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ASPECTS CONCERNING INTERSPECIFIC COMPETITION IN *TRIFOLIUM PRATENSE* AND *PHLEUM PRATENSE* CULTIVATED AT PREAJBA - GORJ

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ABSTRACT

This paper presents some aspects of interspecific competition on the species Trifolium pratense and Phleum pratense grown in conditions of Preajba - Gorj.

Rare clover sown in distant rows, at 50 cm, in which case competitive relations between plants is not carried out, or are present in negligible intensity, gave a yield of 335 g dry matter at linear meter. Grown in alternate rows with Phleum pratense red clover production was less with 174 g, namely 161 g / l.m.

Phleum pratense sown in rare rows gave a yield of 131 g / l.m. dry matter. In the case of alternative rows with red clover, on Phleum pratense row the yield was 104 g / l.m., less with 27 g, distinct significantly negative difference.

INTRODUCTION

Intraspecific and interspecific relations, both direct and indirect, manifested in the biocenosis are extremely diverse and complex. Therefore attempts to systematize their face many difficulties and classification under certain criteria disadvantages usually some aspects.

Direct effect on individuals involved criterion is most commonly adopted in the literature, whereas its quality can be more easily assimilated, while emphasizing the connections and network complexity characterizing a biocenosis.

Interspecific competition is less pronounced, since different species occupy different ecological niches in the biocenosis. In some cases, however, due to limited resources abiotic environment, competition between different species occurs particularly strong, especially if phenological phases are somewhat similar. So for example, in case of temporary meadows, between species there is a very high competition.

MATERIAL AND METHODS

For the study of interspecific competition on *Trifolium pratense and Phleum pratense*, in spring of 2006 in the research field from Preajba - Gorj was located an experience, the land was plowed since autumn 2005.

There were included in the study two factors:

A factor – the fertilization: a_1 – unfertilized; a_2 – 100 kg ha^{-1} N, 50 kg ha^{-1} P_2O_5, 50 kg ha^{-1} K_2O;

B factor – distance between rows: b_1 – 15 cm (alternate rows); b_2 – 50 cm (distant rows).

In 2006, two harvests were taken, and in 2007, three harvests. Harvesting were performed in the following scheme: in each variant-repetition was collected and weighed 2 m long on row of plants, after which the variants were fully mowing, taking into account the weighing and the weight of biomass in the line of 2 m.

The dry matter was determined by the oven, and the calculations were performed by analysis of variance, apart from harvesting on the line and on entire plot. The results were expressed in g / l.m. dry matter.

RESULTS AND DISCUSSIONS

Interspecific competition at Trifolium pratense

The effect of interspecific competition at *Trifolium pratense* can be noticed by comparing the yields of dry matter at linear meter obtained by distant rows sown clover with yields obtained in associated crop, which red clover was framed by two rows of *Phleum pratense*.

Rare clover sown in distant rows, at 50 cm, in which case competitive relations between plants is not carried out, or are present in negligible intensity, gave a yield of 335 g dry matter at linear meter. Grown in alternate rows with *Phleum pratense* red clover production was less with 174 g, namely 161 g / l.m. (Table 1).

Table 1

Influence of inter-specific competition on *Trifolium pratense* yield, average 2006 - 2007 (g / l.m. d.m.)

No	Nutrition space	Yield (g/l.m. d.m.)	%	Difference	Significance
1	Clover distant rows (50 cm)	335	100	-	Control
2	Alternate rows with Timothy (15 cm)	161	43	-174	000

DL 5 % = 11 g/l.m. d.m.
DL 1 % = 17 g/l.m. d.m.
DL 0,1 % = 27 g/l.m. d.m.

Statistically speaking, the difference between the two culture systems has been very significant. This shows that between plants from the rows of *Trifolium pratense* and *Phleum pratense* from adjacent rows existed interspecific competition relationships that have reduced clover production by more than 50%.

Neither the presence of chemical fertilizers has not diminished the intensity of competition exerted by *Phleum pratense* on red clover, only in a small extent (Table 2).

Table 2

Influence of inter-specific competition on the basis of agrofond on *Trifolium pratense* dry matter yield, average 2006 - 2007 (g / l.m.)

No	Agrofond (kg ha^{-1})	Seeding system	Yield (g/l.m. d.m.)	%	Difference	Significance
1	0	Clover distant rows (50 cm)	314	100	-	Control
2		Alternate rows with Timothy (15 cm)	145	46	-169	000
3	100N $50P_2O_5$ $50K_2O$	Clover distant rows (50 cm)	357	100	-	Control
4		Alternate rows with Timothy (15 cm)	177	49	-180	000

DL 5 % = 15 g/l.m. d.m.
DL 1 % = 23 g/l.m. d.m.
DL 0,1 % = 37 g/l.m. d.m.

The relative differences between productions at red clover sown in distant rows and those sown in alternate rows were 54% at unfertilized and 51% on fertilized background, so very close. In absolute numbers, red clover sown in distant rows exceeded red clover sown in alternate rows with 169 g on unfertilized and 180 g on fertilized background, very significant differences both negative.

From the data obtained it appears that the intensity of interspecific competition was considerable, *Trifolium pratense* being intensely competed by *Phleum pratense* phenomenon is explained primarily by the limited resources of the abiotic environment especially in terms of soil minerals.

Interspecific competition at Phleum pratense

Comparing the yields obtained on linear meter at *Phleum pratense* sown in distant rows, with production from the same species framed at a distance of 15 cm by rows of *Trifolium pratense* can see the effect of interspecific competition (Table 3.). *Phleum pratense* sown in distant rows gave a yield of 131 g / l.m. dry matter. In the case of alternate rows with red clover, on *Phleum pratense* row yield was 104 g / l.m., 27 g less, significantly negative distinct difference.

Table 3

Influence of inter-specific competition on *Phleum pratense* yield, average 2006 - 2007 (g / l.m. d.m.)

No	Nutrition space	Yield (g/l.m. d.m.)	%	Difference	Significance
1	Distant rows (50 cm)	131	100	-	Control
2	Alternate rows with clover (15 cm)	104	79	-27	00

DL 5 % = 15 g/m.l. d.m.
DL 1 % = 23 g/m.l. d.m.
DL 0,1 % = 36 g/m.l d.m.

So in the case of species *Phleum pratense*, there was a depression of the production when a row of grass was placed between two rows of leguminous, which reveal the presence of interspecific competition. Also it should be noted that at production *Phleum pratense*, difference between the two systems is lower than seeding *Trifolium pratense*, which may be due to an additional source of food at alternate rows consisting of biologically nitrogen fixed by red clover and used by grass.

Interspecific competition manifested itself in the variant without fertilizers, as well as that which has been applied the treatment with 100 kg / ha N, 50 kg / ha P_2O_5, 50 kg / ha K_2O. Was almost equal intensity, leading to lower production at *Phleum pratense* by approximately 20% (Table 4).

Table 4

Influence of inter-specific competition on the basis of agrofond on *Phleum pratense* dry matter yield, average 2006 - 2007 (g / l.m.)

No	Agrofond (kg ha^{-1})	Seeding system	Yield (g/l.m. d.m.)	%	Difference	Significance
1	0	Distant rows (50 cm)	92	100	-	Control
2		Alternate rows with clover (15 cm)	71	78	-21	0
3	100N $50P_2O_5$ $50K_2O$	Distant rows (50 cm)	171	100	-	Control
4		Alternate rows with clover (15 cm)	136	79	-35	00

DL 5 % = 21 g/m.l.d.m.
DL 1 % = 32 g/m.l. d.m.
DL 0,1 % = 51 g/m.l.d.m.

CONCLUSIONS

In case of *Trifolium pratense* culture associated with *Phleum pratense*, leguminous was subject to intense competition from grasses, reducing their production by 50%.

Interspecific competition manifested by *Phleum pratense* on species *Trifolium pratense* was less influenced by agrofond.

In associated culture *Phleum pratense* was subject of interspecific competition from red clover. Since the yield depression of Timothy was only 21% can say that the intensity of this competition was medium.

Interspecific competition exerted by red clover on *Phleum pratense* had the same intensity both on unfertilized and on the variant with 100 kg / ha N, 50 kg / ha P_2O_5, 50 kg / ha K_2O.

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