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DYNAMICS ACCUMULATION OF GREEN MASS DEPENDING ON TERMS AND RATE
SEEDING OF THE SUDAN GRASS IN THE CONDITIONS EES “AGROUNIVERSITY” OF
ALMATY REGION

Abstract

Dynamics accumulation of green mass of a Sudan grass depending on terms and rate seeding in the conditions of Almaty region is shown in this article. It is established that optimum sowing time is the period 24.04-02.05 at rate seeding of 2,5 million pieces/hectare at which the Sudan grass accumulates the greatest number of green mass-279,5 c/hectare.

Keywords: Sudan grass, vegetation phases, green mass, leaf formation, sowing time, rate seeding, productivity.

Introduction

The solution of the problem development of livestock production is closely connected with strengthening of a food supply, at the same time carrying out diversification change of the structure of sown areas (increase in structure sown of high-protein forage crops), increases in efficiency and elimination deficiency of protein, use of adaptive and innovative technologies is important.

Now improvement of forage production requires increase in return of field hectare, especially irrigated arable land, due to improvement of fodder crop rotations, green and raw conveyors, resource-saving technologies cultivation of annual and perennial herbs, designing of new, adaptive and steady components of forage production in regions of the republic, various on climatic conditions.

For farms various form of ownership a basis of further development of livestock production and formation of a strong and full-fledged food supply during the summer and winter periods is increase in the areas under forage crops and increase in their productivity. An important reserve of forage production - identification of the most productive cultures for use in the green conveyor. The Sudan grass can be such culture.

Sudan grass — valuable culture for production of a green forage, hay and a silo. Green mass, both on a pasture, and in a slanted look is well eaten by all types of the cattle. In 100 kg of a silo 23 fodder units and 1,8 kg of a digesting protein contain that exceeds the maintenance of fodder units and a digesting protein at other annual cereal herbs. Besides, she contains a significant amount of digestible nutrients therefore it is widely applied in the green conveyor. On a green forage the Sudanese grass can be used from the middle of summer and to autumn frosts when other forage crops exhaust the stocks of green material.

The purpose of researches consisted in determination dynamics accumulation of green mass of a Sudan grass depending on terms and rate seeding in the conditions of Almaty region. Fodder culture, an annual grass - a Sudanese grass, a grade Odessa-25 was an object of a research. Researches were conducted in the territory of Enbekshikazakh district of Almaty region on light brown types of soils.

Results of researches

Green mass of a Sudan grass contains a significant amount of digestible nutrients thanks to what it is widely applied in the green conveyor. One more advantage of a Sudan grass is that as a

green forage it can be used from the middle of summer and to autumn frosts. At this time many forage crops have no lot of green mass any more [1;2].

Process accumulation of green mass at fodder plants is important very. Therefore disclosure of regularities of growth and accumulation of green mass of a Sudan grass, change quality of a harvest and the factors influencing these processes is of scientific and practical interest. They give the chance to correctly determine the optimum term cleaning of this or that culture on a green forage [3;4].

Green mass at a Sudan grass collects unevenly. In the period of a full tillering her stock makes only 13-15% of a stock during a full ear emergence. Most quickly it accrues since the beginning of an exit of a plant in a tube, and increase (86-88%) by the beginning of a ear emergence comes to an end.

Two-year-old (2015-2016) studying of process of accumulation of vegetative weight has shown that at a Sudanese grass it is in big dependence on terms and norms of crops, a phase of vegetation of plants and level of an agrotechnology.

Change of these indicators exerts a certain impact on growth and development of plants at which food, light, water, air and other living conditions of plants vary that involves change like a metabolism and consequently affects the mass of plants.

When accounting a harvest dynamics of increase of vegetative mass of plants has important value. Studying of processes of accumulation of green material of a Sudanese grass depending on sowing time and norms of seeding on phases of development has shown that the greatest accumulation of green material was at sowing time 24.04-02.05 and norm of seeding of-2,5 million pieces/ga-279,5 in c/hectare at 38,5% of an foliage, the greatest indicator of accumulation of green mass at sowing time 08.04-18.04 and rate seeding of-2,5 million pieces/hectare 266,5 c/hectare, the greatest indicator accumulation of green material at sowing time 06.05-11.05 and norm of seeding of-2,5 million pieces/ga-250,5 c/hectare (table 1).

The smallest number of green weight - 203,5 c/hectare has been established at sowing time 08.04-18.04 and norm of seeding of-1,5 million pieces/hectare, % oblistvennosti-32,8, at sowing time 06.05-11.05 and norm of seeding of-2,5 million pieces/hectare the smallest indicator of green material has made-225 c/hectare.

Table 1 - Dynamics accumulation of green mass of a Sudan grass (an average for 2015-2016)

Times sowing	Rate seeding of seeds, million pieces/hectare	Vegetation phase					
		stooling stage		heading of panicles		flowering	
		green mass, c/hectare	leaf formation, %	green mass, c/hectare	leaf formation, %	green mass, c/hectare	leaf formation, %
08.04-18.04(c)	1,5(κ)	71,2	55,4	168,0	43,2	203,5	32,8
	2,0	76,8	59,8	190,4	46,6	220,0	35,3
	2,5	81,6	63,5	194,8	49,5	266,5	37,5
	3,0	74,0	57,6	186,1	44,9	234,0	34,1
24.04-02.05	1,5(κ)	69,9	54,4	162,9	42,4	222,5	32,2
	2,0	73,7	57,4	184,1	44,7	236,0	33,9
	2,5	83,8	65,2	196,2	50,8	279,5	38,5
	3,0	79,3	61,7	193,3	48,1	243,5	36,5
06.05-11.05	1,5(κ)	71,5	55,6	168,2	43,3	225,0	32,8
	2,0	76,2	59,3	190,1	46,2	236,5	35,0
	2,5	79,3	61,7	193,3	48,1	250,5	36,5
	3,0	79,8	62,1	194,5	48,4	244,0	36,7

At increase in rate seeding up to 3 million pieces/hectare at all sowing time decrease in accumulation of green mass in comparison with rate seeding of 2,5 million pieces/hectare is observed, but it is more than at norms seeding than 1,5 and 2 million pieces/hectare. Optimum rate seeding of a Sudan grass at all sowing time are 2,5 million pieces/hectare at which the Sudan grass accumulates the greatest number of green mass.

By all options of experience the consistent pattern of accumulation to a greater or lesser extent of green material with simultaneous decrease in % of an foliage has been determined.

In general studying of dynamics of accumulation of green material has shown that the greatest number of green material at a Sudanese grass was formed in exit phases in a tube and tasseling. It has been connected with the physiological period of active growth of plants.

Thus it has been established that optimum sowing time is the period 24.04-02.05 at rate seeding of 2,5 million pieces/hectare at which the Sudan grass accumulates the greatest number of green mass-279,5 of c/hectare.

For identification of fodder advantage of a Sudan grass we have carried out comparative assessment of the chemical composition of her hay in various growth phases.

If on an exit of hay small advantages at the late term of cutting are had, then his quality is much lower about what it is possible to judge by the maintenance of a protein.

The best ratio of nutrients at the Sudan grass is observed in early phases (in the period of the beginning of a tasseling) when she contains the greatest number of a protein and the smallest percent of cellulose (table 2), late cutting, though increases collecting dry weight, but reduces quality of a forage, for example, if the dry mass of the Sudan grass on average in two years of researches at the beginning of a phase of a tasseling of a protein contained 15,10 that in the period of a full tasseling it decreases to 13,56%, to blossoming decreases to 12,10%, the amount of cellulose for this period increases from 29,31 to 32,31%.

Table 2 - The chemical composition hay of a Sudan grass (an average for 2015 - 2016)

Development phases	Moisture, %	Protein, %	Cellulose, %	Carotene, mg/kg forage
2015 y.				
Beginning tasseling	10,20	14,89	29,00	30,90
Full tasseling	10,62	12,69	30,80	28,30
Flowering	11,20	12,20	32,10	25,40
Aftermath	10,80	11,38	28,39	27,80
2016 y.				
Beginning tasseling	10,19	15,32	29,63	34,55
Full tasseling	10,53	14,43	30,95	34,17
Flowering	11,50	12,00	32,52	33,70
Aftermath	10,12	11,66	28,56	29,77
Average for 2 years				
Beginning tasseling	10,20	15,10	29,31	32,72
Full tasseling	10,57	13,56	30,87	31,23
Flowering	11,35	12,10	32,31	29,55
Aftermath	10,46	11,52	28,47	28,78

At young age the Sudan grass is also a carotene source, contents him in her depends on a phase development of plants and decreases in process of their aging. In a phase the beginning tasseling the level of carotene was 32,72 mg/kg, in a phase of blossoming-29,55 mg/kg.

If to consider that hay in an exit phase in a tube is much more gentle and good is eaten by the cattle, then the best term of cleaning of the Sudanese it is necessary to recommend a phase for hay - the beginning tasseling.

At the beginning tasseling of a plant contain a lot of protein, carotene and solid, hay from such green mass is characterized by high quality.

The best term cutting of the Sudan grass on green mass the beginning tasseling. By this time plants manage to save up enough quality green mass.

Observations show that in a phase of full blossoming 30 – 40% of the lower leaves of the Sudanese dried out. It renders crucial importance on reduction of carotene in her in comparison with the level of the beginning tasseling.

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АЛМАТЫ ОБЛЫСЫНЫҢ «АГРОУНИВЕРСИТЕТ» ОТШ ЖАҒДАЙЫНДА СЕБУ МЕРЗІМІ МЕН СЕБУ МӨЛШЕРІНЕ БАЙЛАНЫСТЫ СУДАН ШӨБІНІҢ ЖАСЫЛ МАССАСЫНЫҢ ТҮЗІЛУ ДИНАМИКАСЫ

Аңдатпа

Мақалада Алматы облысы ОТШ "Агроуниверситет" жағдайында себу мерзімі мен себу мөлшеріне байланысты судан шөбінің жасыл массасының түзілу динамикасы көрсетілген. Тиімді тұқым себу мерзімі 24.04-02.05 аралығында, ал тұқым себу мөлшері- 2,5 млн. дана/га болғанда судан шөбінің жасыл массасының түзілуі-279,5 ц/га.

Түйін сөздер: судан шөп, өсімдік фазасы, жасыл масса, жапырақтығы, себу мерзімі, себу мөлшері, өнімділігі.

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ДИНАМИКА НАКОПЛЕНИЯ ЗЕЛЕННОЙ МАССЫ В ЗАВИСИМОСТИ ОТ СРОКОВ И НОРМ ВЫСЕВА СУДАНСКОЙ ТРАВЫ В УСЛОВИЯХ УОС «АГРОУНИВЕРСИТЕТ» АЛМАТИНСКОЙ ОБЛАСТИ

Аннотация

В статье показана динамика накопления зеленой массы суданской травы в зависимости от сроков и норм высева в условиях УОС «Агроуниверситет» Алматинской области. Установлено, что оптимальным сроком посева является период 24.04-02.05 при норме высева -2,5 млн. шт/га, при которых суданская трава накапливает наибольшее количество зеленой массы-279,5 ц/га.

Ключевые слова: суданская трава, фазы вегетации, зеленная масса, облиственность, срок посева, норма высева, урожайность.