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PASTURE MODE FOR USE OF SUDAN GRASS

Abstract. The main task of fodder production in West Kazakhstan region is to provide the livestock industry with fodders stable in yield, balanced in nutritional value and low in cost. An important point is that the supply of green feed, especially during the summer depression, should not be interrupted. All these requirements are met by Sudan grass. Having high plasticity to growing conditions and unique drought resistance for fodder crops, it becomes an indispensable component of green conveyor. Sudan grass is used as grazing feed, to produce green mass and hay. A significant share of Sudan grass in feed crops is provided by its high nutritional value for farm animals. The research aim is to study the technology of Sudan grass cultivation to provide livestock with full feed. As a result of the carried out studies, the data on productivity and feed value of Sudan grass in conditions of West Kazakhstan region during cultivation in grazing mode were obtained. For the studies in 2018 and 2019 in total for 4 browsing, Sudan grass provided collection of 87.06-107.44 c/ha green mass for use as feed to cattle.

Key words: sudan grass, grazing regime, green feed, browsing, yield, feed value.

Introduction. The main direction in agro-industrial complex of the Republic of Kazakhstan is animal husbandry. Increasing meat production is currently the most important task facing Kazakhstan's domestic livestock industry. In the coming years, agriculture is tasked with increasing export potential of the country through the supply of quality domestic meat [1,2,3,4]. In order to achieve these objectives, it is important to provide livestock production with high-quality fodder raw materials. Among many feed crops, Sudan grass deserves special attention [5].

Sudan grass is a universal feed culture, as it is used on green feed, hay, silage, and as a grazing plant. It is characterized by high exuberance, good mobile education capacity, abundant artisanal growth and rapid growth. The hay of Sudan grass is relatively rich in protein, which is the most valuable part of feed, and in this regard ranks first among all cereal one-year-old herbs cultivated in the North Caucasus, second only to legume crops. The hay of Sudan grass is also superior in quality to hay of perennial cereal meadow herbs. It is rich in mineral salts, especially phosphorus and calcium salts. The hay contains some, though insignificant, amount of carotene, which is provitamine A, which is of great importance for normal growth and development of animal body. In terms of amount of digested protein, the hay of Sudan grass stands above that of sorghum, mogar, and steppe herbs and is inferior only to the lucerne hay and vicooose mixture. The transportability of basic nutrients is quite high [6]. Sudan grass is of exceptional importance as grazing feed. Sudan grass gives fresh green food during any period of vegetation, even in July, August and early September, is characterized by high exuberance, good bathing capacity, abundant tilling capacity and rapid growth [7, 8]. Sudan grass is among the late grazing. To start pastries on Sudan grass is recommended when the plant is sufficiently rooted. It is not recommended to graze cattle on Sudan grass for a long time without changing the feed. Much less life-threatening cyanide compounds are formed in Sudan grass, compared to sorghum and Sorghum halepense. The formation of this acid is most common in Sudan grass which has been damaged by drought or any other adverse climatic conditions. The amount of cyanide acid is the largest in young plants [9].

Sudan grass is better than others to withstand grazing. According to Chkalovsky Institute of Meat and Milk Cattle Breeding, the amount of plants pulled out by cattle was at grazing on the pasture of Sudan grass in the phase of cutting 1%, and in the phase of complete stem elongation 0.3%. At the same time, in pastures, the number of plants pulled out by cattle increased by 13-16%, respectively, and in corn pasture to 29.4-43.25% of total herbal area. Sudan grass is also distinguished by the fact that it is better than other one-year-old fodder herbs carry trampling, which significantly increases the value of pasture. After the regrowth of Sudan grass, the growth of its seedlings comes from shoots of three types: developing from underground stem nodes, forming from underground stem nodes and growing from cut shoots, which have maintained a growth point. This bathing ability provides multiple mowings of Sudan grass during the year [10].

Sudan grass as a green feed can be used both by browsing by cattle to the root and by mowing green mass to the feed to animals in the stall. The latter method makes it possible to consume fodder mass more economically and to prevent crops from being pulled out by cattle. For grazing or green feed, Sudan grass begins to be used from the time its stem elongation, when plants grow at 30-40 cm height and take root [11].

The vegetative renewal capacity of Sudan grass after mowing is of great importance in increasing its productivity and lengthening its useful life, as well as in ensuring uniform feeding at different periods of vegetation. The timing of Sudan grass mowing depends on its emptiness, the magnitude of total crop, its distribution by bites and quality of feed [12].

M.G. Muslimov's study of the optimal timing of Sudan grass mowing for green mass showed that the best results on the yield of green mass and the yield of gross energy are provided by cleaning at the beginning of ear formation. A number of researchers have expressed themselves in favor of mowing use in the phase of ear formation beginning, considering the dynamics of accumulation of absolutely dry matter, leaf surface, sugar and other nutrients. When cleaning during this period the largest harvest was received in total for two mowings [13].

Other times (the end of stem elongation and full ear formation) were somewhat inferior to it, but if manufactured they can also be used [13, 14].

It is recommended that Sudan grass be mown for green feed from stem elongation to ear formation. Mowing during this period positively affects the intensity of forthputting and provides obtaining the maximum number of mowing, significantly increases the excretion and quality of fodder due to increase of nutrient content, subtlety and increase of leaf formation [15,16,17].

Research methods. The research is carried out on the experimental field of Zhangir Khan West Kazakhstan Agricultural and Technical University. (Republic of Kazakhstan, Uralsk).

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According to morphological characteristics of profile genetic horizons and agrochemical indicators of arable layer, soil of the test area is characteristic for dry steppe zone of West Kazakhstan. The area of divisions is 50 m2, the repetition is three-fold, and the location of the divisions is random. Agricultural machinery of Sudan grass cultivation is accepted for 1 zone of West Kazakhstan region. Brodskaya 2 zoned sort of Sudan grass grass was used in the experiment. Agricultural machinery of Sudanese grass cultivation accepted for West Kazakhstan region. Nitrogen (ammonium nitrate) and phosphorus (double superphosphate) fertilizers are added to the soil in recommended doses for West Kazakhstan region.

During field tests, accounting, observation of the beginning of phenological phases and growth of Sudan grass were carried out according to generally accepted methods [18]. Photosynthetic activity of Sudan grass crops was studied according to the generally accepted method [19]. Harvesting and registration of crops is performed by continuous method.

When using Sudan grass in grazing mode, the first browsing of plant formations was carried out by simulating in the interval of phases tillering - stem elongation. In the future, repeated browsing of plant formations of Sudan grass was carried out as the grazing vegeative mass grew to a height of 40-50 cm.

Based on the results of chemical analysis of green mass of Sudan grass, bioenergetic evaluation of the studied methods was carried out according to the accepted method [20]. Statistical processing of the study

results was carried out by the method of dispersion analysis [21], statistical graphs were constructed using the program Statistica 6.0.

Results and discussion. Due to its aftermathability, Sudan grass is also a promising crop for use in grazing mode. When growing in grazing mode, the time of beginning of phenological phases and length of growing period are of great practical importance, as these indicators determine the time of economic use.

In 2018, weather conditions at the time of Sudan grass planting were favorable, the seedlings appeared on day 11. The density of Sudan grass seedlings at 95% of the ascended plants was 142.5 pcs m^2. Interphase period of sprouting - growth lasted 12 days. Since the beginning of the first decade of June, due to the decrease in air temperature in the absence of precipitation, there has been a decrease in the growth rate of Sudan grass. Sudan grass tillering came on 12 June. The first browsing was carried out at an average plant height of 39.45 cm on the 33rd day after sowing. By the time of 1 browsing, the area of Sudan grass leaves was 4.39 thousand m^2/ha, with a photosynthetic potential of 0.14 million m^2 days/ha. The length of the growing period of Sudan grass in the grazing regime up to 2 browsing was 15 days, i.e. the browsing was performed on 27 July. In conditions of insufficient heat supply during the initial periods of development, the periods of Sudan grass are extended between after-grass browsing. High temperature of air 35-38, 38-40 degrees in the absence of atmospheric precipitation developed in the 3rd decade of June and in July of month promoted lengthening of the period between 2 and 3 and also 3 and 4 browsing. The 3rd browsing of Sudan grass was carried out 23 days after the 2nd (20 July), and 4 after 30 after the 3rd browsing (20 August).

The number of vegetating plants at the time of herbal harvesting is of great importance for obtaining a guaranteed harvest of grazing grass. According to the counting data, in the conditions of 2018, the density of plant standing at the first browsing was 125 pcs m^2. At the same time, the safety of Sudan grass plants in grazing grass amounted to 87.72%. The number of seedlings is 145 plants/m^2. In the second browsing, there was a decrease in the density of plant formation. Thus, when cleaning on 27 June (15 days after 1 browsing), the density of Sudan grass crops amounted to 118 pcs m^2. During the period between 1 and 2 browsing, 7 plants fell from the plant formation per m^2. In the second browsing, the conservation of Sudan grass plants decreased by 4.941% compared to the first browsing and the density of grazing grass was 118 plants per m^2. When the green mass is alienated, a decrease in the standing density of herbal plants is observed in all subsequent excesses. Plant falling out throughout the growing period after alienation was independent of weather conditions. With an increase in air temperature and a decrease in moisture supply, artisanal growth increased and plant growth slowed. 9-11 plants fell out of grazing grass in 3 and 4 after-grass browsing. The fall of Sudan grass plants from the grazing grass in total for 4 alienations was 47 or 32.41%.

The yield of vegetative mass of grazing plants depends on the coefficient of reproduction, which in turn is determined by the indicator of artisanal activity. With the increase in artisanal production, the specific weight of leaves in the crop structure increases, the content of nutrients increases, the quality of crop increases, as well as the eating capacity and transportability of grazing grass. As 2018 data count shows, tilling capacity of Sudan grass at the first browsing (June 12) was 3.3 stems per plant. In 2 browsing, more than 0.6 shoots were formed on Sudan grass plants compared to 1 browsing and tilling capacity was 3.9 pcs/plant. The formation of after-grass was mainly due to the growth of stems and scions from tillering node. The period between the first and second alienations is characterized by intense appreciation. In the third alienation, the artisanal nature of the plants of the second term exceeded the plants of the first by 1.0 of a stem. With the third alienation, the artisanal content of Sudan grass increased to 4.3, and in 4 browsing this figure was 4.7. In our 2018 studies, the yield of the green mass of Sudan grass used in grazing mode in 1 browsing was 27.25 c/ha with a dry mass collection of 4.36 c/ha.

At the second alienation, the crop of the second sowing term amounted to 29.12 c/ha of green mass and dry mass of 5.01 c/ha. The harvest of the second browsing exceeded the harvest of the first by 6.42%. This confirms the influence of temperature factor on the growth intensity of Sudan grass. At the same time stem of the second term of sowing by density was inferior to the first, increase of green mass crop took place due to increase of a plant mass. In the future, due to the weather conditions, the productivity of Sudan grass was further reduced in 3 and 4 browsing. The yield of green mass in 3 and 4 browsing was 19.45 and 11.24 c/ha, respectively, with a dry mass collection of 3.63 and 2.14 c/ha.

The total productivity of Sudan grass at grazing mode of use for the season 2018 was 87.06 c/ha green collection, 15.14 c/ha dry mass, 13.17 c/ha feed units, 1.52 c/ha digestible protein and 15.73 GJ/ha exchange energy (table 1).

Table 1 – Productivity and fodder value of Sudan grass for pasture mode in dry steppe zone of WKO c/ha, 2018

Indicators	Sequence of browsing:				Total for 4 browsing
	1	2	3	4	
Green material, c/ha	27.25	29.12	19.45	11.24	87.06
Dry weight, c/ha	4.36	5.01	3.63	2.14	15.14
Fodder units, c/ha	3.79	4.36	3.16	1.86	13.17
Digestible protein, c/ha	0.47	0.50	0.36	0.19	1.52
Exchange energy, GDj/ha	4.54	5.21	3.76	2.22	15.73
LSD_{05} Dry weight – 0,36 c/ha.					

In 2019, weather conditions at the time of Sudan grass planting were favorable, but due to the returned cold sprouts appeared on day 15. The density of Sudan grass seedlings at 93.66% of the brairded plants was 140.5 pcs m^2. Interphase period sprouting - tillering lasted 14 days. Sudan grass tillering came on 26 May. Overall, 2019 was a favorable year for the growth and development of Sudan grass grazing use regime. The first browsing was carried out at an average plant height of 42.50 cm on the 39th day after sowing. By the time of 1 browsing, the area of Sudan grass leaves was at 5.71 thousand m^2/ha, with a photosynthetic potential of 0.22 million m^2 days/ha. The length of the growing period of Sudan grass in grazing mode up to 2 browsing was 16 days, i.e. the browsings were performed on 21 June. In the future, weather conditions during the growing period were favourable for the growth and development of Sudan grass grazing regime. 3 browsings of Sudan grass was carried out 23 days after the 2nd (14 July), and 4 after 34 days after the 3rd browsing (18 August).

The growth and development of Sudan grass was significantly influenced by the prevailing weather conditions of the growing period. According to weather conditions, the most favorable conditions for the growth and development of Sudan grass were in 2019. In June 2019, when there was intense growth and harvest of Sudan grass, 40.2 mm of precipitation fell, which is more than the multi-year data by 8.2 mm. By contrast, 6.2 mm of rainfall fell in 2018 in June, down from the norm of 25.8 mm. In addition, in 2018 there were not quite favorable conditions in temperature. In June 2018, the average monthly air temperature was lower than the norm at $0,6^0$C and was $19,8^0$C. Cool weather in June 2018 held back the growth and development of Sudan grass.

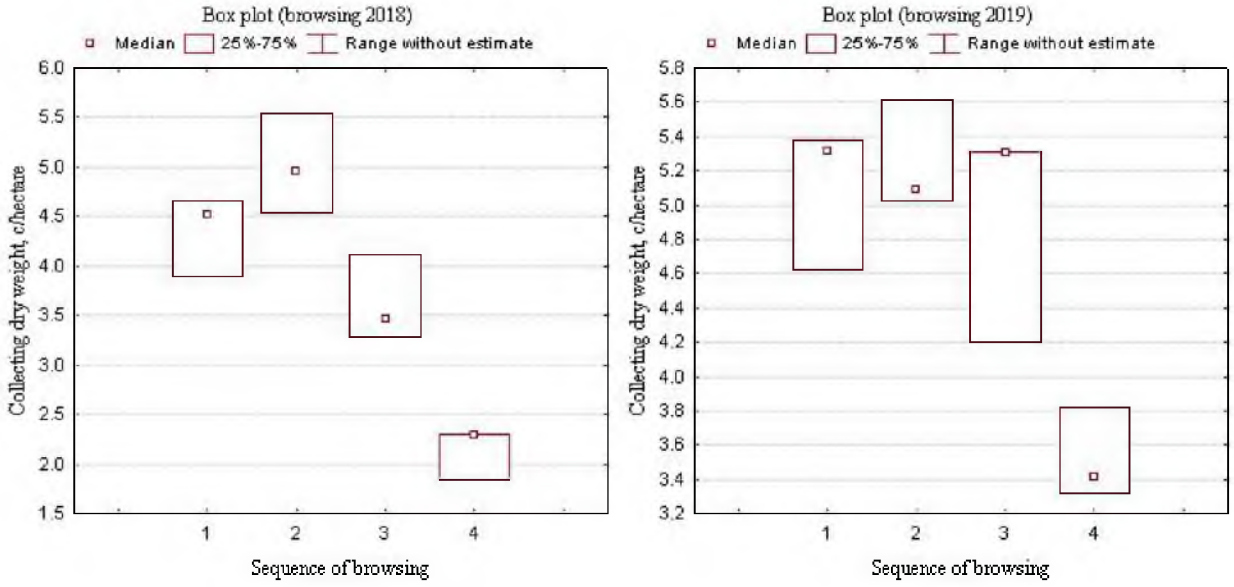
Due to the prevailing weather conditions of vegetation periodicity in studies, higher productivity rates have been lost in 2019 conditions. The yield of green mass of Sudan grass used in grazing mode in 1 browsing was 32.15 c/ha with a dry mass collection of 5.11 c/ha. At the second alienation, the crop of the second sowing term amounted to 30.40 c/ha of green mass and dry mass of 5.24 c/ha. The harvest of the second release exceeded the harvest of the first by 5.75%. This confirms the influence of temperature factor on the growth intensity of Sudan grass. At the same time, haulm stand of the second term of sowing by density was inferior to the first; increase of green mass crop took place due to increase of mass of one plant. In the following, 3 and 4 browsings showed a further decrease in the productivity of Sudan grass, which is related to its biological features. The yield of green mass in 3 and 4 browsings was 26.45 and 18.44 c/ha, respectively, with a dry mass collection of 4.94 and 3.52 c/ha.

The total productivity of Sudan grass under the grazing regime for season 2019 was 107.44 c/ha green, 13.81 c/ha dry mass, 16.36 c/ha feed units, 1.95 c/ha digestible protein and 19.52 GJ/ha exchange energy (table 2).

Table 2 – Productivity and fodder value of Sudan grass for pasture mode in dry steppe zone of WKO c/ha, 2019

Indicators	Sequence of browsing:				Total for 4 browsing
	1	2	3	4	
Green material, c/ha	32.15	30.40	26.45	18.44	107.44
Dry weight, c/ha	5.11	5.24	4.94	3.52	13.81
Fodder units, c/ha	4.44	4.56	4.30	3.06	16.36
Digestible protein, c/ha	0.56	0.55	0.51	0.33	1.95
Exchange energy, GDj/ha	5.31	5.44	5.12	3.65	19.52
LSD_{05} Dry weight – 0,98 c/ha.					

The dispersion analysis of the experiment data on the collection of dry mass of Sudan grazing grass showed sufficient accuracy in estimating the characteristic of total population for 2018, 2019. If Student t-test = 4.3, differences between arithmetic mean of different levels are significant (figure).



Productivity of Sudan grass under pasture mode used in 2018, 2019, c/ha

Conclusion. In the dry-steppe zone of West Kazakhstan region, to provide animals with full-fledged fodders during summer depression, it is effectually to use Sudan grass in pasture mode. Whereby browsing is performed in the period of tillering periods - leaf-tube formation.

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СУДАН ШӨБІН ЖАЙЫЛЫМДЫҚ РЕЖИМДЕ ПАЙДАЛАНУ

Аннотация. Батыс Қазақстан облысындағы жемшөп өндірісінің негізгі мақсаты – мал шаруашылығы саласын өнімділігі тұрақты, қоректілігі жағынан теңгерімді және өзіндік құны төмен мал азығымен қамтамасыз ету. Мал шаруашылығында жазғы күйзеліс кезінде, мал азығына қажетті жасыл балауса шөп тұрақты түрде өндіріліп отыруы қажет. Судан шөбі осы талаптардың бәріне жауап береді. Өсу ортасына аса жоғары деңгейде бейімделуімен ерекшелене отырып, судан шөбі шөлге аса төзімділігінің арқасында жасыл конвейердің таптырмас компоненті болып саналады. Судан шөбі жайылымдық режимде, жасыл балауса және бос шөп өндірісінде де қолданылады. Мал азықтық дақылдар танабының басты бөлігін ала отырып, судан

шөбі ауыл шаруашылық малдары үшін құнды азықтық қасиетімен де ерекшеленеді. Зерттеудің мақсаты – мал шаруашылығын сапалы жем-шөппен қамтамасыз ету үшін судан шөбінің технологиясын зерттеу. Зерттеу нәтижесінде Батыс Қазақстан облысы жағдайында судан шөбін жайылымдық режимде пайдалану бойынша өнімділік пен өнім құндылығы жөнінде деректер алынды. 2018 және 2019 зерттеу жылдарында судан шөбі 87,06-107,44 ц/га көлемінде малға үстеме қоректендіру үшін пайдалануға қажетті жасыл балауса өнімін берді.

Зерттеулер Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университетінің (Қазақстан Республикасы, Орал қ.) тәжірибелік танаптарында қабылданған әдістемелерге сәйкес жүргізіледі.

2018 жылғы біздің зерттеулерімізде жайылымдық режимде пайдаланылатын судан шөбінің жасыл массасының түсімділігі 1-орым кезінде – 27,25 ц/га, құргақ масса жиымы 4,36 ц/га болды. Екінші рет оталау кезінде, себудің екінші мерзіміндегі балауса массасының түсімі 29,12 ц/га және құргақ масса 5,01 ц/га құрады. Екінші оталау түсімі бірінші түсімнен 6,42 %-га асып түсті. Бұл температура факторының судан шөбі өсімінің қарқындылығына әсерін растайды. Бұл ретте себудің екінші мерзімінің сабақтары қалыңдығы жөнінен бірінші мерзімнен кем түсті, жасыл масса түсімінің артуы бір өсімдік салмағының артуы есебінен болды. Одан әрі қалыптасқан ауарайы жағдайларына байланысты, 3 және 4-оталау кезінде, судан шөбі өнімділігінің одан әрі төмендеуі байқалды. 3 және 4-оталаудағы жасыл массаның өнімділігі, тиісінше, 19,45 және 11,24 ц/га, құргақ массаны жинау кезінде 3,63 және 2,14 ц/га құрады.

2018 жылғы маусымда, жайылымдық пайдалану режимінде судан шөбінің жалпы өнімділігі 87,06 ц/га балауса массаны, 15,14 ц/га кепкен массаны, 87,06 ц/га жем-шөптік бірлікті, 1,52 ц/га қайнатылған протеин және 15,73 ГДж/га алмасу энергиясын құрады. Судан шөбінің өсуі мен дамуына вегетация кезеңінде қалыптасқан ауарайы жағдайлары айтарлықтай әсерін тигізді. Ауарайы жағдайлары бойынша, 2019 жылы судан шөптерінің өсуі мен дамуы үшін қолайлы жағдайлар қалыптасты. 2019 жылдың маусым айында, судан шөбінің қарқынды өсуі мен түсім қалыптастыру кезінде, 40,2 мм жауын-шашын түсті, бұл көпжылдық мәліметтермен салыстырғанда 8,2 мм-ге артық. Керісінше, 2018 жылы маусым айында 6,2 мм жауын-шашын түсті, бұл нормадан 25,8 мм-ге аз. Сонымен қатар, 2018 жылы температура жөнінен қолайлы жағдай қалыптасты. 2018 жылдың маусым айында орташа айлық ауа температурасы нормадан 0,60 °С-қа төмен болды және 19,80 °С-ты құрады. 2018 жылдың маусым айында салқын ауарайы судан шөптерінің өсуі мен дамуын тежеді.

Вегетация кезеңінде қалыптасқан ауарайы жағдайларына байланысты зерттеулерде өнімділіктің жоғары көрсеткіштері 2019 жылы орын алғаны байқалды. Жайылымдық режимде пайдаланылатын судан шөбінің жасыл массасының түсімділігі 1-орымда 32,15 ц/га, құргақ масса жиымы 5,11 ц/га құрады. Екінші рет оталау кезінде себудің екінші мерзімінің жасыл масса өнімі 30,40 ц/га және құргақ масса 5,24 ц/га құрады. Екінші оталау түсімі бірінші түсімнен 5,75 %-га асып түсті. Бұл температура факторының судан шөбі өсімінің қарқындылығына әсерін растайды. Бұл ретте себудің екінші мерзімінің сабақтары қалыңдығы жөнінен бірінші мерзімнен кем түсті, жасыл масса түсімінің артуы бір өсімдік салмағының артуы есебінен болды. Одан әрі 3 және 4-оталау кезінде судан шөбі өнімділігінің одан әрі төмендеуі байқалды, бұл судан шөбінің биологиялық ерекшеліктерімен байланысты. 3 және 4-оталаудағы жасыл массаның өнімділігі, тиісінше, 26,45 және 18,44 ц/га, құргақ массаны жинау кезінде 4,94 және 3,52 ц/га құрады. 2019 жылы маусымда жайылымдық режимде судан шөбінің жалпы өнімділігі 107,44 ц/га балауса массасын, 13,81 ц/га кепкен массаны, 19,49 ц/га жем-шөптік бірлікті, 1,95 ц/га сіңімді протеин және 19,52 ГДж/га алмаспалы энергияны құрады.

Осылайша, Батыс Қазақстан облысының шөлейтті дала аймағында ауыл шаруашылығы жануарларын толық құнарлы азықпен қамтамасыз ету үшін жазғы депрессия кезеңінде судан шөптерін жайылымдық режимде тиімді пайдалану қажет. Бұл ретте оталау түптену-түтікке кезеңдерінде жүргізілуі тиіс.

Түйін сөздер: судан шөбі, жайылымдық режим, жасыл балауса, мал жаю, өнімділік, мал азықтық құндылық.

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ИСПОЛЬЗОВАНИЕ СУДАНСКОЙ ТРАВЫ В ПАСТБИЩНОМ РЕЖИМЕ

Аннотация. Основной задачей кормопроизводства в Западно-Казахстанской области является обеспечение животноводческой отрасли стабильными по урожайности, сбалансированными по питательности и низкой по себестоимости кормами. Важным моментом является то, что поступление зеленого корма, особенно в период летней депрессии, не должно прерываться. Всем этим требованиям отвечает суданская трава. Обладая высокой пластичностью к условиям произрастания и уникальной для кормовых культур

засухоустойчивостью, она становится незаменимым компонентом зеленого конвейера. Суданскую траву используют в качестве пастбищного корма, для производства зеленой массы, сена. Значительная доля суданской травы в посевах кормовых культур обеспечивается за счет ее высокой питательной ценностью для сельскохозяйственных животных. Целью исследований является изучение технологии возделывания суданской травы для обеспечения животноводства полноценными кормами. В результате проведенных исследований получены данные по продуктивности и кормовой ценности суданской травы в условиях Западно-Казахстанской области при возделывании в пастбищном режиме. За 2018 и 2019 годы исследований в сумме за 4 стравливаний суданская трава обеспечил сбор 87,06-107,44 ц/га зеленой массы для использования в качестве подкорма скоту.

Исследования проводятся на опытном поле Западно-Казахстанского аграрно-технического университета имени Жангир хана. (Республика Казахстан, г. Уральск) согласно принятых методик.

В исследованиях 2018 года урожайность зеленой массы суданской травы, используемой в пастбищном режиме в 1 стравливании, составила 27,25 ц/га при сборе сухой массы 4,36 ц/га. При втором отчуждении урожай второго срока посева составил 29,12 ц/га зеленой массы и сухой массы 5,01 ц/га. Урожай второго стравливания превысил урожай первого на 6,42%. Это подтверждает влияние температурного фактора на интенсивность роста суданской травы. При этом стеблестой второго срока посева по густоте уступал первому, увеличение урожая зеленой массы происходило за счет увеличения массы одного растения. В дальнейшем в связи с установившимися погодными условиями в 3 и 4 стравливаниях отмечено дальнейшее снижение продуктивности отавы суданской травы. Урожайность зеленой массы в 3 и 4 стравливаниях составила соответственно 19,45 и 11,24 ц/га при сборе сухой массы 3,63 и 2,14 ц/га.

Суммарная продуктивность суданской травы при пастбищном режиме использования за сезон 2018 года составила 87,06 ц/га сбор зеленой, 15,14 ц/га сухой массы, 87,06 ц/га кормовых единиц, 1,52 ц/га переваримого протеина и 15,73 ГДж/га обменной энергии. На рост и развитие суданской травы значительное влияние оказывали сложившиеся погодные условия периода вегетации. По погодным условиям наиболее благоприятные условия для роста и развития суданской травы сложились в 2019 году. В июне месяце 2019 года, когда шел интенсивный рост и формирование урожая суданской травы, выпало 40,2 мм осадков, что больше по сравнению с многолетними данными на 8,2 мм. Напротив, в 2018 году в июне месяце выпало 6,2 мм осадков, что меньше от нормы на 25,8 мм. Кроме того, в 2018 году сложились не совсем благоприятные условия по температуре. В июне месяце 2018 года среднемесячная температура воздуха была ниже от нормы на $0,6^0$С и составила $19,8^0$С. Прохладная погода в июне месяца в 2018 году сдерживала рост и развитие суданской травы.

В связи с сложившимися погодными условиями период в вегетации в исследованиях более высокие показатели продуктивности установлены в условиях 2019 года. Урожайность зеленой массы суданской травы используемой в пастбищном режиме в 1 стравливания составила 32,15 ц/га при сборе сухой массы 5,11 ц/га. При втором отчуждении урожай второго срока посева составил 30,40 ц/га зеленой массы и сухой массы 5,24 ц/га. Урожай второго стравливания превысил урожай первого на 5,75%. Это подтверждает влияние температурного фактора на интенсивность роста суданской травы. При этом стеблестой второго срока посева по густоте уступал первому, увеличение урожая зеленой массы происходило за счет увеличения массы одного растения. В дальнейшем в 3 и 4 стравливаниях отмечено дальнейшее снижение продуктивности отавы суданской травы, что связано с биологическими особенностями суданской травы. Урожайность зеленой массы в 3 и 4 стравливаниях составила соответственно 26,45 и 18,44 ц/га при сборе сухой массы 4,94 и 3,52 ц/га. Суммарная продуктивность суданской травы при пастбищном режиме использования за сезон 2019 года составила 107,44 ц/га сбор зеленой, 13,81 ц/га сухой массы, 19,49 ц/га кормовых единиц, 1,95 ц/га переваримого протеина и 19,52 ГДж/га обменной энергии.

Таким образом, в сухо-степной зоне Западно-Казахстанской области для обеспечения с.х. животных полноценными кормами в период летней депрессии целесообразно использовать суданскую траву в пастбищном режиме. При этом стравливание произвести в период фаз кущения – выход в трубку.

Ключевые слова: суданская трава, пастбищный режим, зеленый корм, стравливания, урожайность, кормовая ценность.

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