

Yield effects of grazing and red clover in white clover/grass mixtures



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In white clover/ryegrass mixtures grazing in one year significantly increases the yield in the next, compared to cutting. Red clover is a good supplement to the mixture as it performs well under cutting regime, while white clover takes over during grazing.

Overall, inclusion of red clover in the mixture contributes to a more robust sward and increased flexibility in utilization.

The production of grass-clover is affected by grazing. Dung and urine excreted during grazing increases the growth of both grass and clover. At the same time the nitrogen fixation by clover decreases. This is something always occurring with the addition of nitrogen. In addition, growth is affected by the animals with their frequent defoliation. The grass becomes denser, ie. there are more shoots per unit area.

White clover has a good ability to adapt, its leaves become much smaller by grazing and it has the ability to cover bare spots by stolon development. This happens, for instance where animals tread, below ma-

nure or urine affected spots.

Red clover does not possess this ability to spread. The number of plants is limited to those established, but grazing means that its growth becomes low and flat to the ground, and the leaves become small. We have studied the impact of grazing on grass-clover production, composition and fertilizer response in mixtures of ryegrass and white clover with and without red clover.

Positive effect of grazing in white clover/grass mixtures

Yield under cutting regime was affected by whether the field was previously cut or



Sward with white- and red clover

grazed. Yield was higher when the grass-clover was grazed up until the cutting period (grazing for at least a year before the time of cutting), compared to cutting (Table 1).

This was especially so where slurry was injected, which may be due to denser

grass population and thus greater growth potential.

Also, the clover content was strongly reduced by previous grazing when cutting in spring, while there was no effect on the summer cut. This may be due to the fact that white clover growth is faster in summer

		Spring growth		Summer growth	
		Yield t DM/ha	Clover %	Yield t DM/ha	Clover %
Ryegrass/white clover					
- slurry	Cutting	3,8 c	21 a	2,4 ab	58 a
	Grazing	3,9 c	11 b	2,4 ab	54 a
+ slurry	Cutting	4,8 b	13 b	2,2 b	34 b
	Grazing	5,4 a	4 c	2,7 a	34 b
Ryegrass/white and red clover					
- slurry	Cutting	5,0 b	52 a	2,3 b	76 a
	Grazing	4,9 b	23 c	2,9 a	57 b
+ slurry	Cutting	5,6 a	31 b	2,5 b	70 a
	Grazing	5,9 a	16 d	3,0 a	51 b

Table 1. Dry matter (DM) yield and clover proportion in spring and summer growth following different management in the previous and the year of harvest. Different letters indicate significant differences.

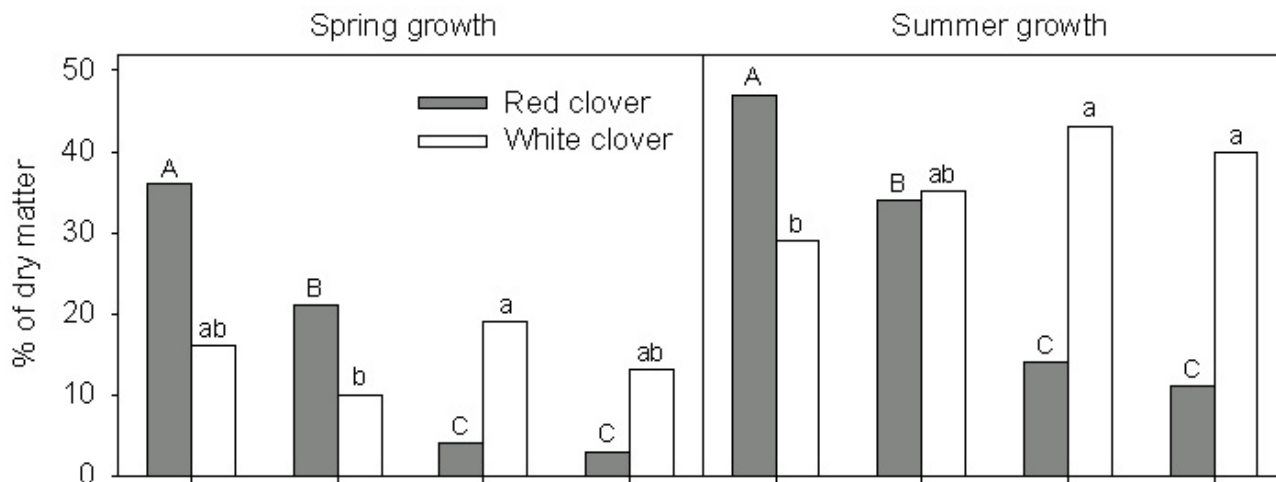


Figure 1. Proportion of red and white clover in a mixture of perennial ryegrass, white and red clover subject to previous grazing and cutting, with and without slurry. Different letters indicate significant differences.

than in spring.

Similarly, the yield response of fertilizer was significantly increased by grazing. The reason may be the recycling of urine and manure by grazing, contributing to a higher level of fertilization as well as a higher plant density, which both affect the potential for production.

Red clover in the mixture

The corresponding residual effect was studied where the seed mixture contained 1 kg red clover per hectares (4%). This caused the significant yield effect of grazing found

in the white clover mixture to disappear (Table 1). The explanation lies in the dynamics of white and red clover in the sward.

Red clover is influenced significantly by grazing and contributes mainly in cut grassland, and vice versa for white clover, whose share increased dramatically during grazing (Figure 1). The amount of red clover seeds was approx. half the volume in the recommended seed mixtures. Without slurry application and cutting only, the proportion of red clover was less than 50% of total dry matter, which is a

satisfactory level without the grass being outcompeted. In this way red and white clover complements each other more than they compete and an overall higher clover proportion is achieved.

Overall, inclusion of red clover in the mixture contributes to a more robust sward and increased flexibility in utilization.



Harvest in parcels



More information

Read more about the DARCOF III project Orggrass on the webpage: http://www.icrofs.org/Pages/Research/darcofIII_org-grass.html

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