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.



ISSN 1991-3494



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).