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FACTORS AFFECTING THE RESPONSE OF  
DAIRY COWS TO ONCE DAILY MILKING

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## ABSTRACT

The aims of this study was to evaluate the effect of once daily milking during mid-lactation and to identify factors which could be used to predict the response of dairy cows milked once daily. Factors studied included intramammary pressure (IMP), udder volume, residual milk and milk composition. A total of 32 Friesian cows, sixteen high breeding index (HBI) and sixteen low breeding index (LBI) (2-11 years old) were used in the study. Within each breeding index group, cows were further divided into 2 groups, cows were then allocated to either once daily milking (treatment group) or twice daily milking (control group) so the groups were balanced for breeding index and age.

The experimental period was divided into 3 main periods, a pre-treatment (3 weeks), a treatment (3 weeks) and a post-treatment period (7 weeks). During the pre-treatment period IMP (before morning and afternoon milking), empty udder volume after morning milking, residual milk and peak flow rate were measured. During the treatment period intramammary pressure was measured at 15 hr, 20 hr and 24 hr after milking. During the first three days of the post-treatment period IMP was measured before afternoon milking and udder volume after afternoon milking were measured. Milk yield and composition were measured during the whole period.

- 1) On average once daily milking reduced daily yields of milk, fat, and protein by 2.8 kg/cow (19%), 0.08 kg/cow (14%) and 0.08 kg/cow (16%) respectively in comparison with the control group.
- 2) Following cessation of the treatment, the average daily

production of cows previously milked once daily was 1.1 kg (7%) milk, 0.06 kg (9%) fat, 0.02 kg (4) lactose less than that of the control group.

- 3) The decrease in milk yield for the individual cows over the treatment period ranged from 12% to 46%.
- 4) The concentration of fat and protein increased while that of lactose decreased during the treatment period in cows milked once daily.
- 5) Measurement of the milk yield and milking times were not sufficiently precise to allow the calculations of residual milk by a novel method.
- 6) There was a significant relationship between IMP 15 hr after previous milking ( $P < 0.05$ ) and the decrease in milk yield due to once daily milking.
- 7) The response to once daily milking was not related to other factors such as IMP at 20 hr and 24 hr after milking, udder volume or milk flow.

Possible reasons for the failure of these factors to predict the response of cows to once daily milking are discussed.

It is concluded that further studies are needed to increase our understanding of the contribution of residual milk to the physical and chemical inhibition of milk secretion.

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LIST OF ABBREVIATIONS

BCS	Body condition score
CO <sub>2</sub>	Carbon Dioxide
H <sub>2</sub> O	Water
HBI	High breeding index
Hg	Mercury
hr	Hour
IMP	Intramammary Pressure
kg	kilogram
l	litre
LBI	Low breeding index
mm	Millimeter
s.e	Standard error
U.S.A	United States of America
SCC	Somatic cell count