ISSN 2226-6070

BAITURSYNOV UNIVERSITY

Ахмет Байтұрсынов атындағы
Қостанай өңерлік университеті

Костанайский региональный университет
имени Ахмета Байтурсынова

intellect, idea, innovation

3i

интеллект, идея, инновация

КӨПСАЛАЛЫ
ҒЫЛЫМИ ЖУРНАЛЫ

МНОГОПРОФИЛЬНЫЙ
НАУЧНЫЙ ЖУРНАЛ

№ 4 2020

№ 4 2020 «3i: intellect, idea, innovation – интеллект, идея, инновация»

обработку в экструдере (таблица 3). Определение показателей осуществлено на базе лаборатории КРУ имени А.Байтурсынова.

Таблица 3 - Смесь кукурузы

№	Наименование определяемых показателей	НД на методы исследований	Фактические показатели
1	*Физико-механические показатели*		
2	Массовая доля сырой клетчатки, %	ГОСТ 13496.2-91	15,7
3	Массовая доля сырого протеина,%	ГОСТ 39933-2014	23,8
4	Массовая доля сырого жира	ГОСТ 13496.3-92	18,9
5	Массовая доля влаги.%	ГОСТ 13496.3-92	5,1

По результатам исследований установлено: при экструдировании повышается массовая доля сырой клетчатки (до 5,7%), массовая доля сырого протеина (до 13%), массовая доля жира (до 6%), влага уменьшается до 3%. [6 стр. 20].

Заключение. При анализе существующих технологий по результатам исследований выявлено, что в зерновых отходах кукурузы имеется достаточное количество питательных веществ (клетчатка, белок, жир, углеводы), которые можно использовать для кормления животных.

Для переработки зерновых отходов применяется дорогостоящее оборудование, которое не могут приобрести мелкие фермерские хозяйства. Поэтому нами предлагается заменить комплекс оборудования для переработки зерновых отходов кукурузы на одну машину – экструдер.

Конструкция экструдера с предлагаемой фильерой и отрезным механизмом опробована в экспериментальных исследованиях.

ЛИТЕРАТУРА:

1. **Аликаев В. А. Справочник по контролю кормления и содержания животных**[Текст]: учеб. для вузов / Г.И. Аликаев В. А Г.И. - М.: Колос, 2016. - 436 с.

2. **Венедиктов А. М. и другие. Кормление сельскохозяйственных животных**[Текст]: учеб. для вузов / А.М. Венедиктов. - Москва: Россельхозиздат, 2018. - 340 с.

3. **Достоевский П.П., Судаков Н.А. Справочник ветеринарного врача**[Текст]: Киев: пособие / П.П.Достоевский, Н.А. Судаков. - Урожай,1990. - 284с.

4. **Калашников А. П. Нормы и рационы кормления сельскохозяйственных животных**.[Текст]: учеб. для вузов / А.П.Калашников. -Москва: Знание, 1993. - 396 с.

5. **Инновационные технологии в животноводстве и кормопроизводстве**[Текст]: Материалы Международной научно-практической конференции, посвященной 25-летию независимости Республики Казахстан, - Алматы, 2016.-420 с.

6. **Кушнир В.Г. и другие.Методика исследований физико-механических свойств зернового материала.** [Текст]: журнал 3^{i} Интеллект, идея, инновация- Костанай: издательский центр КГУ, №1, 2016. с.123

REFERENCES:

1. **Alikaev V.A. Handbook on the control of feeding and keeping animals** [Text]: textbook. for universities / G.I. V. Alikaev, G. I. - M .: Kolos, 2016 .-- 436 p.

2. **Venediktov A. M. and others. Feeding farm animals** [Text]: textbook.for universities / A.M. Venediktov. - Moscow: Rosselkhozizdat, 2018 .--340 p.

3. **Dostoevsky P. P., Sudakov N. A. Reference book of a veterinarian** [Text]: Kiev: manual / PP Dostoevsky, N.A. Sudakov. - Harvest, 1990. - 284p.

4. **Kalashnikov A. P. Norms and rations of feeding farm animals**. [Text]: textbook. for universities / A.P. Kalashnikov. - Moscow: Knowledge, 1993 .--396 p.

5. **Innovative technologies in animal husbandry and fodder production** [Text]: Materials of the International scientific-practical conference dedicated to the 25th anniversary of the independence of the Republic of Kazakhstan, - Almaty, 2016.-420 p.

6. **Kushnir V.G. other. Research methodology for the physical and mechanical properties of grain material**. [Text]: magazine 3i Intellect, idea, innovation - Kostanay: KSU publishing center, №1, 2016. p.123

Сведения об авторах

Кушнир Валентина Геннадьевна- профессор кафедры машин, тракторов и автомобилей КРУ имени А. Байтурсынова, доктор технических наук, г. Костанай, ул. Киевская 18, тел. 87776370867, e-mail: Kushnirvalkush@mail.ru.почтовый индекс: 110000

Гаврилов Николай Владимирович – доцент кафедры машин, тракторов и автомобилей КРУ имени А. Байтурсынова. кандидат технических наук, Костанайский район, поселок Заречный, переулок Садовый 2/2, тел. 87776348638, e-mail: nik_gavrilov_1958@mail.ru.почтовый индекс: 111108
Борзенков Александр Петрович – директор ТОО «Агротехсервис 12», г. Костанай, Фабричная 6, тел. 87773023570, e-mail: borzenkovap@gmail.com, почтовый индекс: 110000
Абылгазимова Ирина Андреевна, магистрант,г. Костанай, улица Текстильщиков 10 А, кв. 104, e-mail: urevichirina@mail.ru, тел: 87078125070, почтовый индекс: 110000

Information about the authors

Kushnir Valentina Gennadievna - Professor of the Department of Machines, Tractors and Automobiles of A. Baitursynov KRU, Doctor of Technical Sciences, Kostanay, st.Kievskaya 18, tel. 87776370867, e-mail: Kushnir valkush@mail.ru. postal code: 110000

Gavrilov Nikolai Vladimirovich - Associate Professor of the Department of Machines, Tractors and Automobiles of the A. Baitursynov KRU. candidate of technical sciences, Kostanay region, Zarechny village, Sadovy lane 2/2, tel. 87776348638, e-mail: nik_gavrilov_1958@mail.ru. Postal Code: 111108

Borzenkov Alexander Petrovich - director of LLP "Agrotechservice 12", Kostanay, Factory 6, tel. 87773023570, e-mail: borzenkovap@gmail.com, postal code: 110000

Abylgazimova Irina Andreevna, undergraduate master student, Kostanay, Tekstilshchikov street 10 A, apt. 104, e-mail: urevichirina@mail.ru, tel: 87078125070, postal code: 110000

Авторлар туралы ақпарлар

Кушнир Валентина Геннадьевна - А.Байтұрсынұлы атындағы ҚЗУ машиналар, тракторлар және автомобильдер кафедрасының профессоры, т.ғ.д., Қостанай қ. Киевская 18, тел. 87776370867, электрондық пошта: Kushnir valkush@mail.ru. пошталық индекс: 110000

Гаврилов Николай Владимирович - А.Байтұрсынов атындағы ҚРУ Машиналар, тракторлар және автомобильдер кафедрасының доценті. техника ғылымдарының кандидаты, Қостанай облысы, Заречный кенті, Садовый к-сі 2/2, тел. 87776348638, электрондық пошта: nik_gavrilov_1958@mail.ru. Пошта индексі: 111108

Борзенков Александр Петрович - «Агротехсервис 12» ЖШС директоры, Қостанай қ., Фабрика 6, тел. 87773023570, электрондық пошта: borzenkovap@gmail.com, пошталық индекс: 110000

Абылгазимова Ирина Андреевна, магистрант, Қостанай қ., Текстильщиков көшесі 10 А, кв. 104, электрондық пошта: urevichirina@mail.ru, тел: 87078125070, пошталық индекс: 110000

UDC 631.68.35.37:633.81

FORMATION OF AGRICULTURAL LANDSCAPES OF THE SUDAN GRASS IN THE DRY ZONE

Nasiyev B.N. - Doctor of Agricultural Sciences, corresponding member of the National Academy of Sciences, Professor. Zhangir Khan West Kazakhstan Agricultural and Technical University, Uralsk

Zhanatalapov N.Zh .– PhD doctoral student of Zhangir Khan West Kazakhstan agrarian-technical university, Uralsk

Khiyasov M.G. – master's student of West Kazakhstan agrarian and technical University named after Zhangir Khan, Uralsk

Field experiments on the study of elements of Sudan grass (Sorghum sudanense (Piper.) Stapf) cultivation technology were carried out in the spring and summer periods in the dry-steppe zone of Western Kazakhstan. The research examined different sowing times at 10-day intervals, and for the harvesting of green fodder, haylage and hay, the harvesting times were examined in different phases of development, as well as grazing mode of use of Sudan grass. The area of divisions is 50 m^2, repetition - threefold, location of divisions is random.The results of scientific research showed that for the conditions of the region it is important to select both optimal sowing and harvesting times. In the years of research, the yield of dry mass of Sudan grass at different sowing times was 21.05-23.37 c/ha, with the highest productivity determined at 1 early sowing time. When studying the time of harvesting, high yield of dry mass of Sudan grass was ensured during harvesting of plant formations in the blooming period 19.06-23.69 c/ha. Under grazing conditions in the study area, Sudan grass produced 16.99 c/ha of dry mass in a total of 4 browsing.

Keywords: sowing period, harvesting period, grazing regime, productivity, feed value

ҚҰРҒАҚ ДАЛАЛЫ АЙМАҚТА СУДАН ШӨБІНІҢ АГРОЛАНДШАФТТАРЫН ҚАЛЫПТАСТЫРУ

Насиев Б.Н. – ауыл шаруашылығы ғылымдарының докторы, ҚР ҰҒА мүше-корреспонденті, профессор. Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университеті, Орал

Жанаталапов Н.Ж. – Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университетінің PhD докторанты, Орал

Хиясов М.Г. – Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университетінің магистранты, Орал

Судан шөптерінің элементтерін зерттеуге арналған далалық тәжірибелер (Sorghum sudanense (Piper.) Stapf) өсіру технологиялары көктемгі-жазғы кезеңдерінде Батыс Қазақстанның құрғақ далалы аймағында жүргізілді. Зерттеу барысында 10 күндік аралықпен егудің әртүрлі кезеңдері зерттелді, ал жасыл жем, пішен және шөп жинау үшін-дамудың әртүрлі кезеңдерінде егін жинау уақыты, сондай-ақ судан шөптерін пайдаланудың жайылымдық режимі зерттелді. Мөлдектердің ауданы - 50 м^2, қайталануы - үш есе, мөлдек аудандардың орналасуы - кездейсоқ. Ғылыми зерттеулердің нәтижелері аймақтың жағдайлары үшін судан шөбін егудің де және орудың да оңтайлы уақытын таңдау маңызды екенін көрсетті. Зерттеу жылдарында әр түрлі егу мерзімі кезінде судан шөбінің құрғақ массасының өнімділігі 21,05-23,37 ц/га құрады, ең жоғары өнімділік 1 ерте себу кезеңінде анықталды. Өнім ору уақытын зерделеу кезінде судан шөбінің құрғақ массасының жоғары өнімділігі жасыл массаны гүлдену кезеңінде жинау кезінде 19,06-23,69 ц/га қамтамасыз етілді. Зерттелетін учаскедегі мал жаю жағдайында судан шөпі жалпы 4 мал жаю кезенінде 16,99 ц/га құрғақ масса берді.

Түйінді сөздер: себу мерзімі, ору мерзімдері, жайылым режимі, өнімділік, мал азықтық құндылық

ФОРМИРОВАНИЯ АГРОЛАНДШАФТОВ СУДАНСКОЙ ТРАВЫ В ЗОНЕ СУХИХ СТЕПЕЙ

Насиев Б.Н. – доктор сельскохозяйственных наук, член-корреспондент НАН РК, профессор. Западно-Казахстанский аграрно-технический университет имени Жангир хана, г.Уральск

Жанаталапов Н.Ж. –PhD докторант Западно-Казахстанский аграрно-технический университет имени Жангир хана, г.Уральск

Хиясов М.Г. – магистрант Западно-Казахстанский аграрно-технический университет имени Жангир хана, г.Уральск

Полевые опыты по изучению элементов технологии возделывания суданской травы (Sorghum sudanense (Piper.)Stapf) проводились в весенне-летний периоды в сухостепной зоне Западного Казахстана. В ходе исследований изучались различные сроки посева с 10-дневными интервалами, а для уборки зеленых кормов, сенажа и сена-сроки уборки в разные фазы развития, а также пастбищный режим использования суданской травы. Площадь делянок 50 м^2, повторение - трехкратное, расположение делянок - случайное.Результаты научных исследований показали, что для условий региона важно подобрать как оптимальные сроки посева, так и уборки укосной массы. В годы исследований урожайность сухой массы суданской травы в разные сроки посева составляла 21,05-23,37 ц/га, причем наибольшая урожайность определялась в 1 ранний срок посева. При изучении сроков уборки высокая урожайность сухой массы суданской травы была обеспечена при уборке растительной массы в период цветения 19,06-23,69 ц/га. В условиях выпаса скота на исследуемом участке суданская трава обеспечила 16,99 ц/га сухой массы в общей сложности за 4 стравливания.

Ключевые слова: сроки посева, сроки уборки, пастбищный режим, урожайность, кормовая ценность

The most important link in establishing a sustainable feed base in West Kazakhstan is the mandatory cultivation of drought-resistant crops. Sudan grass - Sorghum sudanense (Piper.) Stapf is among this group of cultures. In dry weather conditions, it provides crop stability compared to traditional feed crops, is able to grow rapidly after mowing and can be used for silage, haylage, herbal flour and green mass (Andreev, 1989).

This culture is characterized by high yields, rapid growth and drought resistance [1, p.48, 2, p.192]. Sudan grass yield is particularly high during periods of moisture stock abundance (Habyarimana *et al.,* 2004).Sudan grass, along with drought resistance, has good ability to carry salinization of soil.Smaller leaf

area, secondary roots and vegetable wax on the surface makes Sudan grass more drought resistant. Another advantage of this culture is that it grows faster and thus are more competitive and suppress the growth of weeds.This culture makes good use of precipitation in the second half of summer, thereby forming a large above-ground mass. Sudan grass is characterized by good aftermathability, tilling capacity, in daily increase exceeds corn, and good aftermathability allows to obtain 3-4 mowings.In terms of nutritional value it also occupies one of the leading places. In 1 kg of green mass there are 0.22 fodder units and up to 20 grams of digestable protein. In terms of nutrient content, Sudan grass is superior to many other cereal herbs and contains less fiber [3, p.7, 4, p.296, 5, p.265].

All the above-mentioned advantages of Sudan grass depend on the correct selection of sowing terms and harvesting times. Sudan grass belongs to late-sowing crops. Planting of Sudan grass is better carried out when warming the soil at the depth of 10 cm up to 10-12 °C. In case of early sowing in insufficiently heated soil, field germination of seed material decreases to 40 percent, the number of dead seeds increases sharply, the period of germination of survivors increases to 20-25 days, and seedlings are obtained thinned. At the same time, it is not recommended to be late with the sowing of Sudan grass, as in this case the seeds enter already dry soil, which also delays their germination [6, p.17].

An important point is the choice of sowing term. Seeds begin to germinate at soil temperature at the depth of their coverage 5-8°C. However, the optimal temperature for seed germination is 10-12°C. During cultivation for fodder purposes there is an experience in sowing Sudan grass at soil temperature 8-10 °C at the depth of seeding-down[7, p.1529].

In agricultural practices of Sudan grass, it is also important to harvest at the optimal time. According to some scientists, harvesting of Sudan grass for green food and hay is recommended to be carried out in stem-extention stage, according to others - in heading phase. It should also be taken into account that the time of the first mowing has a significant effect on the harvest value. When mowing during stem-extention stage, the first mowing is lower than in ear emergence phase, but the largest harvest is formed [2, p.193, 8, p.20].

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

Despite all the noted advantages, sowing areas of Sudan grass in the dry-steppe zone of West Kazakhstan region to date are insignificant and its yield remains very low. The main reason is the lack of adaptive technologies for its cultivation. Due to the lack of research in these areas, the aim is to increase the yield of Sudan grass by selecting more optimal sowing and harvesting times, as well as to study Sudan grass in grazing mode for the uninterrupted supply of livestock with full-fledged feed.

The research was carried out at the experimental station of Zhangir khan West Kazakhstan Agrarian - Technical University (Republic of Kazakhstan, Uralsk).

Soil of the experimental area is characteristic for dry-steppe zone of West Kazakhstan. The area of divisions is 50 m^2, repetition - threefold, location of divisions is random.

In the first experiment, 3 terms of sowing of Sudan grass were studied. Sowing term 1 was carried out at soil temperature at seed filling depth of 8-10 °C, sowing term 2 - 10 days after term 1; sowing term 3 - 10 days after term 2.

In the second experiment, 3 terms of Sudan grass harvesting were studied: term 1 - before heading phase, term 2 - at the beginning of heading phase, term 3 - in blooming period. The third study examined the use of Sudan grass in grazing.

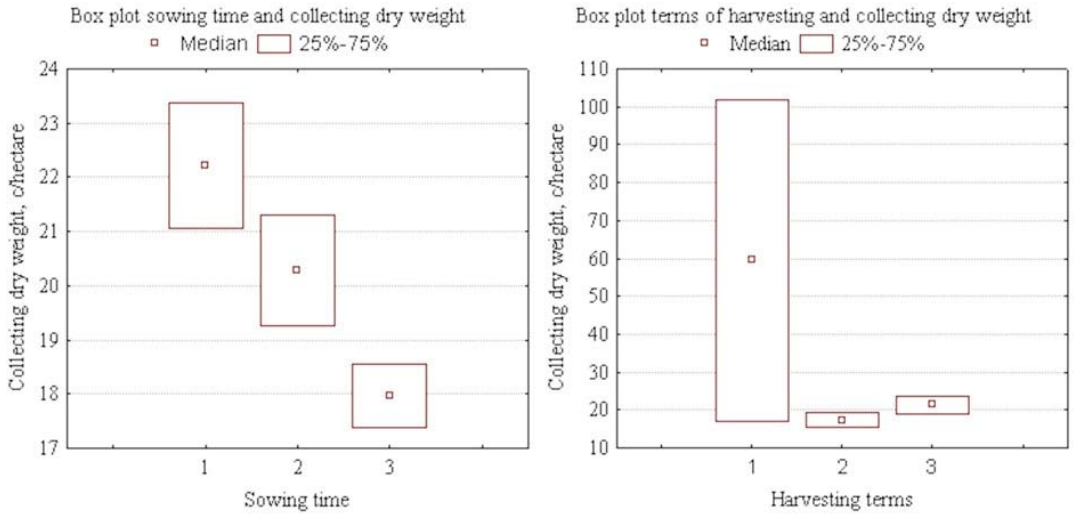
When using Sudan grass in grazing mode, the first browsing of plant formations was carried out by simulating in the interval of tillering phases - stem elongation. In the future, repeated browsing of of Sudan grass plant formations was carried out as the grazing vegeative mass grew to the height of 40-50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

A zoned variety of Sudan grass - Brodskaya 2 was used in the experiment. Agricultural machinery of Sudan grass cultivation was accepted for West Kazakhstan region.

During field tests, accounting, monitoring of phenological phases and growth of Sudan grass were carried out according to generally accepted methods [9, p.50]. The height of plants was measured in the phases of main development of Sudan grass: tillering, stem elongation, ear formation, blooming.

Harvesting and registration of crops was performed by continuous method. 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 [10, p.52]. Statistical data processing, dispersion analysis, and construction of charts are performed using Statistica 6.0.

*Yield and feed value of Sudan grass:*Yield reflects and integrates all factors that affect the plant during its development, and its magnitude is always the result of a compromise between productivity and sustainability.According to Zhuchenko (1990), agronomic interpretation of plant adaptability implies such use of environmental resources and resistance to abiotic and biotic stresses, in which a high crop index and its quality indicators are ensured, and subsequently, minimal costs of assimilators to maintain consistency of plant metabolic processes [11, p.353].



Fugure 1 - Diagram of yield range of dry mass of Sorghum sudanense according to the options of sowing and harvesting time time, c/ha

As can be seen from Figure 1, on average for 2 years of research, the yield of dry mass of Sudan grass was significantly dependent on cultivation techniques: sowing and harvesting times. With Student criterion = 4.3, the differences between arithmetic mean of the different levels are significant. The use of different sowing and harvesting times changes dry mass yield significantly. When studying the time of sowing and harvesting, the dry mass yield and collection of digestable protein were higher in 2019, compared to 2018. Higher productivity indicators on the option of sowing terms were determined at sowing in term 1 at soil temperature at seed filling depth 8-10°C. On average for 2 years in this option, the yield of dry mass and collection of digestable protein were high at 22.06 and 1.66 c/ha, respectively. Further delay in seeding by 10 and 20 days reliably reduces Sudan grass productivity. In the option of harvesting period, the most significantly high productivity of Sudan grass in terms of dry mass yield and collection of digestable protein differs in the harvesting period in blooming period of the given culture. On average for 2 years of harvesting in blooming period, the yield of dry mass at the yield of digestable protein of 1.46 c/ha was 21.50 c/ha. With an earlier harvesting period before ear formation, the productivity of Sudan grass is reliably reduced. A slight increase in the yield of digestable protein prior to the start of ear formation phase (1.43) compared to the start of ear formation phase (1.40) is due to the high content of protein in green mass of Sudan grass during early periods of development. It is known that with the further development of Sudan grass, there is a decrease in the content of protein in green mass.

The effect of year and cultivation techniques, including sowing and harvesting times, significantly affects the yield of exchange energy and collection of feed units of Sudan grass crops. Both on the output of exchange energy and on the collection of feed units, the productivity of Sudan grass was higher in 2019 compared to that of 2018. On average, during the years of research on the option of sowing terms, the largest yield of exchange energy (21.56 GJ/ha) and collection of feed units (19.39 c/ha) was observed at sowing term 1 at soil temperature at seed filling depth 8-10°C. The delayed sowing period reduces the feeding value of Sudan grass. Thus, at the 3rd sowing term, the yield of exchange energy decreased to 17.51 GJ/ha, and the collection of feed units - to 14.30 c/ha.

Based on the data from of experience, a single-factor dispersion analysis of dependence of exchange energy availability and feed units on sowing time was carried out. The significance test was calculated using Fisher's test. According to the test results, the influence of sowing terms on the content of exchange energy and on the content of feed units was confirmed (signal p-level < 0.01).

In the studies on adaptation of Sudan grass harvesting terms for the conditions of dry-steppe zone of West Kazakhstan according to the fodder value, the most accepted was the option of harvesting in blooming period. On average, for 2 years of study in this option, the yield of exchange energy and the collection of feed units on Sudan grass crops was the highest compared to the harvesting time in earlier phases, and these figures were 21.04 GJ/ha and 17.21 c/ha, respectively.

Based on the data from of experience, a single-factor dispersion analysis of dependence of exchange energy availability and feed units on harvesting time was performed. When analyzing the exchange energy depending on harvesting time, F-test confirmed a significant difference between group averages with an error probability of less than 1%. In the analysis of the effect of harvesting time on the

content of fodder units, the difference essentiality between the average ones is tested at 10% level (signal p-level <0.01). Consequently, the change of harvesting time has a significant effect on the amount of stored energy and the number of feed units.

Grazing regime of Sudan grass use: One of the distinctive characteristics of Sudan grass is the possibility of using this culture in grazing mode. Productivity in the use of Sudan grass in grazing mode is the main indicator of economic value and economic efficiency of this culture. In the studies in 2018, 2019, the yield of Sudan grass for the entire period of grazing regime of use depended on the yield of each browsing individually.

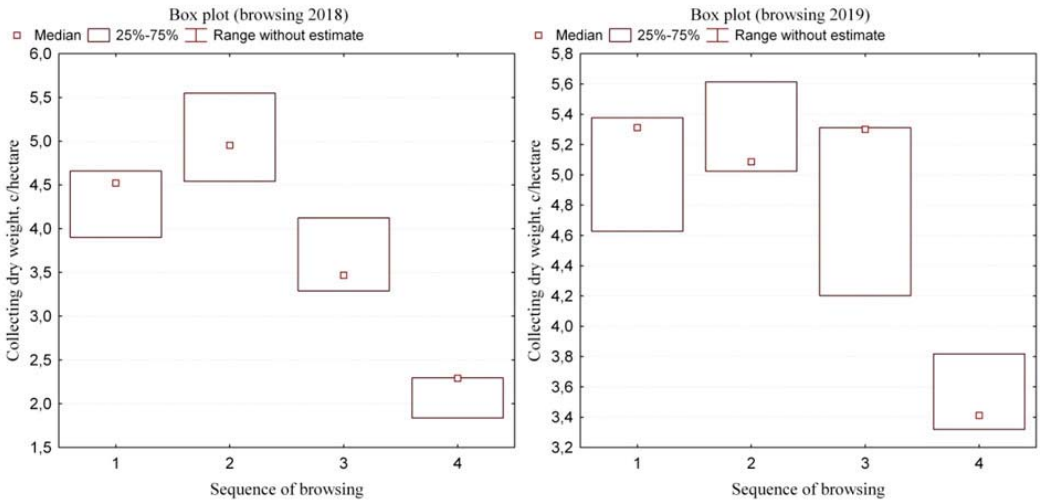


Figure 2 - Productivity of Sudan grass under pasture mode used, c/ha

On average for 2 years, the yield of green mass of Sudan grass used in grazing mode in browsing 1 was 29.70 c/ha with a dry mass collection of 4.74 c/ha.In case of second alienation, the crop of the second sowing term was 29.76 c/ha of green mass and 5.13 c/ha of dry mass. The harvest of the second browsing slightly exceeded the harvest of the first one. This confirms the influence of temperature factor on the growth intensity of grass. At the same time, stem of the second term of sowing by density was inferior to the first one; increase of green mass crop took place due to the increase of a plant mass. In the following, in browsings 3 and 4 there was showed a further decrease in productivity of Sudan grass. The yield of green mass in browsings 3 and 4 was 22.95 and 14.84 c/ha, respectively, with a dry mass collection of 4.29 and 2.83 c/ha.

The total productivity of Sudan grass at grazing mode of use averaged 97.25 c/ha of green mass and 16.99 c/ha of dry mass during the seasons of 2018 and 2019. Dispersion analysis of data from the test of collecting dry mass of Sudan grazing grass showed sufficient accuracy in estimating the performance of the total population for 2018 and 2019. If Student criterion = 4.3, the differences between arithmetic mean of the different levels are significant(Figure 2).

In the studies, the use of Sudan grass in grazing mode of use was also assessed by nutritional value and energy value. Analysis data show, on average, over 2 years of research, that Sudan grass, when used in grazing mode, provided a sufficient level of feed mass with satisfactory feed and energy merits. The yield of feed units, digestable protein and exchange energy was high in browsings 1 and 2. In the future, there was a decrease in the collection of nutritional and energy values. In total, for 4 browsings, Sudan grass on average for 2018, 2019 provided the collection of feed units 14.77 c/ha, digestable protein 1.75 c/ha, with the yield of exchange energy 17.64 GJ/ha. Supply of protein is 118.5 g.

Conclusion:For the conditions of dry-steppe zone of West Kazakhstan, the most optimal sowing terms of Sudan grass for fodder purposes is in earlier periods at soil temperature at seed filling depth 8-10°C. At early sowing time, Sudan grass uses resources more efficiently, thus differing in plant height, number of scions on plants, leaf area and decency. As a result, at early sowing period in dry steppe zone, Sudan grass forms a higher dry mass harvest, differing from later sowing by feed value as well.

The most optimal period of harvesting Sudan grass in the zone of dry steppes of West Kazakhstan is in the blooming period. When harvesting in earlier phases - before and at the beginning of heading phase, biometric indicators decrease, which affects productivity and fodder value of Sudan grass.

In the area of dry steppes, it is advisable to use Sudan grass in grazing mode for uninterrupted provision of rural and household animals with full-fledged fodders.

*Acknowledgments:*The work was carried out within the framework of the program of grant financing of the Science Committee of the Ministry of Education and Science of the Republic of Kazakhstan on the project AP05130172 "Development of adaptive technologies for the cultivation of fodder and oilseeds in relation to the conditions of West Kazakhstan".

REFERENCES:

1. Basaran, U., Dogrusor, C.M., Gulumser E., Mut H. Hay Yield and quality of intercropped sorghum-sudan grass hybrid and legumes with different seed ratio [Tekst]**/** U.Basaran., C.M. Dogrusor., E. Gulumser., H. Mut // Turkish Journal Of Field Crops. - 2017. - No.22(1). - P.47-53.

2.**Nasiev B.N., Zhanatalapov N.Zh. Vlijanie srokov uborki na produktivnost' smeshannyh posevov kormovyh kul'tur** [Tekst] / B.N. Nasiev, N. Zh. Zhanatalapov // Intellekt, ideja, innovacija. - 2017. - Vol 1, No.1. -S.191-196.

3. **Habyarimana E., Bonardi P., Laureti D., Di Bari V., Cosentino S., Lorenzoni C. Multilocational evaluation of biomass sorghum hybrids under two stand densities and variable water supply in Italy** [Tekst]**/** E.Habyarimana, P. Bonardi, D. Laureti, V. Di Bari, S. Cosentino, C. Lorenzoni // Industrial Crops and Products. - 2004. - No. 20. - P.3-9.

4. **Nasiyev B.N., Zhanatalapov N.Zh., Yessenguzhina A.N., Yeleshev R. The use of sudan grass for the production of green fodder, hay and haylage in Western Kazakhstan**[Tekst]**/** B.N. Nasiyev, N. Zh. Zhanatalapov, A.N. Yessenguzhina, R. Yeleshev // Ecology, Environment and Conservation. - 2019. - No. 25(2). - P.295-302.

5.**Sliwinski B.,Brzóska F.The use of sorghum silage in the nutrition of dairy cows. Problems of agricultural technology and use of corn and sorghum** [Tekst]/ B.Sliwinski, F. Brzóska // UP Poznań, 2008. - P.263-266.

6. **Kolomyets N.Y., Gorpinichenko S.I., Yermolina G.M. Stepniachka grade of Sudan grass**[Tekst]/ N.Y. Kolomyets, S.I. Gorpinichenko, G.M. Yermolina //Corn and sorghum. - 1999. - No.5. - P.17-18.

7. **McIntosh D.W. Forage harvest timing impact on biomass quality from native warm-season grass mixtures** [Tekst]/ D.W. McIntosh // Agronomy Journal. - 2016. - No.108. - P.1524-1530.

8.**Zavarzin A.I., Kostina G.I., Mahrov I.V. World collection source of raw material for the selection of Sudan grass** [Tekst]/ A.I. Zavarzin, G.I. Kostina, I.V. Mahrov // Corn and sorghum. - 2002. - No 6. - P.20-21.

9. **Novoselov Yu.K., Kharkov G.D., Shevtsova.N.S.Metodicheskie ukazanija po provedeniju polevyh opytov s kormovymi kul'turami** [Tekst] /Yu.K.Novoselov, G.D. Kharkov, N.S. Shevtsova // Moscow,All-Russian Research Institute of Feed named after V.R. Williams**,** 1987. - S.49-55.

10. **Novoselov Yu.K., Shpakov A.S., Yartieva J.A., Grigoriev N.G., Dedaev G.A. Metodicheskie ukazanija po provedeniju polevyh opytov s kormovymi kul'turami**[Tekst] / Yu.K. Novoselov, A.S. Shpakov, J.A. Yartieva, N.G. Grigoriev, G.A. Dedaev // Moscow,All-Russian Research Institute of Feed named after V.R. Williams, 1989. - S.50-55

11. **Zhuchenko A.A. Adaptive Crop Production**[Tekst] / A.A. Zhuchenko. M, 1990. - P.350-355.

Сведения об авторах

Насиев Бейбит Насиевич – профессор высшей школы «Технология производства продукции растениеводства» Западно-Казахстанского аграрно-технического университета имени Жангир хана, доктор сельскохозяйственных наук, член-корреспондент НАН РК. индекс. 090000, г. Уральск, ул. Жангир хана, 51, тел. 87051429866, e-mail:veivit.66@mail.ru

Жанаталапов Н.Ж. –PhD докторант Западно-Казахстанский аграрно-технический университет имени Жангир хана, г.Уральск

Хиясов Мадияр Галимжанович – магистрант Западно-Казахстанский аграрно-технический университет имени Жангир хана, г.Уральск

Nasiyev Beybit Nasiyevich – Professor of the higher school "Technology of crop production» of Zhangir Khan West Kazakhstan agrarian-technical university, doctor of agricultural sciences, corresponding member NAS RK. Uralsk, Zhangir khan St., 51, tel.87051429866, e-mail:veivit.66@mail.ru

Zhanatalapov N.Zh .– PhD doctoral student of Zhangir Khan West Kazakhstan agrarian-technical university, Uralsk

Khiyasov Madiyar Galimzhanovich – master's student of West Kazakhstan agrarian and technical University named after Zhangir Khan, Uralsk

Насиев Бейбіт Насиұлы – Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университетінің «Өсімдік өнімдерін өндіру технологиясы» жоғары мектебінің профессоры, ауыл