A STUDY OF SPRING GRAZING MANAGEMENT EFFECT ON SUMMER-AUTUMN PASTURE AND MILK PRODUCTION OF PERENNIAL RYEGRASS x WHITE CLOVER DAIRY SWARDS

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ABSTRACT

Evidence generated at Massey University demonstrated the importance of the manipulation of ryegrass reproductive growth during spring to pasture production. It showed that lax grazing of pastures during spring followed by hard grazing at the time of anthesis could result in an enhancement of summer-autumn herbage production, associated with an enhanced tillering activity of ryegrass plants. Such grazing management was called "late control", and it was thought to be an option for enhancing pasture production, particularly in dairy farms, where conditions for manipulating reproductive swards would be most favourable. Thus, the objectives of this study were (i) to evaluate the effects of this late control spring grazing management on summer-autumn herbage production and botanical composition of ryegrass-white clover dairy pastures, and (ii) to investigate the consequences of such a grazing management strategy on pasture quality, herbage intake and milk production by dairy cows.

Three field experiments are reported. The first two were sward-based experiments whose results were used to plan and set up the third experiment, which involved evaluation of both sward and animal effects.

The results from Experiment 1 (October 1990 to April 1991) and 2 (October 1991 to April 1992) confirmed the expectations of enhanced spring and summer-autumn herbage accumulation from a late control grazing management over the spring time. An average increase in production of the order of 750 Kg DM/ha (25%) was obtained from October to November, and of 1.0 t DM/ha (20%) was obtained from January to April in both years, with ryegrass accumulation being enhanced in Experiment 1 and white clover accumulation enhanced in Experiment 2. Evidence gathered about tillering activity was inconclusive, although it showed that tillers produced under the

late control spring grazing management were bigger than those produced under the conventional hard grazing management. White clover response was variable from year to year. It was concluded that the timing as well as the intensity of execution of the late control were very important. Late control should be executed at the time of anthesis of the reproductive development of ryegrass plants (late November-early December), and the removal of seedheads and reproductive stems should be gradual, over two or three successive grazing cycles.

Simulation of the implementation of this late control grazing management on a farm basis was then performed, based on the results from Experiments 1 and 2, in order to gain an overview about possible practical implications for farm practice. The models showed that the preparation of pastures to achieve the reproductive stage prior to late control was feasible and would not imply any decrease in the feeding level of dairy cows. However, more information was necessary on how to execute late control and whether or not the increased summer-autumn herbage accumulation could be converted to milk production.

Further evaluation of late control grazing in Experiment 3 (October 1992 to April 1993) revealed that increase in spring herbage accumulation by 1000 Kg DM/ha (25%) was a consequence of the reproductive growth of perennial ryegrass plants, which caused a decrease in the digestibility of the herbage consumed from 78% to 75% due to the increased contents of senescent and grass stem material in the sward. On the other hand, increased summer-autumn herbage accumulation (1000 Kg DM/ha, 25%) after late control was due to enhanced accumulation of both ryegrass and white clover. The digestibility of the herbage was restored soon after late control. Despite the lower digestibility of reproductive swards during the control period, no significant reduction in the herbage intake of dairy cows was detected in comparison with animals grazing leafy and vegetative swards. However, the use of forage conservation to augment grazing pressure during the late control

phase proved to be more effective than a grazing only strategy, since a large proportion of senescent material was allowed to form under those circumstances. The increase in summer-autumn herbage accumulation was associated with an increase in milk solids yield per cow of the order of 10%, with around 25 Kg milk-fat being obtained from the extra tonne of dry matter accumulated per hectare in late control pastures.

It is concluded that the late control spring grazing management of perennial ryegrass-white clover pastures can be used as an option to enhance pasture production in dairy farms, particularly during the summer-autumn period, and that this increased herbage accumulation can be effectively converted to milk solids yield. The implementation of this grazing strategy into a farm context and its implications for farm practice are briefly discussed.

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