Supplmentary Feeding and Management Strategies to Overcome Drought Situations on Three High Producing New Zealand Seasonal Dairy Farms

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SUPPLMENTARY FEEDING AND MANAGEMENT STRATEGIES TO OVERCOME DROUGHT SITUATIONS ON THREE HIGH PRODUCING NEW ZEALAND SEASONAL DAIRY FARMS

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Abstract

This paper investigates the outcomes of the management strategies to overcome dry summer conditions on three New Zealand seasonal supply dairy farms where the summer management philosophy is towards production rather than survival aimed at giving the farmer control rather than accepting the unreliable production outcomes often achieved. Actual data collected from the case farms as part of a large on-farm monitoring programme was used to model the dry 1998/99 season. This was compared with simulated models for an average season to estimate milksolids responses (g milksolids (MS)/kg DM) and net returns (cents/kg DM) to the additional feeds used. In response to a 30% reduction in summer pasture growth, farmers fed more additional feeds (542 kg DM/ha) and achieved fewer lactation days/ha resulting a reduction of 12.5% in per cow and 19.8% in per hectare milksolids production. The average response achieved to the addition feed was 104g MS/kg DM at a net return of 20.6cents/kg DM fed above

the cost of additional feed. It was concluded that the management strategies achieved the target of having cows in good condition and at a satisfactory level of production at the end of summer to enable autumn milk production to be captured and that farmers should look at further increasing the level of supplement fed in dry summer conditions.

Key words : Supplementary feeding, summer drought, grazing management, dairy production

Introduction

For most seasonal supply dairyfarming systems in New Zealand the summer is the most climatically variable time of the year. Research carried out in the area of summer management (MacDonald 1998, Gray et al, 1992) has mostly focused on survival tactics, with decision rules over the summer autumn period aimed at protecting the next production season often resulting in the farmer relenting control. This project investigates the outcome of a summer management philosophy towards production rather than survival (Matthews 1999), with management aimed at giving the farmer control rather than accepting the unreliable production outcomes often achieved through poor summer pasture growth in New Zealand. It is based on an evaluation of three case study farms during dry summer conditions in the 1998/99 season and aims to assess the effectiveness of their management strategies to maintain production targets over the summer and autumn period.

Material and Methods

A large data base of information was collected for each case farm as part of an ongoing

large scale on farm monitoring programme incorporating 12 farms with a combined area of 1400ha and milking a total of 4000 cows at an average stocking rate of 2.85 cows/ha (Matthews 1998). Actual data on daily pre and post grazing levels, supplement inputs, milksolids production (MS), stocking movements, and fertiliser applications were used to calculate a feed profile for the 1998/99 summer and autumn (Dec 1- June 30) for each case farm. This was then compared to the situation in an average year simulation to estimate the reduction in pasture growth. A base model for the 1998/99 summer was then simulated with the additional feeds removed (turnips, maize and pasture silage) and demand adjusted through manipulating cow numbers and drying off dates to achieve the same pasture and animal conditions by the end of the period (30 June). Estimates of milksolids responses (g milksolids (MS)/kg DM) and net returns (cents/kg DM) to the additional feeds were then calculated for the period. All of the results presented are an average of the three case study farms.

Results and Discussion

The key management strategies used by these farmers over the dry summer focus on sustaining production regardless of pasture growth conditions. This is achieved by;

1.) Maintaining a minimum production level of 1.1 to 1.2kg MS/cow/day in late lactation through high per cow intakes (15 kg DM/cow/day) by a combination of reducing cow numbers and feeding additional supplements (Figure 1).

2.) Maintaining post grazing residuals (Figure 1) to enhance pasture quality and prevent overgrazing of pasture by continuing on the spring grazing rotation (20-23 days)

through the summer and a grazing intensity of between 40 and 60 cows/ha/day.

These management parameters are aimed at maintaining high production through a variable time of the year (summer) and at the same time preserve the ability to capture increased lactation days over the autumn.

On average across the three farms 30% less pasture was grown (927 kg DM/ha) over the 1998/99 summer compared to an average year (Table 1). To compensate for this reduced summer growth additional feed was added (542 kg DM/ha) and stocking rate adjustments made to reduce total demand. These resulted in fewer lactation days per hectare and an earlier drying off date. The farmers were able to maintain feeding levels to achieve the targeted production per cow per day in the face of this reduced pasture growth rate. The reduction in total production per cow (12.3%) and per hectare (19.8%) suggests they were unable to maintain cow intakes and production at the levels achieved in an average year. These changes resulted in a less efficient use of feed with an increase in the amount required per kg MS produced.

In total the use of the additional feeds and stocking manipulations recovered 34% of the MS production that would have otherwise been lost if the additional feeds had not been added. But more importantly it enabled farmers to achieve their targets of having cows in good condition and at a satisfactory level of production at the end of summer to enable autumn milk production to be captured. This resulted in an average response of 104g MS/kg extra supplement DM fed. This is inline with recent research findings in New Zealand where the highest responses to additional feeds come in late lactation from extending lactation length (Deane, 1999, Pinnares 1996).

A net return of 20.6 cents/kg DM fed above the cost of additional feed was achieved. The average cost of the additional feed over the 1998/99 summer at 14.6 cents/kg DM fed was low as more of the lower cost supplements such as forage crops (turnips) and nitrogen fertiliser rather than the higher cost supplements such as grass and maize silage were used on all case farms. The total return for additional supplement fed at 35.2 cents/kg DM must be taken into account when sourcing additional feeds for the summer period.

These results suggest the management parameters used enabled animal production targets to be achieved over the dry summer period and preserved the ability to capture increased lactation days and production in the autumn. The response rates (104g/kg DM) and return (35.2 cents/kg DM) achieved to the feeding of additional supplements suggests that farmers should look at further increasing the level of supplement fed in dry summer conditions.

Acknowledgements

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Table 1 - Production and management outcomes for the dry 1998/99 summer compared to an average year for three case farms.

	1998/99 Summer	Average Year
Pasture production (kg DM/ha).		
Summer	2183	3110
Autumn	2833	2801
Animal Production		
Production (kg MS/ha between 1 Dec – 30 June)	425	530
Average daily MS production (kg MS/cow/day)	1.21	1.38
Total Feed consumed (1 Dec -30 June)		
kg DM/ha	6760	6870
kg DM/cow	2670	2710
kg DM/kg MS	15.9	12.9
Supplements fed (kg DM/ha)	1401	859
Performance Indicators		
MS Response (g MS/kg DM)	104	
Net return (cents/kg DM)	20.6	
Average supplement cost (including turnips, nitrogen and other feeds)	14.6	10.8
Average Drying off date	May 9th	May 28th
Average lactation days achieved/ha between 1 Dec and June 30th.	352	385
Average pasture cover at June 30th (kg DM/ha)	1822	2000

Note: All values are in NZ $ (where NZ$ = 0.5 US$) and a MS price of $3.50/kg was assumed.
The average supplement price was based on a value of 8cents /kg DM for nitrogen, 10cents/kg DM for turnips and 18cents/kg DM for other feeds such as grass and maize silage.

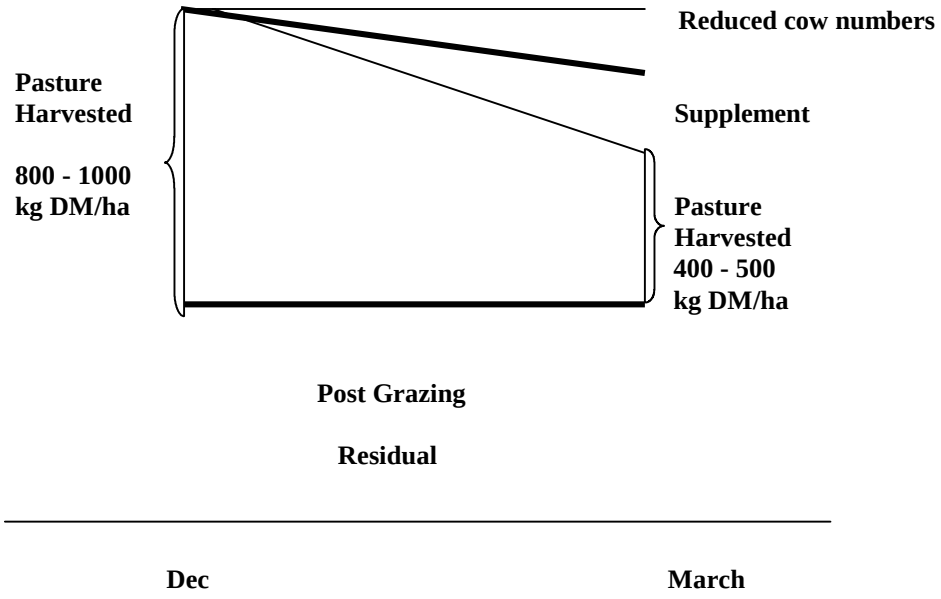

Figure 1 - A management model of summer feeding strategies to maintain animal intakes and post-grazing residuals during dry summer conditions.