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STUDY OF WAYS TO RESTORE THE BIOPRODUCTIVITY OF PASTURES
ИЗУЧЕНИЕ СПОСОБОВ ВОССТАНОВЛЕНИЯ БИОПРОДУКТИВНОСТИ ПАСТБИЩ

ANNOTATION

Currently, the area of downed and overgrown pastures with non-edible and poisonous plants is growing in the West Kazakhstan region. The area of degraded lands in places of watering and recreation of animals is especially large. The range of pastures around the villages expanded to 7-9 km . In general, the dynamics of these processes currently allows us to predict with a high degree of confidence the expansion of pasture degradation to 50% of their area. The unfavorable condition of pastures is explained not only by the natural features of the region. To an even greater extent, this is the result of anthropogenic impact. So, in recent years, in the pursuit of profit, agricultural formations,

especially farms, without taking into account the conditions of pasture lands, have begun to intensively increase the number of agricultural animals. As a result, this led to a significant increase in pasture load, reduced the yield and feed intensity of pasture lands, intensified the processes of desertification in vast territories. The condition of sandy pastures, which used to be mainly used as winter pastures, is especially unfavorable, today they are also used in other seasons. In order to prevent negative anthropogenic impact on pastures in modern agricultural production, the adaptive strategy for further increasing the production of food and agricultural raw materials should be based on the principles of rational nature management, the system of which includes a number of measures, of which the most important are: seasonality of grazing pastures, taking into account the state of vegetation cover, its yield; establishment of the optimal load of livestock per unit area.

Key words: *pastures, bioproductivity, rational use, Tumat, yield, feed quality*

Ключевые слова: *пастбища, биопродуктивность, рациональное использование, Тумат, урожайность, качество корма*

Introduction. Along with other measures to increase productivity and rational use of pasture ecosystems, the use of biological agents and bio-organic fertilizers is important.

By the beginning of the XXI century, there were many prerequisites for the growth of the biofertilizer segment at once. The main thing is the degradation and impoverishment of soils, which chemical fertilizers can no longer cope with. Another important prerequisite is the ability and willingness of consumers in developed countries to pay more for agricultural products grown without the use of pesticides and chemical fertilizers. The accumulation of waste from animal husbandry and the need to properly dispose of them also push scientists to develop new biofertilizers. In Russia alone, waste from the agro-industrial complex is estimated at 600 million tons per year (or 225 million tons in dry matter), which occupy about 2 million hectares of agricultural land. Non-utilized agricultural waste oxidizes the soil, pollutes groundwater and increases greenhouse gas emissions into the atmosphere [1, 2, 3, 4, 5, 6, 7].

One of the agricultural practices aimed at reducing soil degradation and increasing their fertility is the use of bio-organic fertilizers. Their introduction into the soil accelerates the processes of humification, improves the water-physical properties and thermal regime of the soil, stimulates the growth and development of plants [8, 9, 10, 11, 12, 13, 14].

The use of bio-organic fertilizers is closely related to organic agriculture, where its methods are considered environmentally sustainable, due to the fact that they: - improve the structure and fertility of the soil through the use of crop rotation, environmentally friendly organic fertilizers, mulch and the use of legume fodder plants to introduce nitrogen into the cycle of soil fertility. - contribute to biological diversity through the use of natural methods of combating harmful organisms, rather than synthetic pesticides, which, when abused, destroy beneficial organisms. - apply crop rotation, which promotes the planting of a variety of food crops, fodder and underused plants. Despite the fact that the use of bio-organic fertilizers has been studied to some extent, and their positive effects can be confirmed, the experience of their practical application is still small. To determine the impact of an individual product, it is recommended to first test it on a small area and compare the results with the results obtained in an untreated area. It should be noted that bio-organic fertilizers cannot serve as a full-fledged substitute for ensuring the proper level of humus content in the soil of a farm [15, 16, 17, 18, 19, 20].

In this regard, much attention is paid to research on the effects of organic-mineral humic fertilizers "Tumat" on yield, feed capacity, plant and soil cover indicators of pastures of the dry steppe zone of the West Kazakhstan region in order to ensure food security of the region. **Materials and methods of research.**The research is carried out at the West Kazakhstan Agrarian and Technical University named after Zhangir Khan according to the PCF of the Ministry of Agriculture of the Republic of Kazakhstan BR10764865 "Scientific and technological support for the conservation and reproduction of fertility of agricultural lands".

Objects of research: pasture lands of the 1st dry-steppe zone of the West Kazakhstan region. In the year of research (2022), monitoring was carried out on the pasture lands of the Daukara peasant farm in the Bayterek district of the West Kazakhstan region.

A method for studying the effects of organic-mineral humic fertilizer "Tumat" on pasture productivity.

The area of 1 plot is 0.50 ha, taking into account the protective strips, the repetition is 3-fold, the arrangement of plots is systematic.

The rate of consumption of the drug is 1 l / ha, the rate of the working solution is 200 l / ha. The treatment was carried out with a sprayer OPSH-22-2500 in 2 terms according to the scheme of the experiment.

The following calculations and observations were carried out on the experiments:

1) study of changes in the yield of feed mass by bleed cycles;

2) study of changes in the quality of the fodder mass of pasture phytocenoses;

Results and their discussion. In ensuring the food security of the city of Uralsk, the production of high-quality agricultural products of plant and animal origin is of great importance.

In the food belt of the city of Uralsk, productivity increases in agricultural lands located near the city, including pasture lands, are of great importance.

As shown by the research data of 2022 on the pasture lands of the farm "Daukara" of the Bayterek district of the West Kazakhstan region, organo-mineral humic fertilizers "Tumat" had an impact on the yield of pasture phytocenoses, depending on the time of application of the drug.

In 1 bleedings (June), pasture lands treated in the spring with organic-mineral humic fertilizer "Tumat" provided a yield of green phytomass at the level of 7.53 c/ha, which is 0.98 c/ha more compared to the control variant without treatment. At the control, the yield of the green mass of pasture herbage was 7.53 kg/ha or less by 14.96% less compared to pasture herbage treated with organic-mineral humic fertilizer "Tumat".

In the 2022 studies, when pastures were treated with organo-mineral fertilizer in the spring, an increase in the projective coverage of pastures to 55% was noted, in the herbage compared to the control there were 2 more types of pasture plants. Pasture grass treated in spring with organo-mineral humic fertilizer "Tumat" had a height of 33.55 cm or 5.05 cm higher with the control variant (23.50).

As shown by the data of the analysis of yield data of the 2nd grazing phytocenosis, pasture productivity had a certain aftereffect of the processing of the land with organo-mineral fertilizers.

In the summer-autumn period in 2 bleedings (July), the yield of pastures not treated with organic-mineral fertilizer was 3.18 c/ha in green and 1.81 c/ha in dry form.

The processing of pasture grass in the spring period of organic-mineral humic fertilizers "Tumat" had a positive effect on the yield of pastures and in 2 bleedings. In this variant, the yield of the green mass of pasture grass was 4.13 c/ha or 2.05 c/ha in dry form, the difference with the control for the yield of dry mass was 0.24 c/ha or 13.26%.

In the 3rd variant, pasture lands were cultivated 2 times in spring (May) and in summer (in the month of June after rain). As the research data showed, with the double processing of organic-mineral humic fertilizers "Tumat", the yield of pasture cenosis was 4.51 c/ha in green form and 2.21 c/ha in dry form. The difference in yield between variants 1 and 3 was 0.40 c/ha in dry weight or 22.10%.

In 2 bleedings, the projective coverage of pastures under control with the number of 6 types of pasture plants was 40%. When using pastures of the dry steppe zone without treatment with organo-mineral fertilizer, the height of the herbage in the summer-autumn period was at the level of 22.44 cm.

When processing pastures with organic-mineral humic fertilizer "Tumat", both in spring and in summer, the indicators of the quantitative and qualitative composition of pastures were almost the same. The projective cover of pastures was at the level of 50-65% with the same number of pasture plants 9. Herbage had a difference in plant height. If, during spring processing, the height of plants on pastures was at the level of 26.78 cm, double processing slightly increased the height of plants to 29.54 cm.

In the conditions of the year of research (2022), double treatment of pastures with organic-mineral humic fertilizer "Tumat" gave a positive effect.

In the conditions of favorable weather conditions in 2022, the difference in yield between pasture processing options in spring (single processing) and spring, summer (double processing) was 0.16 c/ha or 7.80% in dry weight.

As research data show, the productivity of pasture grass depends on the technology of care.

In the 2022 studies, when pastures were treated with organic-mineral humic fertilizer "Tumat", the yield of the dry mass of pasture grass in the summer period was 2.05-2.21 c/ha. In the absence of

biofertilization of pastures, the productivity of pastures decreases to the level of 1.81 kg/ha of dry weight.

According to the indicators of the collection of fodder units (1.05-1.11 kg/ha), digestible protein (0.08 kg/ha), the productivity of pasture grass was high when using organic-mineral humic fertilizers "Tumat" on pastures.

At the same time, the provision of feed units with digestible protein in 2 treatment options was 74-79g or 25-29g more compared to the control. The yield of feed units and digestible protein from 1 ha was lower compared to the above variant in the control variant (0.74 and 0.04 c/ha). In this variant, the provision of feed units with digestible protein decreased to 49g. The output of the exchange energy in the experimental variants was at the level of 1.03-1.55 GJ/ha.

In terms of energy value, the use of organic-mineral humic fertilizers "Tumat" 1,44-1,55 GJ/ha on pastures occupies an advantageous position (Table 1).

Table 1 – Productivity and feed value of pasture phytocenoses of the dry-steppe zone of the West Kazakhstan region, depending on the processing technology with organic-mineral humic fertilizer "Tumat", the farm "Daukara" of the Bayterek district of the West Kazakhstan region, 2022

Indicators	Processing options		
	Control (without processing)	Spring processing	Spring+ Summer processing
Green mass collection, c/ha	3,18	4,13	4,51
Dry mass yield, c/ha	1,81	2,05	2,21
Collection of fodder units, c/ha	0,74	1,05	1,11
Collection of digestible protein, c/ha	0,04	0,08	0,08
Provision of feed units with digestible protein, g	49	74	79
Collection of metabolic energy, GJ/ha	1,03	1,44	1,55

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РЕЗЮМЕ

В настоящее время в Западно-Казахстанской области растет площадь сбитых и заросших непоедаемыми и ядовитыми растениями пастбищ. Особенно велика площадь деградированных угодий в местах водопоя и отдыха животных. Сбой пастбищ вокруг аулов расширялся до 7-9 км. В целом динамика этих процессов в настоящее время позволяет с высокой долей уверенности прогнозировать расширение деградации пастбищ до 50% их площади. Неблагоприятное состояние пастбищ объясняется не только природными особенностями региона. Еще в большей мере это результат антропогенного воздействия. Так, в течение последних лет в погоне за прибылью сельскохозяйственные формирования, особенно фермерские хозяйства без учета состояний пастбищных угодий стали интенсивно нарашивать поголовье с.х. животных. В итоге это привело к существенному повышению пастбищной нагрузки, снизило урожайность и кормоемкость пастбищных угодий, усилило процессы опустынивания на огромных территориях. Особенно неблагополучно состояние песчаных пастбищ, используемые раньше, главным образом, в качестве зимних, сегодня они используются и в другие сезоны.В целях предотвращения отрицательного антропогенного воздействия на пастбища в современном с.х. производстве в основу адаптивной стратегии дальнейшего наращивания производства продуктов питания и сельскохозяйственного сырья должны быть положены принципы рационального природопользования, в систему которого входит целый ряд мероприятий, из которых наиболее важными являются: сезонность стравливания пастбищ с учетом состояния растительного покрова, его урожайности; установление оптимальной нагрузки скота на единицу площади.

ТҮЙІН

Қазіргі уақытта Батыс Қазақстан облысында жеуге жарамсыз және улы өсімдіктер кең таралған жайылымдардың ауданы өсуде. Әсіресе күйзелген жерлердің көлемі мал су ішіп демалатын төңіреткрдң ерекше үлкен. Жалпы, бұл процестердің динамикасы қазіргі уақытта жайылымдардың деградациясының олардың аумағының 50% - на дейін өскенін жоғары сенімділікпен болжауға мүмкіндік береді. Жайылымдардың қолайсыз жағдайы аймақтың табиғи ерекшеліктерімен ғана түсіндірілмейді. Бұл антропогендік әсердің нәтижесі. Сонымен, соңғы жылдары ауылшаруашылық құрылымдары, әсіресе фермерлік шаруашылықтар пайда табу үшін жайылымдық жерлердің жай-күйін ескермей, ауыл шаруашылығы малдарының санын қарқынды түрде өсіре бастады. Нәтижесінде бұл жайылымдық жүктеменің едәуір артуына әкелді, жайылымдық жерлердің өнімділігі мен жемшөп сыйымдылығын төмендетті, үлкен аумақтарда шөлейттену процестерін күшейтті. Құмды жайылымдардың жағдайы әсіресе қолайсыз, олар бұрын, негізінен, мал бағуға негізінн қыс мезгілінде пайдаланылса, бүгінде олар басқа маусымдарда да қолданылады. Қазіргі ауыл шаруашылығы өндірісіне жайылымдарға теріс антропогендік әсердің алдын алу мақсатында азық-түлік өнімдері мен ауыл шаруашылығы шикізатын өндіруді одан әрі ұлғайтудың бейімделу стратегиясының негізіне табиғатты ұтымды пайдалану қағидаттары негізге алынуы тиіс, оның жүйесіне мыналар аса маңызды болып табылады: өсімдік жамылғысының жай-күйін, оның өнімділігін ескере отырып, жайылымдарды маусымдар бойынша және жайылымдардың аудан бірлігіне түсетін малдың жүктемесін ескере пайдалану.

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