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PRODUCTIVITY OF GRASS STANDS OF PERENNIAL GRASSES DEPENDING ON THE METHOD OF RECOVERY OF PASTURES

Abstract. In the article the data obtained during research on the experimental field of the Kostanay Research Institute of Agriculture. The article shows meteorological data for 2017, which was favorable for the growth and development of perennial forage crops. For the creation of cultural pastures, haymaking and pasture use areas, radical improvement of natural forage lands use grass mixtures. Creation of cultural pastures in the conditions of the steppe zone of Kostanay region by selecting the most productive fodder crops. Conclusions are drawn from the results of research on yield and nutrient content in the green mass of perennial grasses.

Keywords: fodder production, perennial grass, fodder crops, productivity, and pasture.

Introduction. In the Address of the President of the Republic of Kazakhstan to the people of Kazakhstan "Kazakhstan's Way 2050: Common Aim, Common Interests, Common Future", special attention is paid to the development of the agro-industrial complex and the transition to innovative technologies [1].

In Kazakhstan, the land fund covers an area of 272.49 million hectares, 222.24 million hectares of which are agricultural land, including: tilled area – 29.41 million hectares or 11%, hayfields – 5.16 million hectares and pastures – 187.55 million hectares, which is 71%.

Today, 61 million hectares of pastures are used on agricultural lands and 21 million hectares are used on the settlement lands out of 187.2 million hectares. The area of downed pastures is 26.5 million hectares, which corresponds to 16% of the total area of these lands.

The reason for the degradation of pastures around the settlements is their oversaturation with cattle. Due to that, the feed balance deterioration appears leading to an inability to increase the number of animals and their productivity. Another reason is the non-usage of the distant pasture cattle tending, that is, the lack of infrastructure [3-5].

Kostanay Research Institute of Agriculture is located in the second soil-climatic zone. It is arid steppe predominantly with southern low-humus chernozems. The climate is sharply continental: hot and dry summers, little snow cold winters.

The soil of the experimental site is thin black chernozem in a complex with solonetz up to 10%. The thickness of the humus horizon (A + B) is 41-45 cm. The humus content (according to Tyurin) in the arable horizon (0-30 cm) does not exceed 3%, the nitrogen is low (19.2 mg/kg), mobile phosphorus is average (28 mg/kg), potassium is increased (331 mg/kg soil).

According to the long-term data, the annual rainfall norm in the area of the experiment is 323 mm. Precipitation of the warm period (April-October) is 75.6% of the annual amount. Most of them fall in

the second half of the summer. Weather conditions in 2017: as compared with the long-term norm of 323 mm, the amount of precipitation was 343,2 mm. During the vegetation period of 2017, the amount of precipitation was 280.1 mm, which is more than the long-time average annual rate.

Plants of perennial grasses in mixed crops (legumes, grasses) wintered satisfactorily and began to vegetate in April, when the air temperature increased to 12.0 °C (II decade). Preservation of plants of perennial grasses after the winter period in mixed crops of leguminous grasses changed based on variants of experience.

The seeding of perennial grasses was carried out on the experimental plot at presence of moisture at a depth of 2-3 cm seeding: SKP-2,7 (anker openers with a row spacing of 27 cm); «Wintersteiger» (disc openers with a row spacing 15 cm). The experiment replication is 4-fold. Wet soil and its close contact with seeds of grasses, good copying of the landscape by the opener – all these factors positively influenced perennial grasses viability.

Mixed crops develop a large leaf surface and are characterized by a more even distribution of leaves height along. The height of fodder crops in grass mixtures was within the limits – 42-71 cm, legumes – 51-89 cm, the natural vegetation in the control was 43-47 cm (table 1).

Table 1 – Height of natural plants, fodder crops depending on the method of sowing

Alternation fodder crops according to options	Plants height, cm	
	Experiment 1 SKP-2,7 with a row spacing of 27 cm	Experiment 2 Wintersteiger with a row spacing 15 cm
Natural vegetation cereals (control)	47	43
Wheat grass + alfalfa + awnless brome	G-59 L-51 N-35	G-42 L-61 N-45
Wheat grass + sainfoin + awnless brome	G-61 L-85 N-58	G-53 L-65 N-60
Wheat grass + Eastern galega + awnless brome	G-71 L-83 N-59	G-57 L-80 N-61
<i>Note:</i> G – arable grasses, L – arable leguminose grasses, N– natural vegetation.		

Compared to the control (natural vegetation), the yield of green mass using SKP-2,7 (with a row spacing of 27 cm) increases 7 times, while Wintersteiger (with a row spacing 15 cm) – 5 times (table 2).

Table 2 – Comparative productivity of perennial grasses for improvement of pastures

Alternation fodder crops according to options	Dry weight yield, centners per hectare		Yield per 1 hectare			
			Fodder units, centners per hectare		Digestible protein, kg per hectare	
	SKP-2,7	Wintersteiger	SKP-2,7	Wintersteiger	SKP-2,7	Wintersteiger
Natural vegetation cereals (control)	1,7	1,7	1,1	1,1	0,08	0,08
Wheat grass + alfalfa + awnless brome	10,6	9,6	4,8	4,4	6,0	5,8
Wheat grass + sainfoin + awnless brome	10,0	10,1	4,5	4,6	5,7	6,2
Wheat grass + Eastern galega + awnless brome	10,8	9,8	4,9	4,4	6,1	5,4
LSD _{0,5}	1,7	1,5				

Based on the research findings that the greatest productivity of dry weight mass was obtained on the variants: SKP-2,7 (with a row spacing of 27 cm) Wheat grass + Eastern galega + awnless brome – 10,8 centners per hectare, Wintersteiger (with a row spacing 15 cm) Wheat grass + sainfoin + awnless brome – 10,1 centners per hectare.

Conclusion. The effectiveness of any technology for herbs seeding into the sod layer will depend mainly on the provision of best conditions for the germination of grass seeds and the survival of new plants in competition with the natural herbage for moisture, light and nutrients. The dermina helps in autumn and winter periods to accumulate moisture in the soil, since the roots of dead plants are good stabilizers that do not allow low temperatures to break the upper root zone, these factors have a positive effect on wintering of perennials. In the Republic of Kazakhstan, there is huge potential for the development of natural pasture grounds, which is insufficiently used to create a sustainable fodder base and to obtain environmentally friendly and cheap livestock products.

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КОПЖЫЛДЫҚ ШӨПТЕРДІҢ ӨНІМДІЛІГІ ЖАЙЫЛЫМНЫҢ ҚАЛПЫНА КЕЛУ ТӘСІЛІНЕ БАЙЛАНЫСТЫ

Аннотация. Мақалада Қостанай ауылшаруашылығы ғылыми-зерттеу институтының тәжірибе бойынша зерттеулер барысында алынған мәліметтер көрсетілген. Мақалада көпжылдық жем-шөп дақылдарының өсімі мен дамуына қолайлы болған 2017 жылға арналған метеорологиялық деректер көрсетілген. Мәдени жайылымдарды, шабындықтарды және жайылымдық жерлерді құру үшін табиғи азықтық жерлерді түбегейлі жақсарту үшін шөп қоспаларын пайдаланылады. Ең өнімді жемшөп дақылдарын таңдау арқылы Қостанай облысының далалық аймағындағы мәдени жайылымдарды құру. Көпжылдық шөптердің жасыл массасының өнімділігі мен қоректік заттардың нәтижелері бойынша қорытынды жасалды.

Түйін сөздер: жемшөп өндірісі, көпжылдық шөп, жем-шөп дақылдары, өнімділігі, жайылым.

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ПРОДУКТИВНОСТЬ ТРАВСТОЕВ МНОГОЛЕТНИХ ТРАВ В ЗАВИСИМОСТИ ОТ СПОСОБА ВОССТАНОВЛЕНИЯ ПАСТБИЩ

Аннотация. В статье приведены данные, полученные при проведении исследований на опытном поле Костанайского научно-исследовательского института сельского хозяйства. В статье показаны метеорологические данные за 2017 год, которая была благоприятно для роста и развития многолетних кормовых культур. Для создания культурных пастбищ, участков сенокосно-пастбищного использования, коренного улучшения естественных кормовых угодий используют травосмеси. Создание культурных пастбищ в условиях степной зоны Костанайской области путем подбора наиболее продуктивных кормовых культур. Сделаны выводы по результатам исследований на урожайность и на содержание питательных веществ в зеленой массе многолетних трав.

Ключевые слова: кормопроизводство, многолетние травы, продуктивность, пастбище.

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