List of Tables and description

Table 1.

		Mean sward height in cm (SD; count)		Pre-grazing sward composition¥					Post-grazing sward composition				
Exp 1	**PAM**	Pre-grazing†	Post-grazing	TM	MF+RG	CL	OT	DB	TM	MF+RG	CL	OT	DB
	7RG		17.2 (8.77; 119)						50.3	27.4	0.6	16.8	5.1
	1SG	36.6 (10.22; 191)	15.9 (8.35; 80)	63.9	16.7	2.6	16.9	0.0	45.7	30.3	2.3	18.2	3.6
	1FG		17.5 (9.36; 120)						59.5	17.8	0.3	16.5	5.9
Exp 2													
	5RG		9.5 (3.08; 129)						44.5	8.6	1.1	22.4	23.5
	1SG	15.4 (4.33; 328)	9.7 (2.84;114)	64.3	5.6	2.0	18.8	9.3	43.0	8.2	0.5	24.8	23.5
	1FG		9.6 (3.15; 125)						46.8	7.9	0.5	20.8	24.0

† Pre-grazing SH was taken on the whole paddock a day before partitioning into grazing sub-paddocks.

¥ Sward botanical composition on DM basis (%) recorded before grazing and at the end of grazing week (7 d for Exp 1 and 5 d for Exp 2): **TM** = timothy grass (*Phleum pratense*); **MF** =meadow fescue (*Festuca pratensis*); **RG** = perennial ryegrass (*Lolium perenne*); **CL** = red and white clover mixed (*Trifolium pratense* and *Trifolium repens* respectively); **OT** = other species that were not sorted into the above categories and **DB**= dead material (debris). Pre-grazing measurements are taken over the whole experimental week paddock before partitioning into treatments (PAM) and replicates.

Table 2.

Parameters	PAM					Statistics (P-value) †		
Exp 1	**7RG**	**1SG**	**1FG**	*SEM*	*PAM*	*Day*	*Grazed week*	*PAM x Day*
Ash (g/kg DM)	70.3	70.8	70.9	*1.1*	*ns*	*ns*	**	*ns*
NDF (g/kg DM)	607	616	609	*5.2*	*ns*	***	*	*ns*
CP (g/kg DM)	92	101	100	*2.6*	ns	***	**	ns
Buffer soluble CP (g/kg CP)	294	281	289	*8.4*	ns	*	ns	ns
NE_{L20} (MJ/kg DM)	6.0	6.0	6.0	*0.03*	ns	***	**	ns
AAT_{20} (g/kg DM)	97.8	99.4	98.7	*0.62*	ns	***	**	ns
OMD (%)	71.3	70.3	72.0	*0.68*	ns	***	***	ns
Exp 2	**5RG**	**1SG**	**1FG**					
Ash (g/kg DM)	74.0	72.7	74.5	1.9	*ns*	**	*ns*	*ns*
NDF (g/kg DM)	592.7	591.4	588.8	7.0	*ns*	**	*ns*	*ns*
CP (g/kg DM)	136.2[a]	142.9[b]	143.4[b]	3.7	0.081	***	***	ns
Buffer soluble CP (g/kg CP)	256.9	252.1	253.3	6.9	ns	***	***	ns
NE_{L20} (MJ/kg DM)	6.57[a]	6.62[b]	6.61[b]	0.027	0.068	***	**	ns
AAT_{20} (g/kg DM)	114.6	110.2	111.6	1.16	ns	***	**	ns
OMD (%)	66.7	66.3	67.8	0.78	ns	ns	ns	ns

† Day is sampling day in a grazing week as sward samples were taken at start, mid-way-through and end of each grazing week

NDF is neutral detergent fiber; CP is crude protein; NE_{L20} is estimated net energy lactation at 20 kg DMI; AAT_{20} is estimated metabolizable protein supply at 20 kg DMI; OMD is estimated organic matter digestibility

Means in row with different superscripts are significantly different from each other at α ≤ 0.05; P-values: ns = not significant (P > 0.1); * = P < 0.05; ** = P < 0.01; *** = P < 0.001; and tendencies are indicated with full values,

Table 3.

	PAM				Statistics (P-value)		
Exp 1	**7RG**	**1SG**	**1FG**	*SEM*	*PAM*	*Week*	*PAM x Week*
Herbage DMI†	12.3	11.6	12.6	*1.85*	*ns*	***	*ns*
Total DMI‡	16.8	16.0	16.7	*1.85*	*ns*	***	*ns*
DM digestibility	77.0	77.4	76.5	*0.71*	*ns*	***	*ns*
Exp 2	***5RG***	***1SG***	***1FG***				
Herbage DMI†	16.4	16.0	14.7	*1.1*	*ns*	*ns*	*0.08*
Total DMI‡	19.9	19.5	18.3	*1.1*	*ns*	*ns*	*0.08*
DM digestibility	78.8[b]	77.2[a]	77.2[a]	*0.60*	*	***	*

†Estimated DMI based on dosed C_{32} n-alkane, and odd chain alkanes and even chain alcohols of dietary origin - individual cow had one estimate per week and the tested effects presented here are for grazing treatment, estimation week and treatment by week interaction effects

‡ Total DMI is the sum of estimated herbage and offered concentrate feed intake

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Table 4.

Exp 1	PAM			Statistics (P-value)					
Activities with NBS (min/h)	*7RG*	*1SG*	*1FG*	*SEM*	*PAM*	*Time*	*Grazing day*	*PAM x Time*	*PAM x Grazing day*
Grazing/eating	22.9a	24.8 b	24.8b	0.39	*	*	ns	***	ns
Ruminating	18.4b	17.2 a	19.0b	0.30	*	***	**	***	ns
Drinking	0.25	0.25	0.23	0.014	ns	***	*	ns	ns
Other activities†	18.3c	17.7 b	15.8 a	0.32	**	**	**	***	ns
Exp 2									
Activities with NBS (min/h)	*5RG*	*1SG*	*1FG*						
Grazing/eating	26.6 ab	25.3 a	27.3b	0.50	*	***	ns	***	ns
Ruminating	19.6b	18.9b	17.3a	0.35	*	***	ns	***	ns
Drinking	0.19a	0.23b	0.29c	0.02	*	***	ns	*	ns
Other activities§	13.6a	15.5 b	15.0b	0.35	*	***	ns	***	ns

†time spent on resting and other miscellaneous activities but not accounted for in grazing, ruminating and drinking is recorded as "other activities"

Time = time of the day in 24 hrs cycle; Grazing day = day in a grazing week (1 to 7 in experiment 1, 1 to 5 in experiment 2).

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Total time spent on activities (min/d) for each treatment can be calculated by multiplying the mean values with 23.5 as cows spent about half an hour per day on milking

Table 5.

	PAM				Statistics (P-value)			
Exp 1	**7RG**	**1SG**	**1FG**	*SEM*	*PAM*	*Day*	*Week*	*PAM * Day/week‡*
CH_4 yield (g/d)	316.2	284.1	263.8	*25.8*	*ns*	*	*	*
CH_4 intensity (g/kg ECM)†	10.7	10.1	10.1	*1.50*	*ns*	*	*	*ns*
Exp 2	**5RG**	**1SG**	**1FG**					
CH_4 yield (g/d)	286.3	285.7	327.7	*38.50*	*ns*	-	*ns*	*
CH_4 intensity (g/kg ECM)	13.6	12.5	15.6	*2.35*	*ns*	-	*ns*	*ns*

†ECM is energy corrected milk yield

‡ In Exp 2, methane sampling was hampered by a very wet sampling days where the gas inlets to the canister were blocked, and both marker and methane samples were tested negative for most of the analysis. Therefore, complete model using measurement day as a factor was not applied unlike Exp 1. However, mean data per cow per week was considered for testing effects of pasture allocation methods, week of measurement and their interaction effects.

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Table 6.

	PAM			Statistics (P-value)			
Exp 1	**7RG**	**1SG**	**1FG**	*SEM*	*PAM*	*Day*	*PAM * Day*
Cow body weight	552	545	559	*5.7*	*ns*	*0.058*	*ns*
Milk yield	25.3	25.6	25.3	*0.98*	*ns*	*ns*	*
ECM[†]	25.5	27.0	26.2	*1.12*	*ns*	*ns*	*ns*
Fat	4.2	4.4	4.2	*0.22*	*ns*	*ns*	*0.085*
Protein	3.3	3.3	3.3	*0.07*	*ns*	***	**
Lactose	4.7	4.8	4.7	*0.07*	*ns*	*	*
Urea (mmol/L)	2.8	2.7	3.1	*0.20*	*ns*	***	*
Exp 2	**5RG**	**1SG**	**1FG**				
Cow body weight	569	572	571	*5.3*	*ns*	***	*
Milk yield	21.5	21.4	21.3	*0.56*	*ns*	***	**
ECM	22.5	22.3	22.4	*0.59*	*ns*	***	*0.067*
Fat	4.2	4.2	4.3	*0.16*	*ns*	***	*ns*
Protein	3.6	3.7	3.7	*0.21*	*ns*	***	***
Lactose	4.6	4.6	4.5	*0.09*	*ns*	***	*ns*
Urea (mmol/L)	4.2	3.9	4.5	*0.43*	*ns*	***	*

[†] ECM is energy corrected milk yield

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