THE EFFECT OF ORGANIC FERTILIZER "TUMAT" ON THE YIELD OF PASTURE CROPS

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Abstrakt. *Hozirgi vaqtda organik mahsulotlar ishlab chiqarish uchun katta imkoniyatlarga ega bo'lgan chorvachilikni distillashni rivojlantirishga katta e'tibor qaratilmoqda. Ushbu muammoning muvaffaqiyatli hal etilishi ko'p jihatdan yaylov dehqonchiligining katta qismini egallagan em-xashak ishlab chiqarishning rivojlanish darajasiga bog'liq. Bu tabiiy em – xashak erlarining katta maydonlari bilan bog'liq-188 million gektardan ortiq, bu esa o'z navbatida qishloq xo'jalik hayvonlari uchun arzon ozuqa manbai hisoblanadi. Qozog'istonning Janubiy mintaqasi tabiiy yaylovlarining katta qismi Shimoliy cho'lning Orol-Qizilqum va Moyinkum-Betpakdalinskiy tabiiy hududlarida to'plangan. Bu erlar organik mahsulotlar ishlab chiqarishda katta istiqbolga ega. Biroq, ularning hosildorligi past va yil va mavsumga qarab juda katta farq qiladi. O'tgan asrning saksoninchi yillarida olingan xorijiy olimlarning tadqiqot natijalariga asoslanib, chet elda qurg'oqchil yaylovlarni saqlash va unumdorligini oshirish uchun yaylovlardan foydalanishning asosiy shartlari erlarni inventarizatsiya qilish, hayvonlar soni va hayvonlarning sig'imi balansi. yaylovlar, em-xashak o'simliklarini o'z vaqtida begonalashtirish, o'tlarning davriy dam olishini ta'minlash, buta va o'rmon plantatsiyalarini yaratish, qimmatbaho em-xashak o'simliklarining turlari va navlarini tanlash va ularni ekish. Turkistonning oziq-ovqat kamarining o'rganilgan hududlarida yaylov erlarini yaxshilash texnikasini ishlab chiqish bo'yicha dala tajribalari o'tkazildi. Shunday qilib, Turkiston viloyatining yaylovlari o'simlik resurslariga juda kambag'al bo'lib, yaylovlarning degradatsiyasi aniq. Mintaqa qishloq xo'jaligi uchun xavfli, chunki so'nggi yillarda yog'ingarchilik miqdori 120-180 mm dan oshmaydi. tuproq sho'rlangan va o'simliklarga kam. Asosiy o'simliklari efemera, efemeroidlar va halofitlardir. Yarim buta o'simliklari asosan shuvoqning har xil turlari bilan ifodalanadi. Tumat organik preparati bilan yaylov ekinlarini barg bilan davolash sug'orish uchun makkajo'xori kabi aniq natija bermadi. Asosiy sabab-yaylov sharoitida nazoratsiz tuproq namligi. Preparat vegetativ qismni barglar orqali purkash, ya'ni barglarni o'rash orqali qayta ishlash uchun tavsiya etilganligi sababli. Shuning uchun biz Qozog'istonning Turkiston viloyatining issiq iqlim sharoitida yaylov ekinlarini qayta ishlashga hojat yo'q degan xulosaga keldik.*

Абстракт. *В настоящее время большое внимание уделяется развитию животноводства, которое имеет большой потенциал для производства органической продукции. Успешное решение этой проблемы во многом зависит от уровня развития кормопроизводства, которое занимает значительную часть пастбищного земледелия. Это связано с большими площадями естественных кормов - сенокосов - более 188 млн га, которые, в свою очередь, являются дешевым источником корма для сельскохозяйственных животных. Большая часть естественных пастбищ Южного региона Казахстана сосредоточена в Арол-Кызылкумской и Мойынкум-Бетпакдалинской природных зонах Северной пустыни. Эти земли имеют большие перспективы в производстве органической продукции. Однако продуктивность их невысока и сильно колеблется в зависимости от*

года и сезона. По результатам исследований зарубежных учёных, полученных в восьмидесятые годы прошлого века, основными условиями использования пастбищ для сохранения и повышения продуктивности засушливых пастбищ за рубежом являются инвентаризация земель, поголовье и баланс поголовья. пастбища, своевременное отчуждение кормовых растений, обеспечение периодического покоя трав, создание кустарниковых и лесных насаждений, отбор видов и сортов ценных кормовых растений и их посадка.

Key words: *pasture, Tumat, forage plants, innovative technology, highly productive, experiments, studied regions, meteorological indicators, precipitation, arid crops.*

Kalit so'zlar: *yaylov, tumat, em-xashak o'simliklari, innovatsion texnologiya, yuqori mahsuldor, tajribalar, o'rganilayotgan hududlar, meteorologik ko'rsatkichlar, yog'ingarchilik, quruq ekinlar*

Ключевые слова: *пастбище, Тумат, кормовые растения, инновационная технология, высокопродуктивные, эксперименты, изучаемые регионы, метеорологические показатели, осадки, засушливые культуры.*

Пастбища Туркестанской области очень бедны растительными ресурсами, и деградация пастбищ очевидна. Регион опасен для сельского хозяйства, поскольку в последние годы количество осадков не превышает 120-180 мм. Почва засоленная и лишена растительности. Основные растения — эфемеры, эфемероиды и галофиты. Полукустарниковые растения представлены в основном различными видами полыни. Внекорневая обработка пастбищных культур органическим препаратом Тумат не дала таких результатов, как на кукурузе в орошаемых участках. Основная причина – неконтролируемая влажность почвы в условиях выпаса. Так как препарат рекомендуется для обработки вегетативной части методом внекорневого опрыскивания, то есть путем опрыскивание листьев. Поэтому мы пришли к выводу, что в жарких климатических условиях Туркестанской области Казахстана нет необходимости обрабатывать пастбищные культуры.

Introduction. Currently, much attention is being paid to the development of distilling livestock, which has a great potential for the production of organic products. The successful solution of this problem largely depends on the level of development of forage production, where a significant share is occupied by *pasture* farming. This is due to the large areas of natural forage lands – more than 188 million hectares, which in turn are a source of cheap feed for farm animals. A significant part of the natural pastures of the southern region of Kazakhstan is concentrated in the Aral-Kyzylkum and Moyinkum-Betpakdalinsky natural areas of the northern desert, Zhanadarya-Kyzylkum natural area of the southern desert and Karatau natural area of the foothill desert. They are the basis for the development of cattle breeding both now and in the foreseeable future. These lands have great prospects in the production of organic products. However, their yield is low and varies greatly by year and season. This is usually related to the climate and weather conditions of a particular year. These features of arid pastures are explained not only by the climate, but also by the unregulated, uncontrolled exploitation of pasture resources, accompanied by a blackened vegetation cover, deterioration of species composition, downed pastures, and land emptying.

Based on the research results of foreign scientists obtained in the eighties of the last century, it can be argued that in order to preserve and increase the productivity of arid pastures

abroad, the main conditions for the use of pastures are an inventory of land, a balance in the number of animals and the capacity of pastures, timely alienation of forage plants, provision of periodic rest for grass, creation of shrubby and forest plantations, selection of species and varieties of valuable forage plants and their sowing. Consequently, the work aimed at preserving and increasing the productivity of arid pastures is becoming particularly relevant. In this regard, special attention is required to create an innovative technology for improving low–yielding natural lands by applying foliar fertilization with organic fertilizers and sowing seeds of pasture crops, which make it possible to introduce the basic principle of rational use of pastures - seasonality of their operation within the boundaries of land use of farms and other agricultural formations. In the southern region of Kazakhstan, most of them are located on the same type of pasture, i.e. one season of use, which makes it difficult to provide uninterrupted pasture feed in other seasons of the year. Therefore, the development of technology for creating highly productive pasture lands for year-round use in order to provide animals in all seasons is relevant.

Goal:

To conduct an agrochemical and geobotanical survey of pasture lands.

Assessment of soil cover indicators.

Determination of the species diversity of vegetation cover.

Calculation of vegetation density.

Assessment of quantitative and qualitative indicators of the harvest.

Project objectives:

- Determination of the species diversity of the flora of the surveyed territories of the pastures of the food belt of Turkestan.

Preparation of experimental sites, laying experiments on options.

- Restoration of the species diversity of grassland communities through the use of biofertilizers.

The feed resources of natural pastures, as a rule, represent the basis for obtaining high-grade cheap animal feed. In this regard, identifying the biological and economic potential of natural forage lands, developing a scientific basis for their use and increasing productivity, has been and remains the main task of feed production. In order to increase productive longevity and resistance to adverse environmental factors, highly productive pasture lands are formed from cenotically strong, locally adapted species and varieties of forage crops that differ in their activity during different periods of the life of the seed community. Overgrazing causes plant changes in the aboveground and underground parts. With frequent and excessive grazing, the ability of plants to form new shoots decreases. This is due to the overspending of spare nutrients in perennial plant organs. With increased grazing, the root system shortens, and the roots are located close to the soil surface, where there is little moisture. Due to increased grazing, perennial valuable forage plants are replaced by low-value poorly eaten or non-edible plants with a short life cycle. This reduces the quality and quantity of pasture feed. In this regard, the survey and assessment of the quantitative and qualitative state of natural pastures of a particular agroformationand the development of a set of measures for the management of pasture resources, one of which is to increase the productivity of land by applying leaf fertilization to pasture crops of year-round use is important. Field experiments were conducted to develop techniques for improving pasture lands in the studied regions of the food belt of Turkestan

Research methods:

The size of the plot is 12 m x 8 m . The repetition is threefold. The number of treatments is 2 times at the rate of 2 liters of the drug per hectare. The rate of working fluid at the rate of 300 liters per 1 hectare. We had it at 6 liters + 80 g. Processed on the evening of April 22, 2021. The second processing was carried out on June 16, 2021. They were treated twice during the growing season.

The place of the experiment:

Turkestan region, Otyrar district, Rural district, Shilik IP " Aldanov " The total area of the experimental site is 0.25 hectares. The soil is highly saline the treated area is 0.05 hectares in each repeat. A Chinese knapsack sprayer, 20 liters, electric, was used for processing.

The survey and assessment of the pasture area of the farm were carried out according to the instructions for geobotanical surveys of natural forage lands. Vegetation description and determination of land productivity were carried out on a site of 96 m2 (8 m = 12 m) with a 3-fold repetition.

Meteorological indicators

The main feature of the climate of the research area is its pronounced continentality, characterized by sharp fluctuations in air temperature throughout the year and day, high summer temperatures and relatively low in winter, extremely uneven distribution of precipitation by seasons. The average annual air temperature according to the Arys weather station is 12.0°C, the average annual precipitation is 221 mm. Visual observation of weather conditions showed that the winter months were relatively warm. There was very little precipitation in the form of snow. A slight amount of precipitation was observed in January and February. The first half of March was dry. Precipitation fell at the end of the month. The peculiarities of the weather conditions of the reporting year are abnormal temperature indicators in the months of April. The weather conditions of this year showed that the first month of winter was relatively cold and the remaining months were relatively warm and humid. So, at the experimental site, the daytime air temperature in January ranged on average from -5 °C to -11 °C, at night from -13 °C to -17 ° C, in February the air temperature dropped sharply and, respectively, ranged from -10 ° C to -17 ° C and from -15 ° C to -20 °C. Since the third decade of June, the heat has set in, the air temperature has risen to 36-38 ° C. The heat continued in July, and on weekdays the temperature rose to 42-45 °C. The average monthly air temperature in July was 38.5 °C; in August, 36 °C. With long-term average data of 28.9 and 25.8 °C. Rainy weather was established in the first decade and at the end of March. There was no rain until the second half of April. Precipitation in the form of rains was also observed at the beginning of May, however, it is worth noting that significant precipitation was not observed in the flat area. The amount of precipitation in January-May was only 99mm. During this period, the precipitation deficit amounted to 55 mm of the average annual precipitation. As a result of the dry weather at the end of April, during the flowering period of the plant and fruit formation, precipitation was very low. Thus, climatic features (high temperatures in summer and a large deficit of precipitation) had a peculiar effect on the growth and development of plants both on pastures and experimental plots.

Geobotanical survey

The geobotanical survey was conducted on the territory of the Turkestan region, IP "Aldanov" located on the territory of the rural district of Shilik, Otyrar district, Turkestan region, 65 km from the city Turkestan. A geobotanical survey of the pasture territory of IP Aldanov showed that the species composition of the grasslands is very poor. The main part of the territory is occupied by semi-shrubby crops of various types of wormwood (Artemisia) Purslane (Potulaca

oleracea), Camel thorn (Alhagi pseudoalhagi), Azherek (Aeluropus littoralis), Fenugreek (Trigonella), Bulbous bluegrass (Poa bulbosa), Meadow bluegrass (Poa pratensis), Roofing bonfire (Bromus testorum). The projective coverage is 100%, where wormwood accounts for 50% and 50% of the remaining vegetation. The main background of the pasture herbage consists of various types of wormwood perennials. On pastures, it is perfectly eaten by all types of livestock, has a high nutritional value. During the fruiting period, it contains, in terms of 100 kg of absolutely dry matter, about 6.7 kg of digestible protein, 86.0 feed units. The most common species after wormwood (Artemisia) Purslane (Potulaca oleracea) containing 102.1 feed per 100 kg of feed during the flowering period. units, 8.5 kg of digestible protein and 28.5 g of carotene. After the end of the growing season, it is stored for a long time on the pasture as "hay on the vine". In favorable precipitation and temperature conditions at the end of March and in the second half, as it was in April of this year, ephemeral plants Bulbous bluegrass (Poa bulbosa), meadow bluegrass (Poa pratensis) grow abundantly. In spring, in the stages of mass flowering, it contains 12.26-21.95% protein and only 12.59-22.72% fiber, 80-85.5 feed units. In its green form, it is eaten well by sheep in the pasture. After drying, it disappears from the herbage. Other types of ephemera are very sparse, some are rare. Roofing bonfire (Bromus tectorum L.). 100 kg of feed collected and the flowering phase contains 92.3 feed units, 5.4 kg of digestible protein and about 55 g of carotene. In its green form, it is perfectly eaten by cattle along with other ephemera. It is not preserved in dry form in the herbage. Fenugreek- Trigonella. An annual ephemeral plant from the legume family. This species is usually abundant in the first year. This year, due to delayed precipitation, almost no precipitation appeared. Highly nutritious fat-rich food in spring contains 22.0; - in summer 13.99% protein, 65.6-67.9 feed. units, 24.33-25.95 typos. Among the semi-shrubs, there are different types of wormwood (Artemisia). Due to the content of medicinal raw materials, santonin and other alkaloids are not eaten by animals in spring and summer. In autumn, there is almost no santonin in plants, so in autumn and winter it is used for grazing, as a medium-quality forage plant. In autumn, 100 kg of feed contains 4.42 kg of digestible protein, 68.1 feed units. Sagebrush (Artemisia diffusa) is often found in the territories, which is an excellent bait feed for sheep in the autumn period. From the above it can be seen that wormwood species predominate in the vegetation cover 50%, therefore it is better to use pastures in autumn and winter. In spring and summer, the main forage crops are ephemeral plants, which are not preserved in a dry state after the end of vegetation in the herbage. In summer and autumn, the main source of pasture feed is bulbous bluegrass (Poa bulbosa), meadow bluegrass (Poa pratensis). Thus, according to the composition of the herbage, the forage lands of IP "Aldanov" are represented by the ephemeral type. The growth and development of pasture plants takes place in the months of April and May. During this period, the animals are better provided with green food with high nutritional value. As pasture plants mature by summer, their nutritional value decreases. Therefore, it is necessary to transfer animals from an ephemeral type of pasture to another. However, there is no such possibility here. This problem can be compensated only by the creation of sown pastures using long-growing arid crops.

The results of the study

The soil cover is represented by ordinary gray soils of heavy loamy mechanical composition, humus content 0.8-0.9%, gross nitrogen 0.08-0.1%, gross phosphorus 0.1-0.15%, potassium 250 mg/kg, soil volume weight 1.15-1.30 g/cm3, pH of salt extract 7.1.

№ п/п	Total salinity, %	Alkalinity				Cl', %	Cl', mg/eq	SO4 '', %	SO4 '', mg/eq	Ca++, %	Ca++, mg/eq	Mg++, %	Mg++, mg/eq	Na +, %	Na +, mg/eq	K +, %	K +, mg/eq
		Total in HCO3 - %	Total in HCO3 - mg/eq	CO3, %	CO3, mg/eq												
1	0,172	0,027	0,44	0,001	0,04	0,005	0,15	0,089	1,85	0,018	0,90	0,006	0,49	0,019	0,81	0,009	0,23
2	0,123	0,037	0,60	0,001	0,04	0,009	0,26	0,042	0,88	0,010	0,50	0,006	0,49	0,013	0,58	0,006	0,16
3	0,872	0,024	0,40	0,001	0,04	0,007	0,18	0,585	12,18	0,230	11,50	0,007	0,59	0,009	0,41	0,010	0,26
4	0,559	0,032	0,52	0,001	0,04	0,124	3,48	0,213	4,44	0,010	0,50	0,008	0,69	0,159	6,90	0,014	0,35

The total area of the experimental site is 0.25 hectares. The size of the plot is 12 m x 8 m. The repetition is threefold. The number of treatments during the growing season with Tomatoes 2 times at the rate of 2 liters of the drug per hectare. The rate of working fluid at the rate of 300 liters per 1 ha. In the 2020-2021 agricultural reporting year, 278.4 mm of precipitation fell, of which 43.7 mm in autumn, 127.1 mm in winter, and 108.6 mm in spring.

Experimental Scheme:

1. Control
2. Tumat (spray. - 1 time)
3. Tumat (spray. (2 times)
4. Podsev (without spraying)
5. Podsev (spraying. (2 times)

Table 2 shows the data of phenological observations of vegetation cover (species composition, height)

Table 2 Assessment of vegetation cover indicators at the pilot site

№	Name of plants	Latin name of plants	Number of plants (pcs/m2)			Plant high, (sm)		
			I п	II п	III п	I	II	III
1	Wormwood	Artemisia	150	200	201	12-27	12-27	12-27
2	Purslane	Potulaca oleracea	800	300	400	20-32	20-32	20-32
3	Balyk koz	Climacoptera crassa	35	100	20	30- 52	30-52	30-52
4	Camel's Thorn	Alhagi pseudoalhagi	8	0	12	20-32	0	20-32
5	Azherek	Aeluropus littoralis	100	0	0	5-27	0	0
6	Ephemera	Trigonella	300	2300	0	3-12	17-23	0
7	Bluegrass	Poa bulbosa	2000	2100	2000	12-20	12-20	12-20
	Number of plants		3393	5000	2633			

Table 3. The total mass of vegetation on the plots.

№№	Name of plants	Latin name of plants	Weight by plant species in the plot by repetition (gramm)			
			I	II	III	Average

1	Wormwood	Artemisia	7050	9400	9800	8750
2	Purslane	Potulaca oleracea	23200	8700	11600	14500
3	Balyk koz	Climacoptera crassa	4375	12500	2500	6458
4	Camel's Thorn	Alhagi pseudoalhagi	592	296	888	592
5	Azherek	Aeluropus littoralis	2100	0	0	
6	Ephemera	Trigonella	0	0	0	
7	Bluegrass	Poa bulbosa				
8	Total mass		37 317	30 896	23 970	
9	Average in 1m2(gramm)		388,7	321,8	249,6	

The data in Table No. 3 shows the difference in the feed stock between repetitions. Pasture plants by total weight in the first repeat are 66.9 grams more than in the second repeat, and with the third 139.1 grams. And the second repetition rate is 72.2 grams higher compared to the third.

Conclusion:

Thus, the pastures of the Turkestan region are very poor in plant resources, and the degradation of pastures is pronounced. The region is risky for agriculture, as in recent years the amount of precipitation does not exceed 120-180 mm. The soil is saline and poor in vegetation. The main vegetation is ephemera, ephemeroids and halophytes. Semi-shrubby plants are mainly represented by different types of wormwood. Leaf treatment of pasture crops with the organic preparation Tumat did not give a tangible result as in corn for irrigation. The main reason is uncontrolled soil moisture in pasture conditions. Since the drug is recommended for processing the vegetative part by spraying through the leaves, that is, leaf dressing. Therefore, we came to the conclusion that there is no need to process pasture crops in the hot climatic conditions of the Turkestan region of Kazakhstan.

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