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FORMATION OF SEED EFFICIENCY OF BIRD'S-FOOT TREFOIL (LOTUS CORNICULATUS L.) IN THE CONDITIONS OF THE IRRIGATION OF THE FOOTHILL ZONES OF THE SOUTHEAST OF KAZAKHSTAN

Annotation

In the article bringing results about influence by the forming seed production bird's-foot trefoil (Lotus corniculatus L.) in the irrigation conditions of the foothills zone of the South-East Past of Kazakhstan. Established that bird's-foot trefoil (Lotus corniculatus L.) on the seed expedient take with from second take harvest. Herself high seed production (224,9-271,6 ce/he) receive on the variant wide-row sowing (30 sm) with norm sowing 6 million item seed by the hectare.

Keywords: bird's-foot trefoil, way of crops, norm of seeding, number of plants, productivity of seeds

In recent years the wide circulation of bird's-foot trefoil in a fodder grass cultivation in many countries of the world, including and in Kazakhstan, occurred thanks to a complex of its such economic and valuable signs, as longevity (till 10-12 years), high winter hardiness, indiscriminateness to soils (pH 4,5-8,2), a good rowen after bevelling or a bleeding and that is especially important, resistance to a pasture, ability to maintain flooding by thawed snow (till 20 days and more). This culture also well silage making in comparison with other bean herbs. Bird's-foot trefoil well eat all types of cattle, especially its hay, and also green material to a blossoming phase. Forage feeding from it doesn't cause in animals of a swelling and a meteorizm [1; 2; 3].

At cultivation of bird's-foot trefoil and for expansion of its area in the republic the major limiting factor is its unreliable seed efficiency. Therefore the major direction in selection of bird's-foot trefoil, is creation of grades with high and steady seed efficiency, and also along with it development of the processing methods of cultivation of bird's-foot trefoil adapted for specific conditions horned on seeds and a forage that its wide use at creation of cultural pastures and haymakings will allow is required.

According to our researches, in the spring bird's-foot trefoil starts in growth at average daily air temperature 4-6^{0}C. Bird's-foot trefoil it is possible to grow up on the meadow-chestnut soil with rather close bedding of ground waters (1,5-2 m). Soils of a skilled site of industrial practice economy "Agrouniversity" hardloamy with the maintenance of a humus of 1,44-2,45% (in a layer of 0-30 cm). Optimum reaction of the soil pH 6,7-7,1.

Supervision showed that on development of generative bodies and quantity of inflorescences on a plant ways of crops and norm of seeding of seeds of bird's-foot trefoil had a great impact on 1 hectare. At bird's-foot trefoil of wide-row crops with a row-spacing of 30 cm and norms of seeding of 3-6 million pieces of seeds on hectare the number of generative stalks and brushes on one plant is 2-3 times higher, than on ordinary crops with the increased norm of seeding of seeds (9,0-12,0 one million pieces/hectare).

In our opinion it speaks at the best security with light, water and food which extend the period of formation of bodies of fructification at acceleration of growth processes. On experience options with a row-spacing of 45 cm with various norm of seeding of seeds (3-12 one million pieces/hectare) formation of generative bodies was slightly less.

Influencing seed efficiency of bird's-foot trefoil it is necessary to carry an fall of seeds to adverse factors. At bird's-foot trefoil unique biological feature as "shot" of seeds is revealed during cracking of pods. As a result of such "shot" seeds can scatter in different directions on distance of 1,5-2,5 m. It is biological feature of bird's-foot trefoil in our opinion plays a positive role in preservation of a long time of a share of its participation in composition of seedling herbage.

In the period of 2011-2012 in experience seed efficiency of bird's-foot trefoil was studied. Seed efficiency of bird's-foot trefoil was studied from the second hay crop, i.e. on an experience site the first hay crop is cleaned on a forage. Cleaning of seeds in experience is carried out 21.09.2011, and in 2012 cleaning of seeds is made 23.09.2012.

Seed efficiency is studied at a browning of doggies in herbage for 43-45%. On our supervision at an be late with cleaning of seeds of bird's-foot trefoil big loss because of fall is noted. During cleaning of seeds, plants of bird's-foot trefoil remain in a green look (humidity of 53,5%). During cleaning the quantity of productive plants on 1м^2 was within 970-1540 pieces. The quantity of productive branches of the 1st and 2nd order was up to standard – 201,0-337,0 pieces/sq.m. One plant more than productive stalks and branches it is noted on option with the lowered norm of seeding of seeds (table 1; 2).

Table 1 – Influence of ways of crops and norms of seeding on structure of a crop of seeds of bird's-foot trefoil second year of life (2011)

Experience option		Average								
Way of crops	Norm of seeding, one million pieces/hectare	Quantity of plants, pieces /m^2	Quantity of productive stalks, pieces /m^2	Quantity of branches of the 1st, 2nd order		Brushes on the 1st plant	Quantity of doggies pieces /m^2	Quantity:		Weight is 1000 seeds, gram
				total	including productive			seeds, pieces /m^2	including on doggy	
Private (15 cm)	12,0	355	970	417	325	5,7	2037	5092,5	2,5	1,16
	9,0	294	1204	394	307	805	2769	8307,0	3,0	1,14
	6,0	215	1540	335	264	15,6	4312	14229,8	3,3	1,07
	3,0	126	1164	278	201	21,4	3492	10476,0	3,4	1,05
Widely the line (30 cm)	12,0	336	1050	440	330	7,5	2835	9072,0	3,2	1,09
	9,0	234	1503	411	296	14,7	4509	17134,2	3,8	1,07
	6,0	187	1540	375	284	28,2	6930	27720,0	4,0	0,98
	3,0	109	1246	306	197	39,5	6326	25936,6	4,1	0,97
Widely the line (45 cm)	12,0	272	1014	445	337	8,6	3143	10057,6	3,2	1,08
	9,0	179	1470	424	301	17,2	4851	17948,2	3,7	1,06
	6,0	125	1469	392	290	25,4	6170	24680,0	4,0	0,95
	3,0	97	1152	361	207	34,5	5069	20276,0	4,0	0,92

Table 2 – Influence of ways of crops and norms of seeding on structure of a crop of seeds of bird's-foot trefoil third year of life (2012)

Experience option		Average								
Way of crops	Norm of seeding, one million pieces/hectare	Quantity of plants, pieces /m^2	Quantity of productive stalks, pieces /m^2	Quantity of branches of the 1st, 2nd order		Brushes on the 1st plant	Quantity of doggies pieces /m^2	Quantity:		Weight is 1000 seeds, gram
				total	including productive			seeds, pieces /m^2	including on doggy	
Private (15 cm)	12,0	349	728	392	387	4,0	1456	3785,6	2,6	1,15
	9,0	290	820	370	270	5,5	1804	5412,0	3,0	1,12
	6,0	207	1128	316	252	13,7	3384	11844,0	3,5	1,05
	3,0	118	1034	265	197	20,4	3309	11581,5	3,5	1,05
Widely the line (30 cm)	12,0	329	648	421	308	4,2	1814	6349,0	3,5	1,08
	9,0	225	1078	397	285	12,6	3234	14553,0	4,5	1,05
	6,0	184	1368	363	270	21,8	4788	22982,0	4,8	0,97
	3,0	107	1012	298	192	29,7	3846	18845,4	4,9	0,95
Widely the line (45 cm)	12,0	267	770	420	319	6,2	2310	7854,0	3,4	1,07
	9,0	175	994	411	287	13,5	3181	12724,0	4,0	1,05
	6,0	123	960	380	276	20,4	3456	15552,0	4,5	0,92
	3,0	96	810	344	195	22,6	2916	13122,0	4,5	0,90

Data on seed efficiency of bird's-foot trefoil are provided in table 3 horned. From data of the table it is visible that bird's-foot trefoil on seeds it is possible to clean from second year of life.

In 2011 productivity of seeds in experience fluctuates within 59,1-271,6 kg/hectare. The highest productivity of seeds is noted on option wide-row (30 cm) crops with norm on hectare of 6,0 million / piece of seeds (271,6 kg/hectare). On option of ordinary crops with high norm of crops of seeds it is noted the lowest productivity (59,1 kg/hectare).

Table 3 – Influence of ways of crops and norms of seeding on seed efficiency of bird's-foot trefoil

Way of crops	Norm of seeding, one million pieces/hectare	The second year (2011)		The third year (2012)	
		Number of plants pieces /m^2	Productivity of seeds, kg/hectare	Number of plants, pieces /m^2	Productivity of seeds, kg/hectare
Private (15 cm)	12,0	355,0	**59,1**	349,0	**43,5**
	9,0	294,0	94,7	290,0	60,6
	6,0	215,0	152,3	207,0	124,3
	3,0	126,0	110,0	118,0	121,6
Widely the line (30 cm)	12,0	336,0	98,9	329,0	68,6
	9,0	234,0	183,3	225,0	152,8
	6,0	187,0	**271,6**	184,0	**224,9**
	3,0	109,0	251,6	107,0	179,0
Widely the line (45 cm)	12,0	272,0	108,6	267,0	84,0
	9,0	179,0	190,2	175,0	133,6
	6,0	125,0	234,5	123,0	143,1
	3,0	97,0	186,5	96,0	118,1

On options with the increased norm of seeding of seeds productivity of seeds was lower, than on options with the lowered norm of seeding.

In 2012 productivity of seeds in experience fluctuates within 43,5-224,9 kg/hectare. The highest productivity of seeds is noted on option wide-row (30см) crops with norm of seeding of seeds on hectare of 6,0 million / piece (224,9 kg/hectare).

Thus it was established that in the conditions of an irrigation of the southeast of the republic bird's-foot trefoil on seeds it is expedient to clean from the second hay crop. In this case blossoming- fruiteducation comes to more favorable period for plants. The highest seed efficiency is received on option of wide-row crops (30 cm) with norm of seeding of 6,0 million pieces of seeds on 1 hectare.

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ФОРМИРОВАНИЕ СЕМЕННОЙ ПРОДУКТИВНОСТИ ЛЯДВЕНЦА РОГАТОГО (LOTUS CORNICULATUS L) В УСЛОВИЯХ ОРОШЕНИЯ ПРЕДГОРНОЙ ЗОНЫ ЮГО-ВОСТОКА КАЗАХСТАНА

Резюме

В статье приводятся данные по формированию семенной продуктивности лядвенца рогатого (Lotus corniculatus L) в условиях орошения предгорной зоны юго-востока Казахстана. Установлено, что лядвенец рогатый на семена целесообразно убирать со второго укоса. Самая высокая семенная продуктивность (224,9-271,6 ц/га) получена на варианте широкорядного посева (30 см) с нормой высева 6,0 млн.шт. семян на 1 гектар.

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ҚАЗАҚСТАННЫҢ ОҢТҮСТІК-ШЫҒЫС ТАУБӨКТЕРІ СУАРМАЛЫ АЙМАҒЫНДА МҮЙІЗДІ ЛОТУСТЫҢ (LOTUS CORNICULATUS L) ДӘН САЛУ ӨНІМДІЛІГІ

Резюме

Мақалада Қазақстанның оңтүстік-шығыс тауетегі аймағының суармалы жағдайында мүйізді лотустың тұқым өнімділігінің құралуы бойынша мәліметтер келтіріледі. Мүйізді лотусты тұқымдыққа екінші орымда жинаған дұрыстығы анықталды. Ең жоғарғы тұқым өнімі (224,9-271,6 ц/га) 1 гектарға себу мөлшері 6,0 млн.дана кең қатарлы (30 см) себілген вариантында алынды.

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