

THE DEVELOPMENT OF SUDANESE GRASS AND ITS PHOTOSYNTHETIC ACTIVITY DEPENDS ON THE DURATION OF PLANTING

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ABSTRACT

The experiments show that, if the soil of the plant at the beginning of the period of application of the soil of the sudanese grass was 169-176 units/m² in terms of planting times, so the level of soil was increased from 2,09 to 4,04 during the first planting period. The number of plows per bush decreased from the first planting period to the last planting period, but increased from harvest to harvest. During the first planting period, the number of shrubs in the first place increased from 359 pieces to 695 pieces in the fourth. During the second planting period, it was found that it increased from 365 to 578 pieces.

Keywords: Sudanese grass, planting times, photosynthetic activity, green mass, leaf surface.

1. INTRODUCTION

Sudanese grass is a one-year ringing grass. It is a drought-resistant, high-nutrient grass that is fully eaten by livestock. Sudanese grass is sown for growing greens, hay, silage, senage and seedling. Green harvest is 60-80 tonnes and seed harvest is 2,5 tonnes. In 100 kilograms of greens there are 22 units of nutrients and 2,8 kg of protein, and in the hay respectively 57 units of nutrients and 7,4 kg of protein [1].

The reproduction coefficient of Sudan grass is high: 15-20 kg of seeds per hectare can be harvested 20-30 centner/ha. Sudanese grass belongs to the Poaceae family, sorghum constellation and sudanense P. per. by type. Its Homeland is Sudan (Africa). It has been cultivated in Uzbekistan since the 20th century. It is common in tropical and subtropical regions.

The root is well developed as a tassel root, The root penetrates to a depth of 2-2, 5 m and 70 cm spreads to the side. Sudanese grass perfectly absorbs the nutrients of the soil.

It is a heat-loving plant, the seed sprouts at 8-10°C, alternate cure stops growing at 25°C, if the temperature is 45°C. The sum of useful temperature is 1500-3000°C, the plant dies in the cold - 3-4°C. Sudanese grass is a drought-resistant plant, but when watered it grows well and gives a high yield.

Sudanese grass grows well on clean, fertile soils, is resistant to salination, is demanding in food. To grow a ton of hay, 20-22 kg of nitrogen, 8-10 kg of phosphorus and 20 kg of potassium are spent. At the beginning of the growth period, the plant grows slowly. The height of the shrub during the period of cultivation is 18-25 cm [2].

If alternative agrotechnical measures are carried out in the cultivation of Sudanese grass, a high green crop is obtained. It is necessary to determine the technological elements in each soil-climatic condition for Sudanese grass. One of the technological elements that sharply affects the harvest is the duration of planting. From the biology it is known - this is a heat-loving plant, so the earliest planting times are determined depending on the biology.

A.G.Shapoval recommends planting Sudanese grass in the Crimea, the North Caucasus regions by the end of April and the beginning of May, as it is possible to start planting at 10-12°C, having studied the duration of planting of Sudanese grass. It is recommended to plant in the south of Ukraine-in early May, and in the north - in middle May [3].

In the steppe regions of Kazakhstan, the Sudanese grass is an important fodder crop, with great emphasis on the technology of its cultivation. Hay was taken to 17,39-22.06 c/ha when sown in the early term. In many regions, it is recommended to plant Sudanese grass in 10°C temperature [4, 5]. In Latfullin's experiments, a high yield was obtained when Sudanese grass was sown on 25 May and 5 June - to 4,82-5,18 tonn/ha. When the Sudanese grass was planted at 15-20.05, the yield decreased by 9-16% [10].

In the scientific work carried out at the Turkmen farming institute, the planting periods of Sudanese grass are pointed as 19 March, and it is sown on 1st, 10th, 19th April. When sown in the first term, the seedlings appeared in 14 day, and in the remaining terms appeared in 6-10 day. The height of the stem varies from 76 cm to 156 cm. The leaves were 37-41% [7].

The first experiments on the Sudanese grass in Uzbekistan were conducted in 1928-1929 in the Kattakurgan District of Samarkand region and the optimal planting period of the Sudanese grass was determined. Acceptable planting time is counted as 5 April. The good soil and re-growth of the Sudanese grass is an important factor in increasing the yield, after the last harvest, the Sudanese grass can be used as a residue. In the lower parts of the semi-supplied watered land, hay can be grown from Sudan grass to 10 c/ha. In 1932-1933, the Milyutin experiment station studied the planting times of Sudanese grass, and in one season 2th harvest was obtained [2, 5].

Due to the biology of the Sudanese grass, it is recommended to plant the period of planting of the Sudanese grass when 10°C at the depth of planting of the soil. In the climates, this is from April to the first ten days of May and June. Due to the fact that the planting time is different according to the agro calendar, 1-3 times from the Sudanese grass, under irrigated conditions it is possible to harvest 4-5 times.

2. MATERIALS AND METHODS

Experiments on the period of sowing of soybean were carried out in the scientific-practical work of the Institute of cotton selection, seed growing and agrotechnologies of cultivation in Mirzaabad district, Sirdarya region. Summer in the territory of Sirdarya region is hot and dry,

winter is moderate, and there is also a big difference between the daily and annual temperatures. The average annual temperature in the region is around +12,9 +14,9°C. The highest temperature indicator is in June-July, it reaches +25,4 +29,5 °C, while the coldest indicator is in December, January, and is around 1,8-0,1°C. The decline in temperature in winter is associated with the penetration of cold air flows from the Fergana Valley. The soil temperature (in the soil layer) in winter, on average in January –2 –0,2 °C, the soil surface freezes, which makes it difficult to plow the soil and wash the brine. The first frost falls on November, and the last frost falls on February. The duration of cold-free days is 200-336 days.

The sirdarya region is located in the zone where strong wind movements intersect, and the North and East (Bekabad wind) influence on the region is strong. The main part of the wind blows more than in the East and most often falls on May-June. The speed of the wind reaches 3,2 m per second. In the field of experience, Boz-Meadow soils are distributed, which in the region amounts to 232472 hectares or 54,3%.

In terms of salinity of Boz-Meadow soils of Mirzaabad district, the amount of washed and weakly saline soils is 36.9%, in average the amount of saline soils is 45.9%, in strong and very strong saline soils 11.7%. We observed the amount of nutrients in experimental field soils at the beginning and end of vegetation of crops.

The amount of humus in the arable layer of soils of the described area is 0,534-0,614%, in the arable underground layers 0,427-0,453%.

Table 1 .The amount of nutrients in the soil (before planting)

Cutting	Layer, cm	Total, %				Moving, mg/kg		
		Humus	N	P	K	N-NO ₃	P ₂ O ₅	K ₂ O
1	0-30	0,534	0,044	0,100	1,75	1,70	20,0	125
	30-50	0,427	0,036	0,085	1,80	1,50	18,0	125
2	0-30	0,480	0,040	0,090	1,70	2,81	40,0	150
	30-50	0,400	0,030	0,070	1,75	1,91	25,0	150
3	0-30	0,614	0,053	0,126	1,78	2,135	42,5	125
	30-50	0,453	0,042	0,100	1,80	1,91	30,0	125

After sowing, the supply of nutrients to the soil is slightly improved.

The experiment was conducted in the laboratory and field style. Field experiments placed in 4 repetitions, 2 tiers. The surface of the socks is 36 m2. Periods of planting of Sudanese grass: 01.04; 15.04; 01.05 and 15.05; 01.06 and 15.06; 01.07 and 15.07; 01.08. The planting norm of seeds is up to 25 kg/ha, the planting depth is 3-5 cm. Planting method is simple as follows, between rows 15 cm. In the experiment, the Chimbayskaya Jubilee variety was planted. All

agrotechnical activities remaining in the experiment were carried out according to the technology of cultivation adopted in the region.

Table 2 .The amount of nutrients in the soil at the end of vegetation

Cutting	Layer, cm	Total, %			Moving, mg/kg		
		Humus	N	P	N-NO ₃	P ₂ O ₅	K ₂ O
		%	%	%	мг/кг	мг/кг	
1	0-30	0,582	0,046	0,082	0,75	12,1	134
	30-50	0,480	0,021	0,055	1,10	7,6	134
2	0-30	0,515	0,038	0,076	1,91	8,5	100
	30-50	0,334	0,013	0,055	1,50	6,0	100
3	0-30	0,637	0,036	0,082	3,26	10,0	168
	30-50	0,425	0,030	0,060	1,50	10,0	168

In the experiment, phenological observations, biometric measurements, calculations were performed, yield and its quality were determined in the period of application [8].

3. RESULTS AND DISCUSSION

Sudanese grass has the property of piling up. At the beginning of the period of application, it was determined that the seedling number of the plant was 169-176 units/m² in terms of planting times. During the first planting period, the level of salinity of the Sudanese grass increased from 2,09 to 4,04 from harvest. It was found that the soil decreased during the next planting periods (Table 3). It has been observed that during all planting periods, there is an increase in the number of seedlings to harvest.

Table 3 The effect of planting time on the seedling number and piling up of Sudanese grass

Term of planting	Number of seedlings m ² /plant	General piling up				The number of stems, m ² /plant			
		Cuttings							
		1	2	3	4	1	2	3	4
01.04	172	2,09	2,58	3,30	4,04	359	444	568	695
15.04	172	2,12	2,65	3,36	-	365	447	578	-

01.05	171	2,08	2,61	3,19	-	356	446	545	-
15.05	169	2,14	2,68	3,34	-	362	453	564	-
01.06	170	2,01	2,59	-	-	342	440	-	-
15.06	171	2,01	2,46	-	-	344	421	-	-
01.07	172	2,02	2,32	-	-	347	399	-	-
15.07	171	2,06	2,09	-	-	352	357	-	-

The number of plows per bush decreased from the first planting period to the last planting period, but increased from harvest to harvest. During the first planting period, the number of shrubs in the first place increased from 359 grains to 695 pieces in the fourth. During the second planting period, it increased from 365 to 578 pieces. There is almost no difference in the number of shares in the term of the last planting.

Sudanese grass is a tall plant, but it is harvested early to obtain a green mass, so the biological capacity is not enough. In the early planting periods, it grew better in the second and third harvests, since these harvests coincided with the high harnesses of the summer. When planted in the second half of summer, only in the first place grew well (Table 4).

Table 4 The growth of Sudanese grass and its dependence on the duration of planting of the leaf surface

Term of planting	Stem height,sm				Leaf surface, ths m ² /ha				Photosynthetic capacity (PSC), mln. m ² day/ha
	cuttings								
	1	2	3	4	1	2	3	4	
01.04	159	170	160	130	14,4	17,8	22,7	27,8	1,48
15.04	158	168	152	153	18,2	22,7	28,0	22,2	1,48
01.05	153	160	146	48	17,8	22,3	27,2	-	1,40
15.05	152	156	152	46	17,6	22,1	26,6	-	1,29
01.06	150	150	144	-	17,2	22,1	22,2	-	1,22
15.06	155	155	56	-	20,6	25,2	-	-	1,06
01.07	150	110	-	-	21,0	23,4	-	-	0,90

15.07	177	55	-		14,1	14,4	-	-	0,41
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As you know, the yield is higher if the leaf surface is well developed. In the experiment, the leaf surface was determined in each mowing. During the first planting period, the leaf surface increased from 14,4 to 27,8 thousand m²/ha. During the second planting period, it was found that in the last harvest the leaf surface decreased, in this case the duration of this harvest was reduced. In the third, fourth and fifth planting periods, three harvests were obtained, but in the fifth planting period, the duration of the third harvest was short, did not reach the mowing phase. In the sixth-eighth harvests were harvested from two, but did not reach the optimal harvesting phase in the last term. Total leaf surface planting times correspond to the options for all harvests 82.7; 91,1; 67,3; 66,3; 61,5; 45,8; 44,0; 28,5 it was equal to a thousand m²/ha. Another indicator of the photosynthetic activity of crops is the photosynthetic capacity (PSC). In the experiment, PSC decreased planting times from 1,48 to 0,41 million m² per day. This affects productivity.

Planting times were affected by the harvest of greens extracted from the Sudanese grass. This can be seen from the data in Table 5. A good harvest was obtained in 3 units of the first planting period, but in the last harvest the harvest was 94 c/ha, since the last harvest did not reach the optimal harvesting phase. When sown in May, 3 units were harvested, the yield of the third crop was reduced. When sown in June, 2th harvest was taken, the third harvest was also taken when sown in early June, but the harvest was low. When sown in the second half of July, one harvest was obtained, the this case, received Greens to 198 c/ha. In the period of validity in the Sudanese grass, the total harvest of Greens obtained by planting periods is appropriate to the options: 761; 684; 610; 531; 452; 368; 311; 198 c/ha. The poppy of the Sudanese grass is a nutritious food. The unit of nutrients obtained by planting periods in terms of options in total yield: 146,0; 130,7; 116,0; 100,4; 78,8; 67,2; 57,0; 33,7 established c/ha. The amount of nutrients, like the amount of harvest, also decreased as late planted.

Table 5 The dependence of the yield of the green mass of the Sudanese grass and the amount of unit of nutrients on the duration of planting

Term of planting	Green mass harvest, c/ha					Feed unit, c/ha				
	cuts				total	cuts				total
	1	2	3	4		1	2	3	4	
01.04	206	243	218	94	761	35,0	48,6	43,6	18,9	146,0
15.04	204	241	212	27	684	34,7	40,2	40,4	6,4	130,7
01.05	200	240	170		610	34,0	48,0	34,0		116,0
15.05	195	226	109		531	33,2	46,6	21,6		100,4

01.06	192	221	39		452	32,6	44,2			78,8
15.06	183	177	-		368	32,0	35,2			67,2
01.07	174	137	-		311	29,6	27,4			57,0
15.07	198	-	-		196	33,7				33,7

In terms of options per unit on a feed in this experiment 94; 93; 93; 92; 90; 89; 88; 76; 77 gram protein is correct. According to the zoo technical requirements, 100-110 grams of protein per unit of feed should fit. The fullness of the greens from the Sudanese grass depends on the duration of planting, and when planted early, this is approaching the demand, which means that it is much cheaper to feed the cattle.

4. CONCLUSIONS

In the experiment, it was found that by the periods of planting, the level of salinity of the Sudanese grass increases, from the harvest to the harvest, which means the possibility of obtaining higher Greens;

From the early planting periods, there was a decrease in the leaf surface and photosynthetic capacity, depending on the late planting periods.

The period of planting of the crop has been decreasing late. The total yield decreased from 761 to 196 c/ha.

The presence of a nutrient unit from 145,0 to 33,7 c/ha was determined in the case, depending on the planting time in the sprouts of the Sudanese grass.

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