

An impact of soil processing on vegetative reproduction of *AgrostisStolonifera*

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The article studies problems of reproduction of *AgrostisStolonifera*: an impact of processing soil on vegetative reproduction of *AgrostisStolonifera*. Ploughing up a territory of *AgrostisStolonifera* provided for an increase in a number of spears per area, increase in total mass and harvest in total. On fertile black earth soils *AgrostisStolonifera* forms a more powerful system of spears with higher numbers of viable buds than on gray forest soils or podzolic soils.

Key words: boreal cereal, vegetative reproduction of *AgrostisStolonifera*.

Boreal cereals breed with seeds and vegetatively[5; 18; 24]. In moderate-humid climate and terms of acute competition for nutrition, light, and water, those cereals that in definite periods of the year form multiple generative structures, and also various special sprouts (rhizomes, runnerlike, and, frequently, apogeotropic) that provide vegetative reproduction and that differ in form, mass, formation period, life duration, degree of development of vegetative buds, etc. spread [14]. Cauline formations are capable of rooting themselves in nodes, and from the side buds, which are proceeding to growth, giving the beginning of structures of overground and underground sphere. Forming of different sprouts with developed alar buds, that are capable of staying in motionless condition or proceeding to growth, makes the certain specificity conditional on regrowth of boreal cereal.

In spite of the evidence of great importance of reproduction and regrowth of boreal perennial fodder cereal, these questions didn't find proper reflection in literature [1; 2; 3; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24].

The aim of our research was the examination of peculiarities of *AgrostisStolonifera*'s breed. The task of research included: examination and analysis of influence of soil processing on *AgrostisStolonifera*'s breed. There were used vegetative and field experiments at the pasture grounds, laboratory methods of research.

The influence of ploughing up on the reproduction of *AgrostisStolonifera* was estimated in field terms by counting (4-5 times repeat) of sprout number at the fixed grounds (625 cm²).

This work contains the results of our researches of vegetative reproduction of *AgrostisStolonifera*.

AgrostisStolonifera is a perennial basilar short rhizomatous cereal. It forms rich green mat of vegetative sprouts (runners) and root leaves.

Root system is well developed, branched, but the majority of roots spreads at the topsoil, at a depth of 8-12 cm. The plant forms insignificant quantity of thin, 10-12 cm high generative sprouts, which strengthen at the lower nodes. Besides, it develops long (40 cm) procumbent surface sprouts (runners), that root themselves at nodes and produce new sprouts and leaves when contact with wet soil. One plant of *AgrostisStolonifera* spreads out that much, that it can occupy 1 m² area.

Leaves are small, flat, delicate, grassy, 3-5 cm long and 1-2 mm width. Color of lawn varies from blue-gray dark green to grassy rich green.

AgrostisStolonifera is unpretentious when it comes to soil. It can grow at sabulous and loamy soils; grows well at saline and acidic soils.

Out of whole variety of vegetative breed organs the runners and rhizomes are of the greatest importance, the function of which increases when pastures are processed (disking, ploughing etc.), where rhizomatous and runner forming types prevail. While the mechanical processing of topsoil overground and underground sprouts are cut into sections (cuttings), what strengthens the vegetative reproduction and improves the conditions of plant vegetation. Thus in spring of 2011 in Mordovia the ploughing up of *AgrostisStolonifera*'s area promoted improvement of herbage and rise of its productivity, what was conditioned by mass appearance of individuals out of buds of cut rhizomes at the processed area (table 1).

Table 1 – Influence of soil processing on the harvest of verdurous masses of *AgrostisStolonifera*

Variant	Height of herbage, cm	Quantity of sprouts, at 1 m ²	Harvest of verdurous masses		Color of herbage
			kg/m ²	tons/hectare	
Control	17	918 ± 47,7	0,96 ± 0,02	9,6	light
Disking	20	1191 ± 68,1	1,34 ± 0,08	13,4	light green
Ploughing up	33	2016 ± 71,1	2,34 ± 0,11	23,4	dark

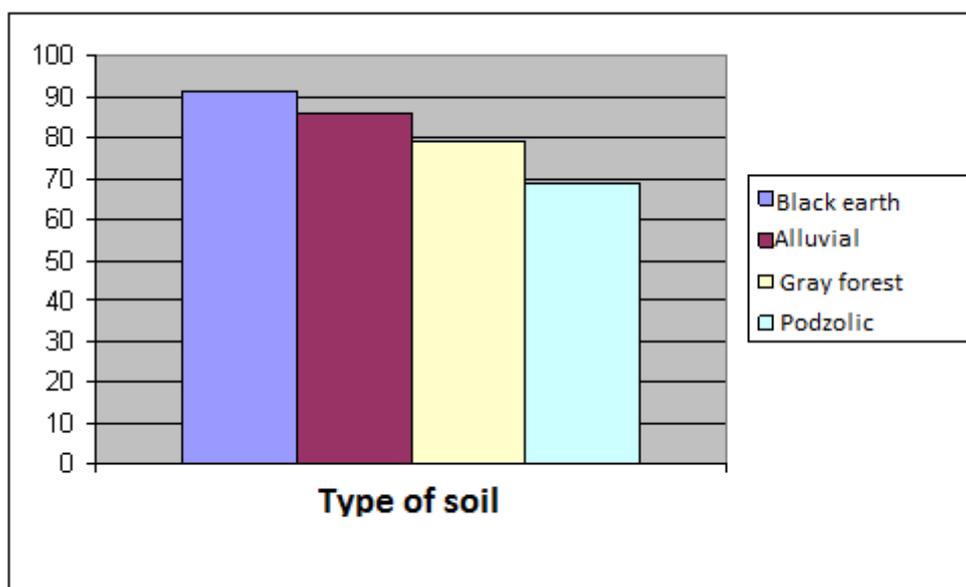
Ploughing of *AgrostisStolonifera*'s area caused increase of sprout quantity per square unit, rise of their mass and harvest in total. It is connected not only with partition of roots and separate runners into big quantity of cuttings and acceleration of bud awakening, but also with considerable improvement of water and air conditions for new individuals' vegetation and their provision with accessible forms of nutrition elements etc. An improvement of ecological regimen while forming of new herbage of *AgrostisStolonifera* is observed also while disk-

when runners, runnerlike sprouts and partially rhizomes are cut. But disking turned out to be less reasonable, than ploughing up.

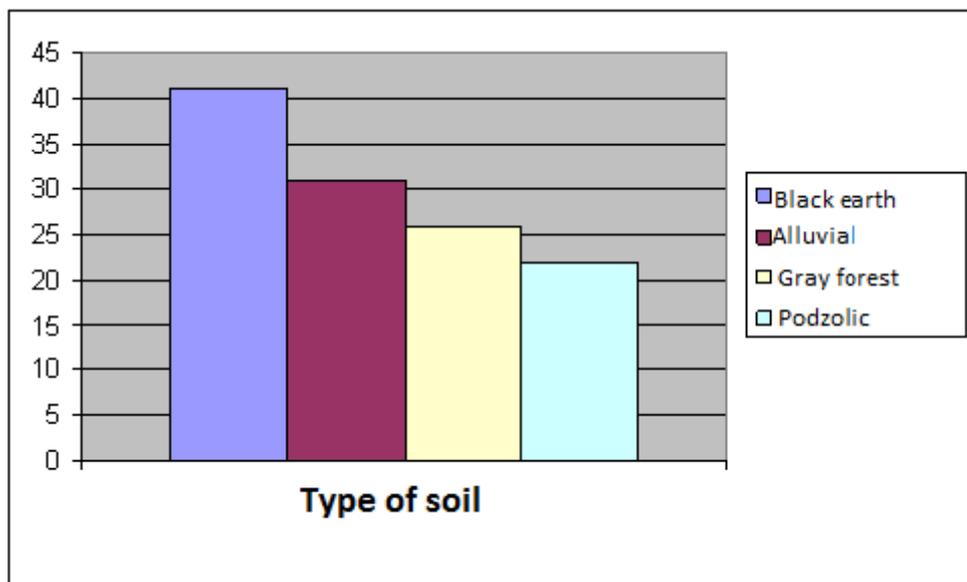
The effectiveness of pasture processing depends on the quantity of formed organs of vegetative reproduction and to a considerable degree is defined by the vegetative conditions, and firstly by soil fertility (table 2; pic. 1-3).

Table 2 – Forming of *AgrostisStolonifera*'s rhizomes at different types of soils (Mordovia, 2011)

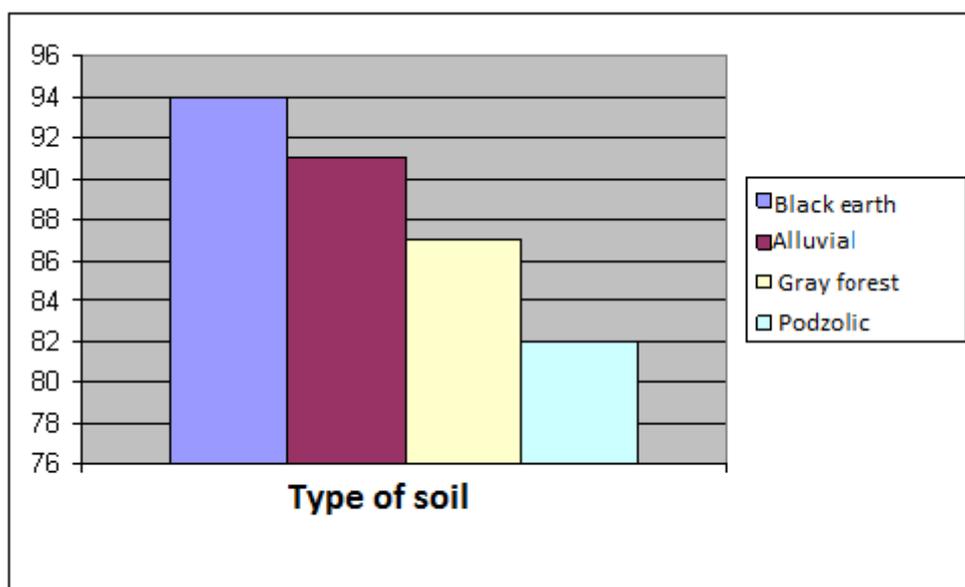
Soils	Rhizomes length		Quantity of buds		% bud awakening
	m/m ²	km/hectare	to 1 m ²	million/hectare	
Black earth	91 ± 4,3	910	4300	41	94 ± 2,0
Alluvial	86 ± 3,9	860	3100	31	91 ± 3,1
Gray forest	79 ± 3,5	790	2660	26	87 ± 2,6
Podzolic	69 ± 3,3	690	2200	22	82 ± 2,1



Picture 1 – Rhizomes length of *AgrostisStolonifera* at different types of soils (m/m²) (Mordovia, 2011).



Picture 2 – Quantity of buds of *AgrostisStolonifera* at different types of soils (million/hectare) (Mordovia, 2011).



Picture 3 – Bud awakening of *AgrostisStolonifera* at different types of soils (%) (Mordovia, 2011).

Thereby, on fertile black earth soils *AgrostisStolonifera* forms a more powerful system of spears with higher numbers of viable buds than on gray forest soils or podzolic soils. The intensity of vegetative reproduction of *AgrostisStolonifera* considerably depends on soil fertility and is defined by biological peculiarities of kind and quality of planting material.

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