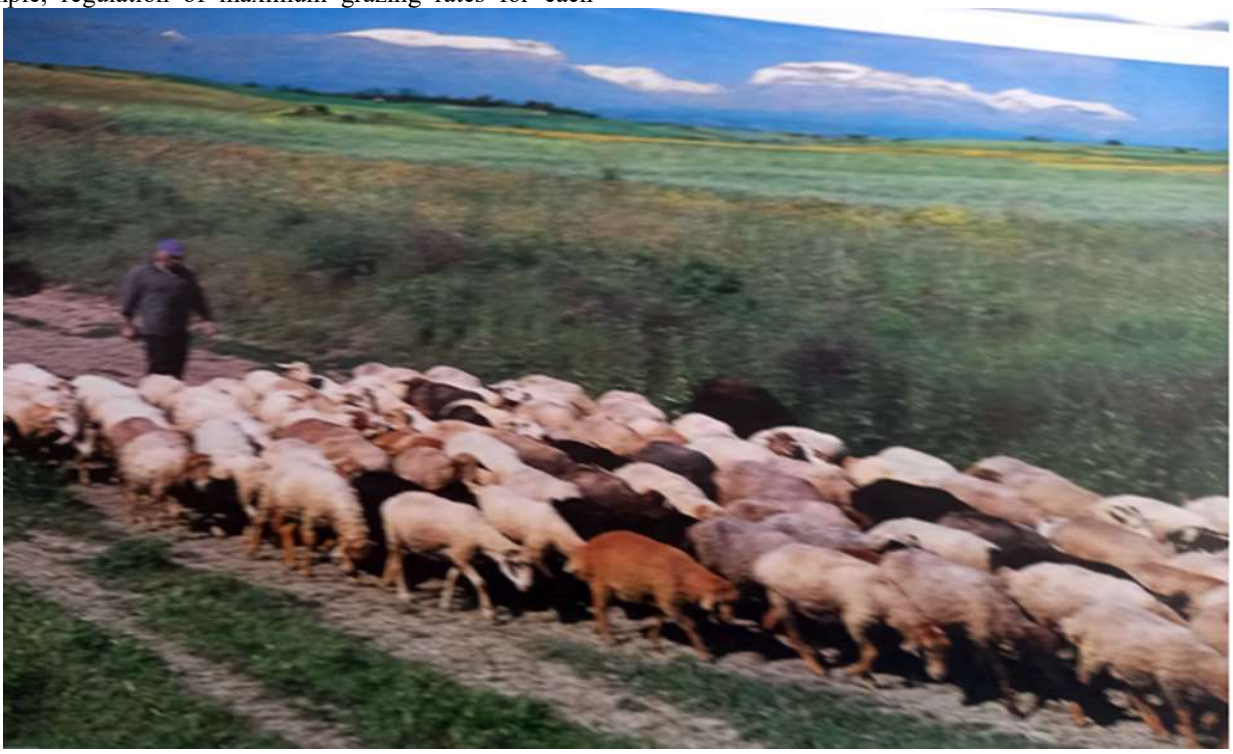

Figure.2. Regulation of maximum grazing norms for agro-geographical area

Determination of maximum grazing norms

Figure3.Restingofpasturesandsowingofgrassseeds

Strict rules on maximum grazing rates should be established to eliminate overgrazing and its negative consequences. These rules can be determined by agro-geographical areas or, better yet, by separate 'pastures'. These rules can be established by experts in pastures owned by the state or municipalities.

Maximum grazing norms and maximum grazing periods can be determined based on the production potential of each of these pastures. These areas can be described on maps as 'pastures grazed according to pasture load'.As is well known, pasture load is the maximum grazing rate that allows animals to reach the desired level of productivity.

Measures of pasture load are not easy to measure and include the effects of various unexpected effects (natural climatic factors; hail, extreme weather conditions, etc.) that are difficult or impossible to mitigate. Thus, pasture load can be considered as an 'optimal grazing norm'. The maximum grazing norms defined by the rules are fixed values and do not correspond to the optimal grazing norms. This understanding is a task to avoid excessive and unsustainable grazing norms.

Optimal grazing rates may be lower or higher than maximum grazing rates.The optimal grazing rate for summer pastures is on average about 4-8 heads per hectare.

In winter pastures characterized by steppe ecosystems, the optimal grazing rate is 2-4 heads per hectare, depending on the productivity of local vegetation.

Figure 4. Advanced and efficient farming experience.

Compliance with the appropriate grazing rate will be mandatory for farmers and will not be compensated as the measure is in line with 'good farming practices'.

The state or municipality may require a farmer who rents pasture to sign a contract that sets out the maximum grazing rate. can be provided. Adherence to the grazing norm will result in more easily digestible protein in the feed and more vitamins and minerals that are important for the animal's body (increase in productivity, increase in feed quality and digestibility), which will reduce labor costs and reduce crop production. feed unit consumption and economic efficiency will increase.

Based on the above, in order to improve management-increase the efficiency of pastures:

4.Production Suggestions

1. Grazing norms should be observed in pastures, taking into account the area, relief, vegetation, and grazing should be limited in areas prone to erosion and ravine formation;

2. Surface and capital improvement measures should be taken in the eroded areas, fertilization should be carried out taking into account the botanical composition of the grass cover, physical and chemical properties of the soil; (organic fertilizers an average of 20 tons of dried manure per hectare every 5 years, and mineral fertilizers an average of 1.5-2 quintals of ammonium saline per hectare in 2-3 years, 2-2.5 quintals of superphosphate, 1-1, 2 quintals of potassium chloride) should be given;

3. The planting of any crop, except for green fodder (harvest) not exceeding 3% of the total area for grazing and grazing in pastures, shall not be allowed, cattle shall not be kept in summer and winter pastures, migration roads and camps shall be returned to their intended purpose. must be provided,

4. In order to increase efficiency, the grazing rate should be limited to the number of animals, taking into account productivity, and in order to reduce the burden on pastures, cultural pastures should be created in irrigated areas with priority of modern technologies;

5. In order to improve the efficiency of the management system, a special fund should be established to apply and pay fines for violations of the rules of use of each hectare of pasture land kept in the State Land Fund, and the funds paid to this fund should be used to restore pastures and improve infrastructure;

6. When pastures are used under the cultivation of cereals and melons and gourds, the persons who allowed the sowing in the field shall be held liable and the damage caused shall be compensated to that person, as they have become unusable;

7. Pasture management-leasing, control over its use should be carried out in a centralized manner (creation of associations);

Summary

Elimination of existing problems in pastures (overgrazing, erosion of biodiversity, reduction of soil fertility and soil erosion, reduction of organic matter in the soil and CO2 release, salinization and alkalinization of soil, etc.) and their multifunctional features of special importance:

pastures are a supplier of many agricultural products,protects soil fertility and biodiversity,protects soil from wind and water erosion,has good potential for storing carbon dioxide in the soil compared to arable lands and forests, has a positive effect on the restoration of groundwater levels,

has a protective effect on maintaining water quality and has a positive effect on water infiltration,is an aesthetically pleasing landscape, provides wonderful opportunities for relaxation, open space, and existing problems;rest - vegetative and to some extent seed reproduction of local species,Soil softening - germination of annual, perennial grasses and dwarf shrub seeds,slopes - conversion of arable land into permanent pastures,inclusion of temporary pastures in crop rotation,increase feed production - support the production of meat, milk, wool, etc.

Given that pastures support the rural economy and are a source of livelihood for the population, Restoration and protection of pastures (rest, surface softening, surface and capital improvement, creation of temporary pastures, conversion of arable lands on slopes into pastures, etc.) are urgent and of special importance,“State Program approved by the Presidential Decree No. 222 of May 22, 2004” and “Strategic Road Map for the production and processing of agricultural products in the Republic of Azerbaijan” approved by the Presidential Decree No. 1138 dated December 6, 2016, is a contribution to the Sustainable Food Security Program in the country.