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EFFECT OF PLANTING RATE AND HARVESTING DATES ON GREEN MASS YIELD OF PERENNIAL AND MULTI-CROP GRASS SORGHUM

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ABSTRACT: In the article, the effect of sowing rate and harvesting period on the green mass yield of perennial and multi-fertile grassy sorghum (Kolusb grass) variety "Azamat" is studied. In the variant with 4.0 kg of seed per hectare, the yield of 182.1 tons of green mass was obtained compared to the experimentally low and increased sowing rate at the end of the flowering phase.
Keywords: Grassy sorghum, perennial, multi-harvest, green mass, first harvest, second harvest, yield.

INTRODUCTION

S. almum Parodi of sorghum is a perennial forage crop belonging to the family Roaseae ili Gramineae Juss and Sorghum Pers. belongs to the generation [1, 2, 4].

A new type of cultivated sorghum (Columbus grass) has gained a very wide distribution area in countries with subtropical, tropical and temperate climates, especially in areas with low rainfall, due to its high drought resistance [6].

This species is widespread in Argentina, South Africa, Australia, India and the USA as a pasture crop, as a silage crop and as a green mass [9, 10, 7].

Oatmeal forage is a valuable feed that ruminants enjoy. Sorghum is drought tolerant and grows where maize cannot be grown due to high temperatures or dry conditions [11].

In areas with high rainfall (700-1000 mm), excessive growth of rhizomes and the presence of cyanide glucosides [5] have also been found to interfere with the rotation of fodder grasses due to their outward appearance . However, the green mass of Columbus grass harvested in the flowering phase usually contains low or moderate amounts of glucoside [7, 8]; Herbs of 5-6 weeks old do not contain dangerous amount of glucoside for animals [3].

METHODS AND MATERIALS

The scientific research work was carried out in 2022 in the experimental farm fields of the Tashkent State Agrarian University "Information and Consulting Center".

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The soil of the experimental farm is a typical gray loam that has been irrigated for a long time. This soil contains about 0.715-0.920% humus, about 0.065-0.083% nitrogen, about 0.134-0.152% phosphorus and about 0.148-0.154% potassium. The mobile forms of nutrients in the experimental field are $N–NO_3$ 3.1-4.7 mg/kg, P_2O_5 40.3-41.7 mg/kg, and K_2O 140.0-180.7 mg/kg. constitutes The soil is not saline, and this soil differs in water permeability, softening complexity.

In the field experiment, the variety Azamat of perennial grassy sorghum was planted in three replications with 12 variants for green mass. 2.0, 3.0, 4.0 and 5.0 kg of seeds were used per hectare. The area of each option is 28 m^2, of which 14 m^2 is taken into account , and the total area of the experiment is 0.15 ha. For green mass, fertilization was done at the beginning of the flowering phase and at the end of the flowering phase

Harvested twice during the growing season for green mass. It was fed with mineral fertilizers and watered 3-4 times.

Based on the goals and objectives of the experiments, phenological observations and calculations were carried out on the Azamat variety of grassy corn.

RESULTS AND DISCUSSION

The green mass yield in 2023 was higher than the green mass yield obtained in 2022, because the second-year grass sorghum cultivar Azamat increased due to the additional stems and bachki that formed after each harvest. 'k mass yield has increased. While three harvests were obtained in 2022, the fourth harvest in 2023 did not mature, and the yield was relatively low because the plant was harvested in the middle of the tuber phase when it was over one meter tall.

39.2 tons of green mass yield was obtained from one hectare of land from the first harvest for green mass in the fertilization phase of the variant with 2.0 kg of seeds planted per hectare. It was found that green mass yield increased by 43.5 tons when harvested at the beginning of the flowering phase and 46.4 tons when harvested at the end of the flowering phase.

In the variant with 3.0 kg of seeds planted per hectare, an increase in green mass yield was observed, when mowing in the flowering phase, a green mass yield of 46.9 tons/ha was obtained, at the beginning of the flowering phase, the green mass yield was 0.8 tons and at the end of the flowering phase, 3.9 increased by tons.

Even in the variant where the rate of planting per hectare was increased to 4.0 kg, the above law was repeated and the yield of green mass was increased. When mowing in the fertilization phase 50 . 4 tons/ha green mass yield was obtained, green mass yield at the beginning of the flowering phase was 51.3 tons and at the end of the flowering phase increased by 53.7 tons.

Even in the variant where the rate of planting per hectare was increased to 5.0 kg, the above law was repeated and the yield of green mass was increased. When mowing in the fertilization phase 52.3 tons/ha green mass yield was obtained, green mass yield at the beginning of the flowering phase was 53.9 tons and at the end of the flowering phase increased by 55.1 ton.

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In the case of planting rate of 4.0 kg per hectare, 1.9 tons less blueberry mass was obtained in the fruiting phase, 2.6 tons in the early flowering phase, and 1.4 tons in the end of the flowering phase.

In the second harvest, an increase in green mass yield was observed. Variants planted at 4.0 and 5.0 kg of seed per hectare had higher yields than those with lower seeding rates in the experiment. In these variants, the maximum yield was achieved at the beginning of the flowering phase and at the end of the flowering phase in terms of harvesting periods. The variants with low sowing rates also showed high yields at these harvesting periods.

In the third harvest, a decrease in the yield of green mass was observed. In this harvest, the variant with 4.0 kg of seeds per hectare had a higher yield than the other variants in the experiment, but the yield was higher at the end of the flowering phase of the harvesting periods. At the end of the flowering phase of the variant planted with 4.0 kg of seeds per hectare, 52.1 tons of green mass were obtained from the harvesting period, and compared to the variants with 3.0, 2.0, and 5.0 kg of seeds per hectare, the yield was 2.8, 6.5, and 1.3 tons more proved to be obtained.

In 2023, the 4th harvest was carried out after the plant was over 1 meter tall, before entering the fruiting phase. The air temperature was not enough to enter the fertilization phase. The 4th harvest was harvested before frost at the end of October, so the yield of green mass was low in all variants of the experiment.

Table 1

Green mass yield of perennial and multi-fertile grass sorghum, t/ha, 2023

№	Sowing norms kg/ha	Mowing dates (phases)	Green mass from the 1st harvest, t/ha	Green mass from the 2nd harvest, t/ha	Green mass from the 3rd harvest, t/ha	Green mass from the 4th harvest, t/ha	Total yield t/ha
1	2.0	Panicle formation	39.2	52.6	43.4	12.3	159.8
2		At the beginning of the flowering phase	43.5	50.5	44.1	13.5	151.6
3		At the end of the flowering phase	46.4	51.8	45.6	14.1	157.9
4	3.0	Panicle formation	46.9	50.5	47.4	14.7	159.5
5		At the beginning of the flowering phase	47.7	51.4	49.1	15.2	163.4
6		At the end of the flowering phase	50.3	52.4	49.3	15.9	168.1

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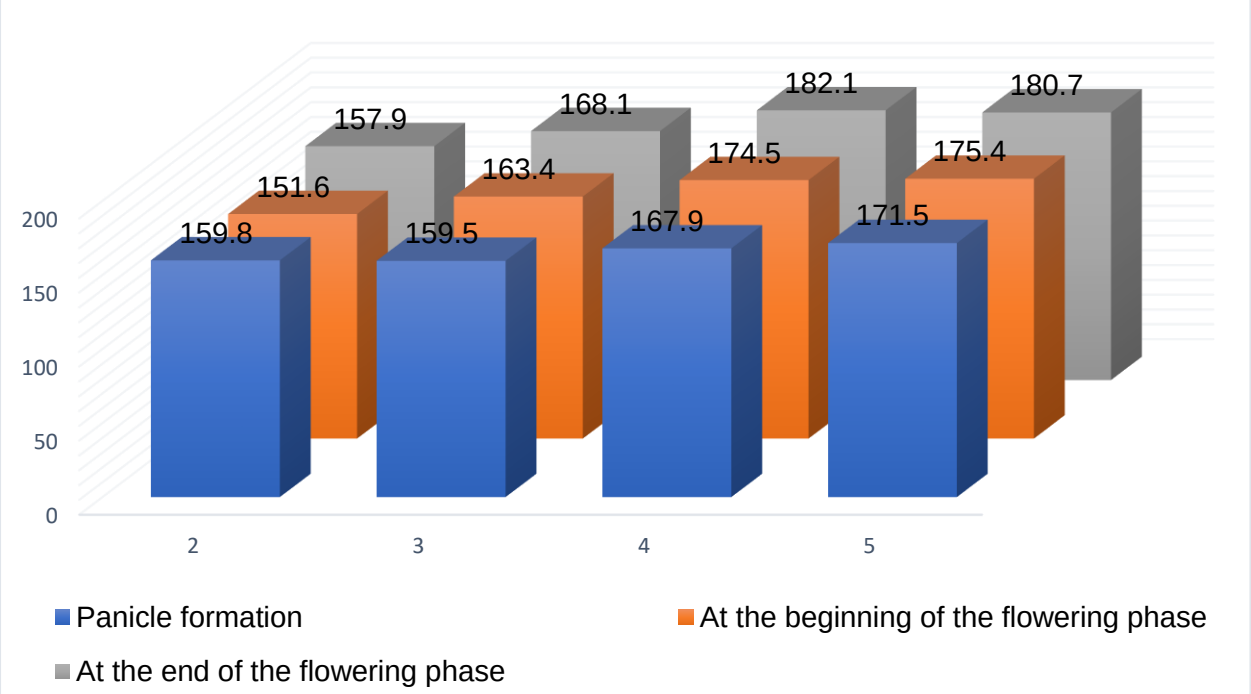
7	4.0	Panicle formation	50.4	54.1	48.3	15.4	167.9
8		At the beginning of the flowering phase	51.3	56.4	50.5	16.3	174.5
9		At the end of the flowering phase	53.7	59.1	52.1	17.2	182.1
10	5.0	Panicle formation	52.3	55.8	48.3	15.1	171.5
11		At the beginning of the flowering phase	53.9	56.2	49.5	15.8	175.4
12		At the end of the flowering phase	55.1	58.4	50.8	16.4	180.7

12.3 tons of green mass per hectare of land from the first harvest for blueberry mass during the harvest period in the fruiting phase of the option planted with 2.0 kg of seeds per hectare

Figure 1

Green mass yield of perennial grassy sorghum, t/ha



mass yield was obtained. It was found that blue pulp yield increased by 13.5 tons when harvested at the beginning of the flowering phase and 14.1 tons when harvested at the end of the flowering phase.

In the variant with 3.0 kg of seeds per hectare, an increase in green mass yield was observed, when mowing in the flowering phase, a green mass yield of 14.7 tons/ha was obtained, at the

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beginning of the flowering phase, the green mass yield increased by 0.5 tons and at the end of the flowering phase by 1.2 tons .

Even in the variant where the rate of planting per hectare was increased to 4.0 kg, the above law was repeated and the yield of green mass was increased. 15.4 tons/ha of green mass yield was obtained when mowing in the fruiting phase, 16.3 tons of green mass yield at the beginning of the flowering phase and 17.2 tons at the end of the flowering phase.

Even in the variant where the rate of planting per hectare was increased to 5.0 kg, the above law was repeated and the yield of green mass was increased. When harvested in the fruiting phase, 15.1 tons/ha of green mass was obtained, the green mass yield increased to 15.8 tons at the beginning of the flowering phase and 16.4 tons at the end of the flowering phase.

In the option with a planting rate of 4.0 kg per hectare, the green mass yield was higher than other options in all harvesting periods.

In 2023, the Azamat variety of multi-fertile perennial herbaceous sorghum was planted to obtain green mass and harvested 4 times in total, and the average yield was calculated from these 4 harvests. In the variant with 5.0 kg of seed per hectare, more green mass was obtained compared to the variants with a lower seeding rate in the experiment. In the case of planting 2.0 kg of seeds per hectare, a total of 159.8 tons of green mass was obtained from three harvests during the harvesting period in the flowering phase, which is 11.7 tons less than in the beginning of the flowering phase, 151.6 tons were harvested, which is 23.8 tons lower. less and at the end of the flowering phase, 157.9 tons were harvested, and 22.8 tons less blue pulp yield was obtained. In the case of planting 3.0 kg of seeds per hectare, 159.5 tons were harvested during the fruiting phase, 12.0 tons less, at the beginning of the flowering phase, 163.4 tons were harvested, 12.0 tons less, and 168.1 tons were harvested at the end of the flowering phase, 12.6 less green mass yield was obtained per ton. In the option of increasing the planting rate by 4.0 kg per hectare, a total of 167.9 tons of green mass was obtained from three harvests in the period of harvesting in the flowering phase, 30.6 tons less, and 174.5 tons in the period of harvesting at the beginning of the flowering phase, 0.9 tons less. and at the end of the flowering phase, 182.1 tons of green mass were obtained, and on the contrary, 1.4 tons of green mass were obtained.

CONCLUSION

The Azamat variety of K- bearing perennial herbaceous sorghum was planted to obtain green mass and harvested 4 times in total, and the average yield was calculated from these 4 harvests. The variant with 4.0 kg of seeds per hectare produced more green mass compared to the experimental low and increased seeding variants. A total of 167.9 tons was obtained from three harvests during the fruiting phase, 174.5 tons at the beginning of the flowering phase, and 182.1 tons at the end of the flowering phase.

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