Influence of Planting Method on Some Productivity Elements for Seed Production in Festuca Rubra L. (I) Number of generative sprigs

Corina Cristea[1], Neculai Dragomir[2], Teodor Cristea[2], Dorin Rechiţean[1], Carmen Dragomir[2], SebastianToth[2], Samira Răvdan[2], Mihai Lunca [2]

[1] *Grass Research- Development Station Timişoara, Calea Urseni, nr. 32, Timişoara, România*
[2] *Faculty of Animal Science and Biotechnologies, Calea Aradului, nr. 119, Timişoara, România*

Abstract
The results obtained reflect the importance to know the way the generative sprigs form, the technological factors that influence the number of sprigs and, finally, the seed production. The utilization at planting of a reduced seed norm (5 kg/ha) strongly influences the sprigging capacity in red fescue, compared with a bigger norm, respectively 20 kg/ha.

Keywords:*Festuca rubra*, productivity elements, seed production.

1. Introduction

The distance between rows and the seed amount used for planting or the planting norm represent two important factors with influence on the efficientization of seed production technology in red fescue [1, 2].
This work presents the way distance between rows and planting norm influence red fescue's capacity of forming generative sprigs.

2. Materials and methods

The researches were performed at the Research-Development Station for Pastures Timişoara, on a brown vertic eumesobasic soil, moderately gleyied, alkaline in the depth (low below 100 cm), moderately decarbonised, strongly clogged up by water, on medium fine/medium fluviatile deposits, medium loam/medium clayey loam, during 2004-2007.
The experimental display of our researches comprised a bifactorial experience, with the following graduations: A – Distances between rows a_1 = 12.5 cm; a_2 = 25 cm; a_3 = 50 cm; B – Planting norms b_1 = 5 kg/ha; b_2 = 10 kg/ha; b_3 = 15 kg/ha; b_4 = 20 kg/ha.
The experience was arranged in field according to the sub-divided parcel method, in four replications, with parcel's area of 20 m^2.
During the first year of vegetation, we carried out two maintenance cuttings, to remove the weed species, without yield determination. In the case of the variants planted with the distance of 50 cm between rows, we applied two mechanical hoeings with the help of the motocultivator.
The fertilization was applied every year, at the end of the spring, with a quantity of 250 kg/ha complex fertilizers (15:15:15).
The biological material used for planting was represented by the *Festuca rubra* variety Pastoral.

3. Results and discussion

Variance analysis, for the mean of the production years, shows planting norm's importance for the increase of the number of generative sprigs (Table 1).

* Corresponding author: Corina Cristea,
E-mail: cristeacori@yahoo.com

The distance between rows at planting exerts an insignificant contribution to the increase of the number of generative sprigs. In this viewpoint, in the case of distances of 25 cm and 50 cm, the mean increase is only 8 %, respectively 9 %, compared with the variant planted at 12.5 cm-distance (Table 2, figure 1).

Table 1. Influence exerted by density (planting norm) and distance between rows on the number of generative sprigs in *Festuca rubra*

VARIANCE ANALYSIS

SOURCE	SUM OF QUADRATES	DEGREES OF FREEDOM	VARIANT S^2	TEST F Value	Sign
Whole exp.	876784	35			
Big parcels, Total	287696	8			
Blocks	13997.33	2			
A	187309.3	2	93654.66	4.33639	
Error a	86389.34	4	21597.33		
Medium parcels, Total	589080	27			
B	516528.9	3	72176.3	69.0587	***
AB	27673.8	6	4612.29	1.84996	
Error b	44877.33	18	2493.18		

*** * * Table limit differences * * ***

Variation source	Test t			Test Tukey	
	DL 5%	DL 1%	DL 0.1%	DL 5%	D L 1%
a	166.618	276.1093	514.0333	154.4226	241.8156
B	49.46376	67.7657	92.3158	49.43248	67.74081
ab	82.95813	132.5272	234.9402	78.13605	118.9893
# ab|a - constant	42.83687	58.6868	79.9478	42.80979	58.66527

Variability coefficient: 2.71%

Table 2. Influence of distance between rows on the number of generative sprigs in *Festuca rubra*

Distance between rows (cm)	No. generative sprigs	Diff.	%	Signif.
12.5	1738	Mt	100	
25.0	1876	138	108	
50.0	1903	165	109	

DL 5%=167 DL 1%=276 DL 0.1%=514

Table 3. Influence of density (planting norm) on the number of generative sprigs in *Festuca rubra*

Planting norm Kg/ha	No. generative Sprigs	Diff.	%	Signif.
5	2006	317	119	***
10	1889	199	112	***
15	1771	82	105	**
20	1690	Mt	100	

DL 5%=49 DL 1%=68 DL 0.1%=92

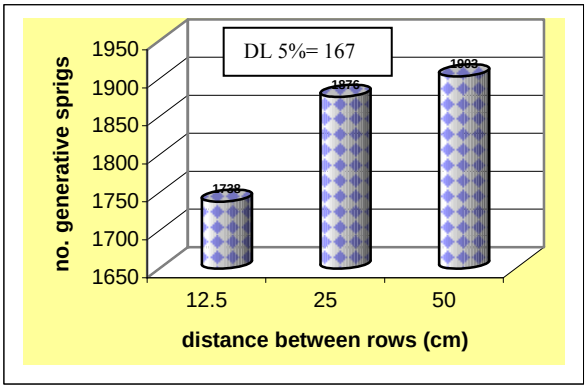

Figure 1. Influence of distance between rows on the number of generative sprigs in *Festuca rubra*

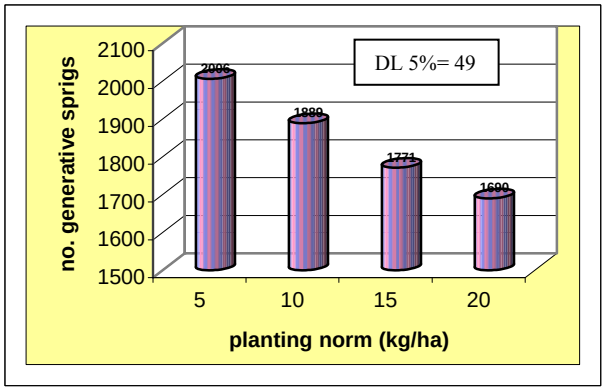

Figure 2. Influence of density (planting norm) on the number of generative sprigs in *Festuca rubra*

The utilization of a reduced seed norm, in our situation 5 kg/ha, strongly influences the sprigging capacity in red fescue, compared with a bigger norm. On the average, with this norm, we obtained a very significant increase (with 19 %) of the number of generative sprigs, compared with the variant planted with a norm of 20 kg/ha. Similar results were obtained in the variant planted with a norm of 10 kg/ha (12 % growth) (Table 3, figure 2.)

The mean results prove that the biggest number of generative sprigs may be obtained in the case of reduced planting norms (5 kg/ha), indifferently of the distance between rows. So, the biggest number of generative sprigs/m^2 (2064) was obtained in the variant planted with distances of 25 cm and a planting norm of 5 kg/ha (Table 4, figure 3).

Table 4. Influence of density (planting norm) and distance between rows on the number of generative sprigs in *Festuca rubra*

Distance between rows (cm)	Planting norm (kg/ha)	No. generative sprigs	Diff.	%	Signif.
12.5	5	1912	381	125	***
	10	1818	287	119	***
	15	1691	160	110	**
	20	1531	Mt	100	
25	5	2064	533	135	***
	10	1917	386	125	***
	15	1776	245	116	***
	20	1749	218	114	**
50	5	2043	512	133	***
	10	1932	401	126	***
	15	1847	316	121	***
	20	1789	258	117	***

DL 5%=83 DL 1%=133 DL 0.1%=235

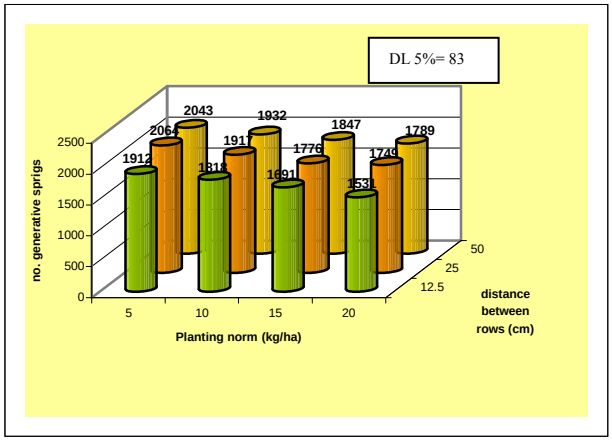

Figure 3. Influence of density (planting norm) and distance between rows on the number of generative sprigs in *Festuca rubra*, mean of all years

4. Conclusions

The biggest number of generative sprigs, in *Festuca rubra*, was obtained successive to the utilization of a planting norm of 5 kg/ha, indifferently of the distance between rows, respectively 1912 in the case of 12.5 cm between rows, 2064 at 25 cm and 2043 at 50 cm between rows.

References

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