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Rotational grazing of dairy cows : effect of grazing intervals on animal and grass production

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With rotational grazing, short grazing intervals allow to feed grass of good value : this method enhances animal performance but reduces grass production. Inversely, according to Frame and Hunt, (1971, J Br Grassld Soc, 2, 163-171) and Binnie and Chestnutt (1991, Grass and Forage Sci, 46, 343-350), longer intervals improve grass production but reduce grass value and quality. Furthermore, two advantages could be obtained with longer intervals :

- a larger amount of grass available for grazing in summer, which could lower the acreage of grass to be cut for silage in spring ;
- a longer period of grazing without supplement of forage, but with possibly a lower milk production.

During 3 years (1992 to 1994), perennial ryegrass swards have been rotationally grazed, form early may to mid-september (paddocks of 1 hectare each). Two groups of Holstein cows (4 th to 8 th month of lactation) have been used, with 17, 26 or 21 cows in each group, respectively for trial 1, 2 and 3 :

- group S (short) with grazing intervals of 18 to 25 days in spring and 25 to 35 days in summer ; cows were moved from a paddock to another in order to obtain an optimum milk production ;
- group L (long) with longer intervals, of 23 to 33 days (spring) and 33 to 50 days (summer), and cows moving from a paddock at a very low sward height.

During the periods of deficiency for grass production, cows were fed a supplement of maize silage (group S) or grass silage (group L). Sward heights were checked (40 measurements per paddock) with a grassmeter, when animals entered or leaved each paddock.

On average, during 3 years, intervals for group L were longer : 6.6 days (spring) and 11.5 (summer) more than for group S. Longer intervals were associated with higher sward heights, when cows entered into a paddock : +2 to +4 cm, at the various stages of grazing season. At the end of each paddock, sward heights were similar for the two groups. A low stubble height was reached with many difficulties in group L, and the same height was reached very easily in group S. Treatment L was associated with a smaller grazing area per cow, especially in spring. For the two groups, milk production and milk fat percentage were similar ; but milk protein percentage was slightly lower for group L, particularly in summer.

To sum up, longer intervals between successive grazings have very little effect on milk production. This method allows to have a larger stock of grass available, associated with a lower acreage to be cut for silage ; a longer grazing period is also possible, without supplement of forage. But longer intervals must be associated with a very short grazing, before moving cows from a paddock.

Periods	Spring		Summer		Whole period	
Treatments	S	L	S	L	S	L
Grazing intervals (d)	21.8	28.4	28.4	39.9	25.6	35.0
Sward heights						
available herbage (cm)	13.1	16.8	11.9	14.0	12.6	15.3
stubble (cm)	6.9	6.6	6.9	7.1	6.9	6.9
Silage in summer (kg of DM/cow)	0	0	370	150	370	150
Milk production (kg)	25.7	25.6	20.2	20.0	22.6	22.3
Fat (%)	3.81	3.83	3.79	3.79	3.81	3.81
Protein (%)	3.00	2.96	3.19	3.07	3.10	3.02