

## MILK FEEDING STRATEGIES FOR IMPROVING GROWTH PERFORMANCE IN CROSSBRED DAIRY CALVES

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### ABSTRACT

*The success of dairy industry depends to a large extent on rearing of calves to a breedable age at a faster rate and with minimum mortality. The higher the plane of nutrition the earlier the onset of puberty and thus quicker the returns. In this context, a study was conducted to assess the effect of challenged milk feeding on growth performance in dairy calves. Eighteen calves born in Kerala Agricultural University Livestock Farm, Mannuthy were selected at random and were divided into three groups of six animals each. The calves in the first group were fed with milk in normal regime as per package of practices recommendations (Control group). Animals in the second and third group were fed 25 percent and 50 percent extra milk as that of normal regime. The body weight and average daily weight gain of all animals were recorded till 4<sup>th</sup> month of age and analyzed. The overall result indicated that there was a significant increase ( $P < 0.05$ ) in daily average weight gain in animals fed with 25 percent and 50 percent extra milk when compared to animals in the control group. It was also observed that the daily*

*average weight gains recorded in animals in the second and third group were significantly higher ( $P < 0.05$ ) than that of the control during the fourth month of age indicative of the carry over effect of the feeding system. Based on the result it is recommended that a higher level of milk feeding regime during pre-weaning state will not only influence the growth rate during the period but also beneficially contribute to the growth performance in later stages.*

**Key words:** Challenged milk feeding, extra milk allowance, milk feeding strategy.

### INTRODUCTION

An efficient calf feeding system is critical because it determines the future income and sustainability of dairy farms (Tozer *et.al.*, 2001). The primary goal of most liquid feeding programs for dairy calves is to double the birth body weight within 8 weeks of age and minimize the morbidity primarily diarrhea and respiratory diseases and mortality (Jasper *et.al.*, 2000). The higher the plane of nutrition the earlier the onset of puberty and thus quicker the returns (Von *et.al.*, 2006). Nature's way of feeding calves includes free access, nursing until satiated, frequent meals per day and suckling. Conventional rearing systems usually limit access, restrict milk intake per meal,

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encourage rapid feeding or gorging, restrict meals per day or provide milk in pails( Davis *et.al.*,2011 ). Feeding less milk results in poor growth due to lack of needed nutrients( Huber *et.al.*, 1984). In many animal models, it is well documented that the amount of nutrients consumed early in life has long-term effects on future performance (Pettersson. 2000 ). In this context, a study was conducted to assess the effect of challenged milk feeding on growth performance in dairy calves reared in Kerala Agricultural University Cattle Farm.

Development Scheme, Mannuthy were selected at random and were divided into three groups of six animals each. The calves in the first group were fed with milk in normal regime as per package of practices recommendations (Control group). Animals in the second and third group were fed 25 percent and 50 percent extra milk as that of normal regime. This schedule in all groups was continued until the calves attained 3 months of age at weaning. The body weight and average daily weight gain of all animals were recorded till 4<sup>th</sup> month of age and analyzed.

## MATERIALS AND METHODS

Eighteen calves born in University Livestock Farm and Fodder Research and

## RESULT

The observations are summarized in the following tables

Table 1 : Details of Weight recorded (Grams) during the first, second, third and fourth month

Sl. No.	Calf No	Experimental group (Kg)	Birth Weight (Kg)	Wt. in 30 days (Kg)	Wt. in 60 days (Kg)	Wt. in 90 days (Kg)	Wt. in 120 days (Kg)
1	D173	25% Extra	29	35	45	57	71
2	D175	25% Extra	26	34	40	54	70
3	D176	25% Extra	22	33	39	56	80
4	D185	25% Extra	19	27	39	51	64
5	D188	25% Extra	20	25	39	54	64
6	D191	25% Extra	20	24	32	39	56
7	D174	50% Extra	25	35	43	56	70
8	D177	50% Extra	21	32	41	55	78
9	D178	50% Extra	17	26	37	52	76
10	D183	50% Extra	26	35	47	60	72
11	D186	50% Extra	26	30	45	59	77
12	D192	50% Extra	25	29	35	52	54
13	D181	Control	24	31	38	47	55
14	D182	Control	23	28	37	46	60
15	D184	Control	22	28	37	47	54
16	D189	Control	31	38	43	55	61
17	D190	Control	25	33	43	51	56
18	D193	Control	23	26	39	46	55

Table 2: Details of daily weight gain during first, second, third and fourth month

Calf No	Daily Wt. gain 1 <sup>st</sup> month (Grams)	Daily Wt. gain 2 <sup>nd</sup> month (Grams)	Daily Wt. gain 3 <sup>rd</sup> month (Grams)	Daily Wt. gain 4 <sup>th</sup> month (Grams)
D173	200	333	400	468
D175	267	200	466	533
D176	367	200	566	800
D185	267	400	400	433
D188	167	433	533	333
D189	233	167	400	200
D174	333	267	433	468
D177	367	300	466	800
D178	300	367	500	766
D183	300	400	433	400
D186	133	500	467	600
D190	267	333	267	167
D181	233	233	300	267
D182	167	300	300	467
D184	200	300	333	233
D191	133	267	233	333
D192	133	20	433	467
D193	233	33	333	267

Table 3: Details of average of daily weight gains (Grams)

	1 <sup>st</sup> month	2 <sup>nd</sup> month	3 <sup>rd</sup> month	4 <sup>th</sup> month
25% extra	233	305	433	466
50% extra	261	339	476	578
Control	216	272	322	261

## STATISTICAL ANALYSIS

The overall result indicated that there was a significant increase ( $P < 0.05$ ) in daily average weight gain in animals fed with 25 percent and 50 percent extra milk when compared to animals in the control group. It was also observed that the daily average weight gains recorded in animals in the second and third group were significantly higher ( $P < 0.05$ ) than that of the control during the fourth month of age indicative of the carry over effect of the feeding system.

## DISCUSSION

Accelerated milk feeding adds economy by reducing calf mortality rate and cutting calving interval (Terre *et al.*, 2006). Most dairy producers

feed restricted quantities of milk to calves because of cost and the perception that increased milk intake may lead to a higher incidence of diarrhoea, reduced calf starter feed intake and reduced mass gain. Results from several studies indicate that feeding more milk or high-quality milk replacer does not cause diarrhoea (Jasper *et al.*, 2002).

The concept of accelerated feeding for young milk-fed calves is now well-accepted as an alternative to traditional restricted feeding. Research and field experience have highlighted many important aspects that are required for successful implementation of accelerated milk feeding systems. A step-down or gradual weaning process facilitates a smoother transition to dry feed (Flower and Weary, 2001). Colostrum-deprived calves or calves that are undergoing transport stress will not respond as well to increased amounts of milk and may in fact be impacted negatively. Benefits to accelerated milk-feeding programs include: decreased age at first calving, improvements in health, and increased milk production (Kung *et al.*, 1997). Adequate milk feeding during younger ages decreases stress in calves and thus improves the performance (Fiems *et al.*, 1982, Diaz *et al.*, 2001).

Based on the result of this study, it is recommended that a higher level of milk feeding regime during pre-weaning state will not only influence the growth rate during the period but also beneficially contribute to the growth performance in later stages. Ongoing research will provide the necessary input variables to model the overall economic impact of accelerated milk feeding programs

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