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DYNAMICS OF COUCH GRASS IN PERENNIAL RYEGRASS SWARDS UNDER CONTINUOUS GRAZING AND 4- AND 6-WEEKLY MOWING

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1. INTRODUCTION

In intensively used grasslands in The Netherlands perennial ryegrass (*Lolium perenne* L.) is the main grass species. However, serious problems can occur with couch grass (*Elymus repens* (L.) Gould). Most grasslands in the Netherlands are rotationally grazed with one or two cuts for silage.

The main cause of couch increase in grassland is probably an open sward which can easily result from all sorts of sward damage at high stocking rates. At high levels of nitrogen, couch can explosively increase in open patches by means of prolific rhizome branching (Neuteboom and Cramer, 1985; Neuteboom, 1981). A second probable cause of couch increase is late harvesting for silage, because after long growth periods couch can shade out perennial ryegrass through its continuous stem elongation. On the other hand, couch seems to be relatively sensitive to frequent defoliation (Neuteboom, 1981). This may be explained from couch's weak tillering and from its continuous loss of growing points with frequent defoliation.

Some results will be discussed of an experiment in which dense couch patches in an intensively used perennial ryegrass sward on clay (450 kg N ha^{-1} yr^{-1}) were submitted to 4- and 6-weekly cutting and continuous grazing.

2. MATERIAL AND METHODS

In a 12-year old grassland sward on clay 16 patches with high proportions of couch were selected after a first cut on 22 May 1980. Eight patches (replicates) were continuously grazed until the end of the growing season together with the remaining part of the field; ten patches were covered by cages of which five (replicates) were mown at 4-weekly and five at 6-weekly intervals. On 12 August all plots were harvested and subsequently continuously grazed. All patches were harvested after the winter on 19 May 1981. Yields and botanical composition were determined by cutting and separating grass in two 1/4 m^2 plots per replicate (cutting height 3.5 cm). The treatments are summarized in *Table 1.*

Table 1:
Summary of treatments

22 May	12 Aug.	20 Oct.	19 May
1980	continuous grazing		1981
4-weekly mowing			
6-weekly mowing			

3. RESULTS

On 12 August, 4-weekly mowing had decreased and 6-weekly mowing significantly increased the dry weight proportion of couch with respect to the first cut on 22 May *(Table 2).* This coincided with an increase and a clear decrease of perennial ryegrass, respectively. At the same date continuous grazing had resulted in a sharp decrease of couch and a strong recovery of perennial ryegrass. However, in this treatment *Poa annua* had also significantly increased (from 5 to 18%). The latter effect seems to confirm the general experience in practice that couch gives space to other weed species. The very strong increase of *Poa annua* up to 29% and to more than 40% in the 4- and 6-weekly mown plots at the first cut in 1981, respectively is noteworthy. Continuous grazing after 12 August had clearly suppressed couch and favoured perennial ryegrass in these treatments. However, probably perennial ryegrass had been weakened too much to refill the open spaces. Couch had not increased its tiller numbers under 6-weekly mowing on 12 August, which suggests that it had suppressed perennial ryegrass by means of a higher mean shoot weight. At the first cut 1981 the earlier continuously grazed patches had a significantly higher dry matter yield than those of the other treatments ($p<0.001$).

4. CONCLUSIONS

The results clearly indicate that couch is not adapted to continuous grazing. In a rotational grazing system including grass harvesting for silage, two processes might be involved in the increase of couch. The first process is the fast spread of couch in open patches after sward damage caused by grazing cattle (poaching and urine scorch); the second process is the further suppression of perennial ryegrass in dense tall couch patches due to the competition for light during long growth or regrowth periods.

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Table 2:

Dry matter (DM) yields, dry weight percentages of couch (Ely), perennial ryegrass (Lp) and Poa annua (Pa), and tiller numbers per dm²[n] of couch on three sampling dates. Treatments: grz (continous grazing), 4-w (4-weekly mowing); 6-w (6-weekly mowing).

	DM yield (kg ha^{-1})		Dry weight percentages [number of tillers Ely]											
	22/5 1980	19/5 1981	22/5/80 %Ely	[n]	%Lp	%Pa	12/8/80 %Ely	[n]	%Lp	%Pa	19/5/81 %Ely	[n]	%Lp	%Pa
grz	4940	5160	56	[21]	39	5	10	[11]	72	18	20	[10]	63	17
4-w	4370	4040	60	[22]	34	6	47	[13]	49	4	30	[18]	41	29
6-w	4930	4060	60	[22]	35	5	74	[18]	21	5	32	[20]	25	43

4. REFERENCES

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