Comparison of ensiled grass/white clover and grass/red clover for dairy cattle *S. De Campeneere, J.L. De Boever and D.L. De BrabanderILVO,Animal Science Unit, Scheldeweg 68, 9090 Melle, Belgium*White clover has a higher digestibility and contains more protein than red clover and (most) grasses, but it is not suited for pure culture. Ensiling of pure red clover is more difficult, and the energy and protein value is lower than for grass. However, ingestibility of red clover is higher than that of grass. By mixing grass and clover in one culture, the advantages of both species can possibly be combined. Recent legislation promotes the use of clover in grassland in Belgium. To obtain more knowledge on the feeding value and the use of this crop in cattle diets, two diets are compared using 14 lactating Holstein cows in a Latin square design with 2 periods of 4 weeks. The diets consisted of grass-clover (diet 1: white and diet 2: red) and maize silage (60/40 on DM base) fed ad libitum and completed with concentrates to supply 105% of the net energy and digestible protein requirements. Before and after the trial a three-week control period was added to compare the intake and the performance on the diets including clover with the intake and the performance on a traditional diet of maize silage/prewilted grass silage and concentrates. Apart from the feeding trial, in vivo digestibility will be determined with wethers to calculate the net energy value and rumen degradability characteristics of the organic matter, crude protein and NDF will be determined with cannulated cows to estimate the protein value of both crops.

In Flanders, increased interest for **clover** due to: incentive to grow own 'roughage protein sources' (grass-clover, lucerne, red clover): 600 € / ha, max. 5 ha

	White clover:	Red clover:
PRO	higher digestibility, higher protein content than red clover and (most) grasses	ingestibility is higher than that of grass
CONTRA	not suited for pure culture	ensiling difficult and nutritive value lower than for grass

mixing grass and clover in one culture,
=> combining the advantages of both grass and clover

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Materials and methods

- Cross-over design 2 x 2 (1 period = 4 weeks)
- 14 Holstein cows
- roughage diet:

  40%/60% maize silage / prew. grass-clover silage

  mixed and fed ad libitum in 2 feedings daily
- supplemented with wheat and concentrate
- all diets formulated : similar energy (NEL) and protein supply (CP, DPI, RDPB)

Materials and methods

- NEL: digestibility trials with sheep
- protein values (CP, DPI, RDPB) determined with in sacco incubations in rumen cannulated cows.

Origin

Total surface: 2,7 ha; Sown: may 2004

20 + 8 kg/ha Lolium Perenne + red clover Merian

20 + 6 kg/ha Lolium Perenne + white clover Huia

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Crop yield

Harvest 2005 / ha		Grass / red clover			Grass / white clover		
		%DM	kg DM	%/% DM	%DM	kg DM	%/% DM
1	19/05	37.2	3964	-	43.1	4533	-
2	12/07	61.3	4559	14 / 86	61.4	3757	78 / 22
3	**31/08**	**45.4**	3907	**21 / 79**	**63.4**	3654	**72 / 28**
4	18/10	26.9	2293	40 / 60	23.8	2870	58 / 42
	Total/ha		14724			14814	

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Composition and nutritive value

		GRCl	*GWCl*
	DM (g/kg)	463	593
Composition	CP	168	171
(g/kg DM)	CF	244	234
	NDF	403	451
	Ash	193	165
Nutritive	*In vivo* digest. OM (%)	70.0	73.8
value	NEL (MJ/kg DM)	4.88	5.42
	DPI (g/kg DM)	80	84
	RDPB (g/kg DM)	29	23
	FOM (g/kg DM)	433	515
	protein degradability (%)	60.3	62.6
	escape prot digestibility (%)	84.1	79.4

Results

		GRCI	GWCI
Diet composition	CP	142	147
(g/kg DM)	EE	27	29
	CF	190	179
	Ash	115	96
	NDF	355	364
	starch	186	217
DM-intake (kg)	maize silage	6.2	5.8*
	grass-clover	10.3	8.7**
	concentrates	6.1	5.9
	totaal	22.6	20.4**

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Results

		GRCI	GWCI
Nutrient intake	NEL (MJ/d)	140.1	132.5
	NEL (% of needs)	105	102
	DPI (g/d)	1868	1707´
	DPI (% of needs)	121	111**
	RDPB (g/d)	32	86
Performance	milk production (kg)	28.5	27.4
	fat content (%)	4.67	4.69
	protein content (%)	3.24	3.32´
	FPCM (kg)	30.3	29.3
	weight gain (kg/d)	0.87	0.47

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Conclusion

- Crop yields are good (14.7 and 14.8 tons DM/year)
- Red clover is more dominant than white clover in our fields => cautious interpretation
- GRCl: lower NEL and somewhat lower DPI
- DM intake of GRCL (higher portion of clover) was strongly higher
- Milk production of GRCL was somewhat higher than of GWK (not sign.)
- Comparable milk fat content and milk protein contents
- Results are probably influenced by clover portions

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