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## FEEDING AND MANAGING EARLY LACTATION COWS

J.R. Dunham

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### Summary

Feeding and managing dairy cows during the prepartum and early lactation periods have more effect on total lactation yields than all other factors. It is during this time that the pattern of milk production is established for the entire lactation. The full production potential of high producing cows cannot be realized unless these periods are given special consideration.

### Introduction

The profitability of a dairy cow is closely related to the level of milk production during the first 120 days of lactation. The next 120 days is usually a break-even period, and the last 65 days of lactation will usually pay for feed costs. Therefore, the goal for a profitable dairy should be to establish feeding and management programs that will allow dairy cows to reach their full production potential during early lactation.

### Summit Milk Yield

Summit Milk Yield (SMY) is an estimate of the peak of the lactation curve, which is made by the DHI program. SMY is important, since the total lactation yield is affected by its magnitude. In fact, total lactation yield increases approximately 300 lb for each 1 lb increase in SMY. Any practice that will increase SMY will have a long-term effect.

The Stage of Lactation Profile (SOLP), which is reported on the DHIA Herd Summary, indicates that cows decline in production level at a rather constant rate of about 0.1 lb/day, regardless of the SMY level. Therefore, high production in late lactation cannot be expected, unless production was high early in lactation. Figure 1 shows the relation between SMY, SOLP, and Rolling Herd Average (RHA).

A comparison of the average SMY of heifers, other cows, and all cows as shown on the DHIA Herd Summary in Table 1 illustrates the importance of feeding and management programs to SMY. In high-producing herds, the SMY, as would be expected, is higher than in low-producing herds. In addition, the difference between average SMY of heifers and cows in high-producing herds is greater. This suggests that high-producing herds are fed and managed in a manner that will allow cows to express their potential. Or, in low-producing herds, production of cows is similar to that of heifers because of nutritional limitations. Hence, feeding and management programs of early lactation cows are of critical importance.

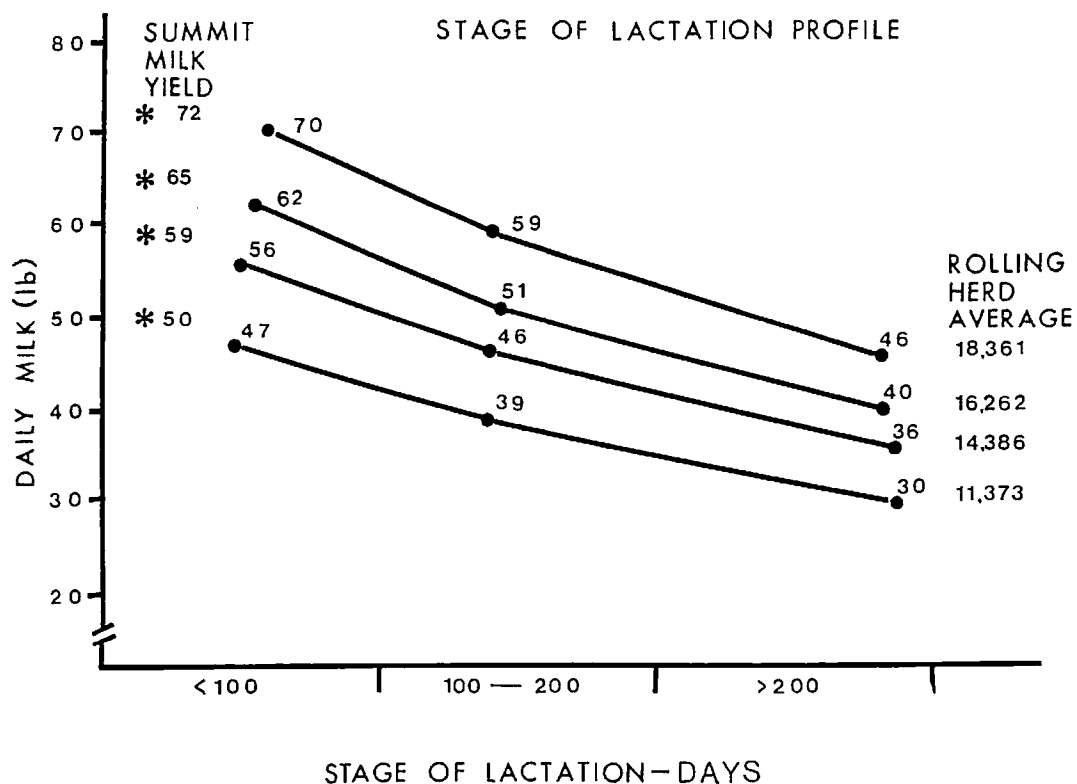


Figure 1. Comparison of Summit Milk Yield, Stage of Lactation Profile, and Rolling Herd Average.

Table 1. Comparison of Summit Milk Yield of first lactation heifers, other cows, and all cows with Rolling Herd Average (RHA)

RHA	Summit Milk Yield			Difference Others - First
	First	Others	All	
	- lb -			
11405	41.4	53.6	49.8	+ 12.2
14609	50.8	66.3	60.6	+ 15.5
16160	53.9	71.5	65.5	+ 17.6
17610	57.6	76.7	70.0	+ 19.1
19744	63.6	84.6	77.2	+ 21.0

#### Dry Period

The dry period should be considered when reviewing feeding and management programs for early lactation cows, since it will affect the next lactation. Cows should be dry for 45 to 60 days. There is no advantage in cows being dry longer than 60 days, but dry periods of less than 45 days in length will lower production in the next lactation.

Special attention should be given to first lactation heifers. Many heifers will be milking almost as well at dry-off time as they were in early lactation, and most will be milking better than the older cows (Figure 2). Therefore, it is always tempting to milk the heifers a little longer at the end of lactation. If these heifers are not given a long enough dry period to gain body condition, then the performance in the second lactation may be disappointing.

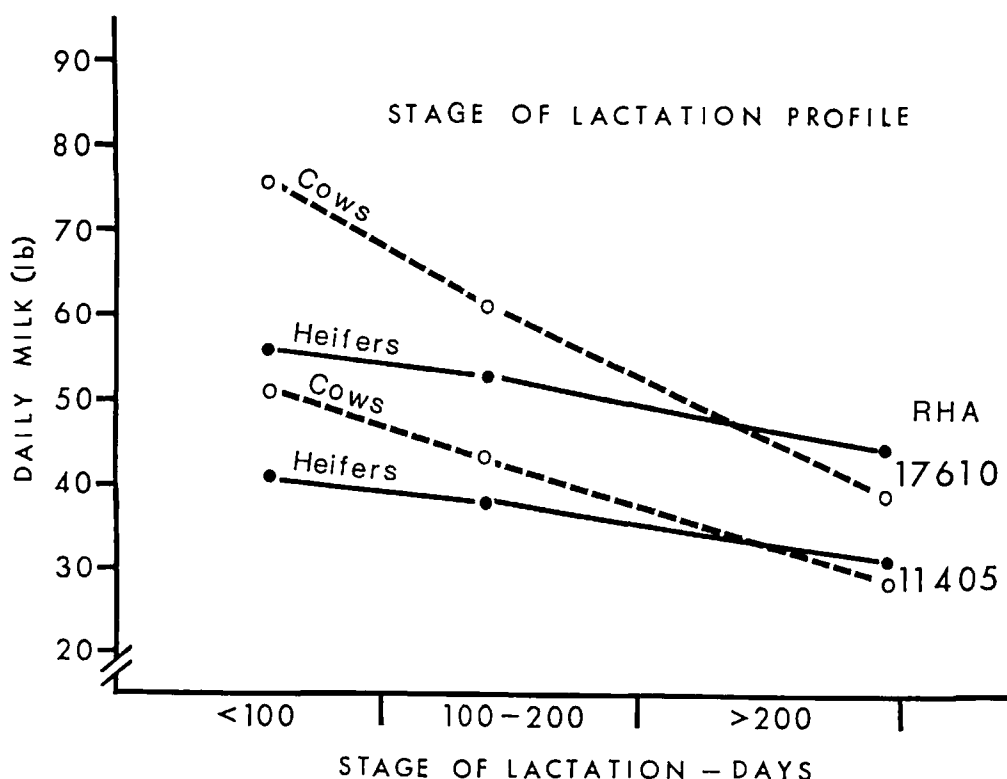


Figure 2. Comparison of Stage of Lactation Profile of cows and heifers.

Cows should go dry in good body condition. A body condition score of four on a scale of one to five would be ideal. Cows in this condition will have a covering of fat over the entire body but not to the extent of being patchy around the hips and pins. It is a good management practice to separate thin dry cows from those that are in good condition and feed according to body condition.

Care should be taken to avoid over-conditioning dry cows, since many postpartum problems are associated with fat cows. For this reason, corn silage is not recommended for dry cows because of its higher than required energy content. Also, alfalfa should be fed only in limited amounts to avoid milk fever.

A good dry cow feeding program should be based on a grass-type forage with enough grain, protein, and mineral supplement to meet nutritional requirements (Table 2).

Table 2. Nutrient requirements of dry cows

Nutrient	First 6 weeks		Last 2 weeks
	Body Condition 4	Thin	
Protein, % D.M.	11	11	12
NE <sub>L</sub> , Mcal/lb D.M.	0.50	0.65	0.65
ADF, %	27	24	24
NDF, %	35	32	32
Calcium, %	0.45	0.45	0.45
Phosphorus, %	0.35	0.35	0.35
Trace Salt, %	0.25	0.25	0.25
Vitamin A, U/lb D.M.	1500	1500	1500
Vitamin D, U/lb D.M.	750	750	750
Vitamin E, U/lb D.M.	7	7	7

The 2 to 3-week prepartum period is a critical time for adjusting cows to the lactating cows' ration so that they will readily consume large amounts of dry matter after calving. The rumen microbes need this time to adjust to the types of forages fed and to high energy rations. This is particularly necessary if ensiled forages are to be fed. Adaptation to high energy rations should be made by increasing grain consumption up to 1% of body weight.

Cows and heifers in the prepartum period should be observed closely for indications of mastitis. Those individuals showing enlarged quarters should be milked before calving, and a treatment program should be initiated. In addition, springers showing excessive udder edema should be milked on a regular basis before calving. Prepartum milking will reduce intramammary pressure and will alleviate the accumulation of fluids in the mammary tissues. A good supply of colostrum should be on hand for the calves of cows and heifers that have been milked prepartum.

#### Early Lactation Feeding

The goal of early lactation feeding is to maximize dry matter intake as soon as possible after calving. As indicated in Table 3, early lactation cows are quite responsive to increased dry matter intake, which is important in improving SMY.

Table 3. Expected milk response to each additional pound of dry matter intake

Production (lb/day)	Days Postpartum				
	42	98	154	210	266
	- lb milk -				
40	1.7	1.7	1.6	1.4	1.0
60	2.2	1.9	1.7	1.5	1.3
80	2.2	2.0	1.8	1.5	1.4
100	2.4	2.2	1.8	1.6	1.4

Early lactation cows should be challenged soon after calving with additional grain to meet their requirements for milk production. Limiting grain consumption at this time will restrict the SMY and thus total lactation yield. Table 4 lists the diet specifications for early lactation cows. Using computerized feeders to measure grain consumption, researchers have shown that cows will increase grain consumption gradually after calving, if given the opportunity. If grain consumption is limited for 2 weeks or more following calving, digestive upsets may occur when additional grain is fed.

Table 4. Specifications for total ration dry matter for early lactation cows

Item	Amount
D.M./body cwt.	3.7 lb
Forage D.M./body cwt.	1.5 lb
NE <sub>L</sub>	0.72 Mcal/lb
Protein	18%
Crude Fiber	12%
Acid Detergent Fiber	15%
Neutral Detergent Fiber	28%
Calcium	0.7%
Phosphorus	0.45%
Buffer	0.75%
Trace Mineral Salt	0.25%
Vitamin A	1500 U/lb
Vitamin D	750 U/lb
Vitamin E	7 U/lb

Managing the feeding program of early lactation cows is important in maintaining cows on high energy rations. Buffer should be fed to prevent acidosis and to keep cows on feed. Sodium bicarbonate or an equivalent amount of buffer should be included at the rate of 1.5% of the grain mix.

Maintaining adequate length of fiber is also necessary for keeping cows on feed and for maintaining milkfat tests. Chopping forages less than 3/8 inch in length can lead to digestive disturbances, since finely chopped forages will not act as fiber in the rumen.

Early lactation cows will respond to feeding high levels of protein. Since most fresh cows have more ability to milk than eat, body weight is normally lost during early lactation. This loss of body weight is a source of energy for milk production, provided enough protein is fed. Table 5 indicates the production response expected after increasing the protein percentage in the total ration dry matter.

Table 5. Increase in milk production from changing protein percentage

Protein before supplementation	Protein after supplementation			
	14%	16%	18%	19%
	- lb -			
12%	5.9	9.0	10.6	11.0
14%		3.1	4.6	5.1
16%			1.5	2.0
18%				0.4

Other management practices can affect feed intake. Feeding more than twice daily will provide fresher feed, which will be more readily consumed. Separating first-lactation heifers from cows will reduce competition and allow heifers to consume more feed. Providing fresh water within close walking distance will also increase feed intake. Using tanks for watering in addition to automatic waterers during hot weather may improve feed intake.

