

The Main Challenges and Prospects of Pastures Rational Use in the Republic of Kazakhstan

Tlektes Yespolov*, Kanat Tireuov*, Ukilyay Kerimova*,
Suleimen Turekulov*

*Kazakh National Agrarian University, Republic of Kazakhstan, Almaty

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ABSTRACT. The adoption of the new Law "On pastures» is focused on the formation of the basic premises of the rational use of farmland, especially pastures. One of these prerequisites is the strengthening of the role of regional units of public administration. It is necessary to approve the role of regions as major subjects of agrarian policy. It requires an urgent solution to the issues of the severe degradation of pastures, insufficient irrigation, as well as desertification of pastures in the system of land relations of the regions. In order to implement the priorities of the rational use of pasture lands in the Republic of Kazakhstan, it is important to focus on the key role of regional development programs and institutions as the main tool for the development of pastures in the country. © 2018 Bull. Georg. Natl. Acad. Sci.

Key words: rational pasture use, low-water pastures flooding, pastures degradation

In the Message to the Nation by the President of the Republic of Kazakhstan Nursultan Nazarbayev "New Opportunities Under the Fourth Industrial Revolution", January 10, 2018, it is stated that it is necessary to stimulate the use of agricultural land with the best results [1].

Regulatory and legal conditions for ensuring the rational use of pastures, improving their condition and infrastructure, preventing the processes of their degradation are also defined in the new law of the Republic of Kazakhstan "On pastures" from February 20, 2018, that states "... in the case of the absence of pasture animals for grazing for two years in pastures, or their amount is less than 20% of the maximum permissible load on the total area

of pastures and the absence of mowing for the purpose of fodder harvesting, the land plots are under withdrawal" [2].

Nowadays, the existing advantages in the development of the country's agrarian sector, the diversity of soil and climate resources allowing cultivating various crops, including forage crops, as well as livestock and poultry farming, with optimal placement and use will allow to achieve sustainable economic results in the country's agro-industrial complex.

According to statistical data of the Ministry of National Economics of Republic Kazakhstan (<http://state.gov.kz>) the sizes of agricultural lands with total area 221.6 million hectares in 2017,

including pastures amounted to 186.5 million hectares (or 84% of all land) proves the presence of a great potential of natural resources in Kazakhstan [3].

Kazakhstan occupies the fifth place in the world and covers eight geographical zones with twelve kinds of soil varieties. The reserve of pastures feed is about 15 million tons of feed units. Moreover, the forage reserve of the republic consists of three categories of agricultural land: natural pastures, accounting for 60% of all forage; natural and sown hayfields constituting 18%; arable land under fodder crops is 22%. Therefore, all this suggests that Kazakhstan has the appropriate natural resources to increase the number of animals, in particular, the development of transhumance.

However, Kazakhstan is not fully realizing its potential for in the use of pastures. Thus, it is necessary to solve the number of the following issues.

The main problem is the strongest degradation of pasture lands. The presence of grass on the annually renewed pastures of Kazakhstan is from 25 to 28 million tons of fodder crops, the value of which is estimated at \$ 1.2 billion by the World Bank. On average, one conventional head of large and small cattle accounts for more than 20 hectares of pasture.

According to official data, only 81.2 million hectares or 43% of pastures have been used for pasturing livestock in recent years, 76.8 million hectares of that pastures are taken to the reserve lands, because of water lack and remoteness from settlements. In 2016, the number of grazing cattle in the Republic presented 14.9 million conventional heads in terms of cattle (cattle), and only per conventional head of cattle only 3.3 tons of feed. If it is taken into account that the demand for feed of the head of cattle for 180 days of grazing constitutes 6.3 tones, then the shortage of pasture forage from 81.2 million ha of pastures accounts for 52.3%; the existing forage grazing can provide only 7.4 million conventional heads of cattle.

Therefore, discrepancy between the balance of livestock and pasture resources has a negative impact on the condition and productivity of pastures, the yield of livestock products, as well as its quality.

Strengthening of this problem occurs against the background of steady growth of the livestock at the population. Currently, 52% to 63% of all livestock species in the country are concentrated in households, constituting 74% of all livestock production. Therefore, a large proportion of degraded pastures are located on lands near settlements, especially within 5 km. The main reason is oversaturation with cattle, which leads to the problem of their overgrazing. In particular, due to overgrazing, 27.1 million hectares of pastures were degraded, from which 14 million hectares were completely withdrawn from circulation, which resulted in violation of the norms for the permissible burden of grazing on pastures. Average pasture productivity in recent years does not exceed 0.5 tons of hay per ha [4].

Socio-economic conditions of the transition period limited the possibility of moving farm animals using seasonal pastures, which created the preconditions for the concentration of livestock around settlements and watering-places. Thus, the animal load per unit area in the natural and economic zones of only South-Eastern Kazakhstan exceeds the permissible limit by 3 - 5 times. This led to the mismatch of pasture forage to the needs of grazing animals in pasture feeds. So, the productivity of 1 hectare of pasture grounds on areas taking into account not watered areas does not exceed 250 fodder units.

It should be noted that the issues of transhumance in Kazakhstan have not been considered for more than 25 years, which has resulted in inefficient use of pasture lands. Many farmers did not migrate to summer pastures for economic reasons:

-Firstly, the lack of financial resources for the relocation and the lack of proper infrastructure;

-Secondly, being closer to the village, farmers can sell milk, kumis, butter, etc. Moreover, the second reason is more valuable as it is the only source of income.

The world practice shows that animals that graze in flocks and herds on distant pastures are well-nourished than those that graze near populated areas. In particular, the cattle ranching on pastures is rapidly growing by 10 kg more than the one which feeds on grassland near the house. At the same time, the cost of such meat in Kazakhstan can be 60-70% cheaper than meat products in European countries.

The second problem is the insufficient level of pasture watering. Currently, natural water sources as rivers, streams, lakes and springs provide no more than 40% of all pasture lands in the country. The rest of the territory requires creation of engineering structures for the raising of groundwater. Meantime, one of the reasons for the low level of pasture water supply is the lack of a complete picture of existing water wells that need to be reconstructed.

It is important to note that before 1990, there were 35,000 dug wells and 38,000 tub wells in the country. The water pipelines with a total length of 12 thousand km were functioned. Simultaneously, due to the lack of proper operation, more than 70% of water bodies damaged, and the construction of new ones stopped. Natural sources of the country can provide up to 40 million hectares of pastures [5]. The rest of the areas are under the flooding because of the engineering water extraction installations of underground waters..

Wherein, pasturable water supply in Kazakhstan has some distinguishing features:

- the use of pastures is seasonal;
- watering points between seasons do not work, so the equipment of watering points are removed or preserved until the next season;
- there are no centralized sources of electricity in the pastures, as the construction of electric

networks in the pastures of seasonal use requires large investments. Nowadays, water points on pastures are supplied with energy from autonomous power plants of low power. The internal combustion engines of mobile plant use to power the pumping and desalination plants and improve the life of shepherds.

The special significance has the flooding of low-water pastures, where due to the lack of the sufficient water, animals have to distill for watering over long distances, which is caused by long drinking breaks.

As a result of untimely watering along with long-distance overrun the animals get tired reducing the duration of grazing, which inevitably leads to loss of live weight of animals and reduce their productivity. In addition, as the animals with hauls intensively trample vegetation, the pasture productivity is reduced.

The third is the increasing trend of intensification and desertification of pasture lands. According to experts, Kazakhstan is the first among the CIS countries by size desertification. In particular, only in the South Kazakhstan region more than 2 million hectares of pastures came from the general turnover of land because of desertification. Along with desertification of pastures the arid species completely disappeared such as astragalus and izen greenish, which with saxaul bushes and other grasses restrained sands, fixed them with its root system in place, not allowing to move on and get more and more territory.

Unfortunately, there is a tendency sublease of among pasture owners who are not engaged in agricultural activities and do not have livestock to use. The point is that these grassland areas are left unused or not in use due to the lack of watering places for animals or livestock.

According to the general opinion of scientists and practitioners, the main reason of such a situation in pastures is the lack of a regulatory framework forcing the increasing risks associated

with climatic, anthropogenic, technical and other impacts.

Therefore, without regular state support, over the next 30 years, pasture lands can completely degrade and decrease their productivity.

The fourth is the lack of an information database on grazing land that would allow to assess the conditions for pasture livestock farming and their rational use. This problem is one of the reasons for the lack of assessment of the current productivity of pasture resources, their forage and capacity. The map of forage lands of Kazakhstan Republic was created in 1978 and now is outdated. Many types of forage lands lost their productivity, feed stock and forage capacity changed. Limited reliable information on the assessment of feed resources, watershed, determining the load of farm animals in the pasture area and others are one of the major factors hindering the development of the pasture system in the country.

Moreover, there is a problem of improving the necessary socio-economic conditions for livestock breeders for the development of transhumant livestock. There is no drinking water in remote pastures, the main conditions for work and rest of shepherds, as well as roads and communications. All these reasons discourage the farmers and they choose to graze cattle near the villages.

Therefore, the development of a mechanism for the rational use of the pasture potential of Kazakhstan Republic becomes significantly important at the present stage.

Effective development of pasture farms in the country, as a consequence, the development of transhumance involves primarily Interregional (district) consortium and the development of an integrated Program (hereinafter the Program).

It is advisable to consider the following issues in the Program of the Interregional Consortium functioning:

The development of the joint balance management of pasture resources by competent authorities of regions of the republic.

The development of a joint balance of pasture resources management provides the calculation of the needs of the regions of the republic in pastures and forage and the possibility of their coverage.

Implementation of the suggested balance sheet will allow to determine the optimal amount of mutual supplies of pasture resources in the regions, to relieve pasture areas, to solve the existing challenges between land owners and pasture users.

2. Adoption of a long-term Interregional (district) Agreement on the use of pasture resources.

There should be specified the amount of pasture resources in the agreement. Particularly, in the field of pasture arrays, it will be correct to determine the optimal volume of livestock population distribution and the degree of their concentration in the regions.

Besides, the issues about the organization of work on the integration of personal farms and small farms into agricultural cooperatives for the joint management of livestock in remote areas in the Agreement should be solved.

The agreement should also reflect all measures to eliminate the threats of crop failure, to carry out activities in case of drought and low yields. There should be taken measures to improve the quality of sown herbs and pastures, solving environmental problems.

The implementation of this Agreement will help to solve the problem of rational use of pasture resources in the regions of Kazakhstan.

3. Integrated development and use of pasture resources.

In this area it is necessary to approve, first of all, mutually agreed modes of use of grazing land (production, consumption, etc.)

It is advisable to create a new large-scale map for pasture livestock management, which in modern conditions will play an important role in increasing the productivity of livestock.

Here, special attention should be paid to the climatic indicators that affect the development of pasture livestock: frost, drought, freezing,

abundance of high temperatures, scarcity of precipitation and a huge deficit of humidity, causing specific climatic conditions in arid zones, expressed in their aridity, etc.

It seems necessary at the interregional level to coordinate the issues of development of pastures, the creation of a geoportal for pasture resources, for the practical application of agro-formations for the distillation and pasture livestock and, consequently, the resumption of mobile livestock in the country. In the methodical plan, the study of pasture areas in Kazakhstan should include three stages of mapping: inventory, assessment and review, providing data collection, analysis and input.

The development of cartographic models using GIS technologies give an opportunity for economic entities, especially farmers, small and medium enterprises to organize the rational management of livestock, create an environmentally friendly balanced structure of pasture lands, ensure the sustainability and profitability of agricultural production, improve the quality of life and living environment of the population.

4. Joint inter-regional construction of wells of intersystem lines, modernization of irrigation systems for pasture arrays.

It is important to develop a General scheme of irrigation of pastures, taking into account the rational placement of irrigation sources, indicating the priority of reconstruction of invalid (abandoned) and the construction of new irrigation facilities.

However, it should be emphasized that it is necessary to carry out examination and watering facilities and the creation of maps of pasture irrigation of the country for the assessment of water availability in pastoral areas, where first should show:

-watering pasture zones of good quality water (with salinity up to 2.0 g / cube dm);

-zones of watering pastures with water of satisfactory quality (with salinity ranging from 2.1 to 4.0 g / cube dm);

-zones of watering pastures with water of unsatisfactory quality, with the possibility of using

water in the absence of other sources of water use (with salinity ranging from 4.1 to 6.0 g / cube dm);

-zones of watering pastures with water, prohibited for use for livestock (with a mineralization of over 6.0 g / cube dm);

-zones of watering pastures with water without data on its mineralization.

Renewable energy sources should be used for energy supply in water points.

In Kazakhstan Republic, the low-capacity wind installations for pasture watering can be used in 85% of the total territory with about 150 thousand peasant farms, where half of them is specialized in livestock production. This refers to the use of Renewable Energy Sources (RES) - the sun, wind, biomass and others, which in recent years have been strengthened as "green technologies" term.

Currently, about 4,000 agricultural enterprises and more than 80,000 peasant farms do not have access to power transmission lines. The use of wind pumps or solar generators in pastures allow to reduce the cost of cubic meter of water by 2-3 times in comparison with water-lifting installations with a drive from an internal combustion engine.

In general, the work on the water supply of pasture livestock should be carried out on an innovative basis. Taking into account the current economic situation, it is proposed to organize the system of watering and water supply of pasture areas in three ways:

Firstly, there are more than 7,0 thousand villages and settlements in the country, where the main livestock of animals belongs to the households. There are sufficient labor resources, but there is no adequate infrastructure and the possibility of processing the agricultural products. On the basis of cooperation, interested in the final result, you can achieve good results. Therefore, the problem of flooding pastures should begin from them.

Secondly, 35 million hectares or 20% of pasture land are at the disposal of farms. There is 5 million grown by country farmers, from 18 million sheep. It is necessary to use this potential rationally.

Thirdly, taking into account that all land is distributed by owners, and vacant land suitable for transhumance are found only in the lands of the state reserve. It is encouraged to learn them by creating a new modern structure. In our opinion, it should be useful to create an innovative Youth Livestock Complex (YLC) with appropriate infrastructure.

The proposed activities on sustainable management of pasture resources will contribute to the preservation of the ecological integrity of the pastoral ecosystems of the Republic in the environment, the development of the livestock sector and the provision of food security in Kazakhstan Republic.

აგრარული მეცნიერებანი

სამოვრების რაციონალური გამოყენების მთავარი გამოწვევები და პერსპექტივები ყაზახეთის რესპუბლიკაში

ტ. იესპოლოვი*, კ. ტირეუოვი*, უ. კერიმოვა*, ს. ტურეკულოვი*

**ყაზახეთის ეროვნული აგრარული უნივერსიტეტი, ალმაათა, ყაზახეთის რესპუბლიკა*

(წარმოდგენილია აკადემიის წევრის გ. კვესიტაძის მიერ)

„სამოვრების შესახებ“ ახალი კანონის მიღება მიმართულია სავარგულების, განსაკუთრებით კი სამოვრების რაციონალური გამოყენებისკენ. ამის ერთ-ერთი წინაპირობაა სახელმწიფო მმართველობის რეგიონული ერთეულების როლის გაძლიერება. აუცილებელია რეგიონებს, როგორც სასაოფლო-სამეურნეო პოლიტიკის მთავარ სუბიექტებს, მიენიჭოს განსაზღვრული როლი. სამოვრების სერიოზული დეგრადაცია, არასათანადო ირიგაცია, ისევე როგორც სამოვრების გაუდაზნოება რეგიონების მიწებთან დაკავშირებულ სისტემაში ის პრობლემებია, რომლებიც სასწრაფო გადაწყვეტას მოითხოვს. ყაზახეთის რესპუბლიკაში სასამოვრე მიწების რაციონალურად გამოყენებისათვის პრიორიტეტების განსახორციელებლად მნიშვნელოვანია ყურადღების გამახვილება რეგიონული განვითარების პროგრამებისა და ინსტიტუციების, როგორც ქვეყნის სამოვრების განვითარების მთავარი ინსტრუმენტის, საკვანძო როლზე.

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