

## THE RESPONSE OF N'DAMA X BUNAJI CROSSBRED CALVES TO CREEP FEEDING AND THE ECONOMICS OF PRODUCTION

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**Target Audience:** Animal Scientists, Farmers, Policy Makers, Cattle Traders.

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### ABSTRACT

A 140-day experiment was conducted to assess the effect of creep feeding on the performance of N'dama X Bunaji crossbred calves and the economics of the feeding strategy. Fourteen 3-4½ months old calves and weighing 52-59kg were randomly assigned to two treatments. The creep fed contained 50% cottonseed cake, 40% maize offal and 10% molasses. The creep feed calves had significantly ( $P<0.05$ ) higher weaning weight ( $144.57\pm 0.09$  versus  $107.75\pm 5.74$ kg) and daily weight gain ( $0.61\pm 0.05$  versus  $0.44\pm 0.02$ kg) than the control.

In both groups, male calves were significantly ( $P<0.05$ ) heavier than the females from 28-140 days of the experiment. The growth response to creep feeding was 34% representing 80% gross margin over creep feed consumed.

It was concluded that creep feeding of N'dama X Bunaji crossbred calves should be encouraged and that the feeding strategy is economical.

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**Keywords:** Creep feeding, Crossbred calves, Economics.

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### DESCRIPTION OF PROBLEM

Creep feeding is the supplementation of calves while they are nursing their dams. In the tropics, most pastures and ranges which support the cows and calves during lactation experience decline in quality during the dry season (1), therefore the increasing nutrient requirement of the calf during this period is not met thereby affecting its performance.

In Nigeria, where the traditional system of cattle production is dependent on grazing natural pastures, growth or weight gain of the animals tend to follow the pattern of growth and quality of pasture during the wet and dry seasons. In the northern guinea savanna for example, cattle grazing natural pasture lost during the dry season 15-20% of the weight they attained at the end of the rainy season (2). Even during the wet season, gains of 0.33kg/head/day were only marginal and the animals' feed needed to be supplemented (3). Significant improvement has been observed in the weight of calves at birth and one year of age due to supplementary feeding (4).

From the producer's point of view, the important issue is not whether creep feeding improves weight gain but whether the feeding practise is economical.

Creep feeding of calves is little practised in Nigeria and there is a dearth of information on this feeding strategy. Elsewhere, economics of creep feeding are varied. In U.S.A., creep feeding has been found to be profitable (5,6) while under pasture conditions, creep feeding has been found to be uneconomical due to high cost of the creep ration (7).

The objective of this study therefore was to evaluate the growth response of the crossbred calves (grazing native pastures) to creep feeding and to assess the economics of the creep feeding strategy.

### MATERIALS AND METHODS

The study was conducted at the University of Agriculture, Makurdi, Livestock Teaching and Research Farm from March-August, a period corresponding to late dry season and rainy season respectively in the study area. Average rainfall was 1377mm and temperatures ranged from 25° - 40°C.

Fourteen (7 males and 7 females) N'dama X Bunaji crossed 3-4 1/2 months old calves weighing 52-59kg were randomly assigned to two treatments: creep diet and non-creep diet (control). The animals were sprayed against ectoparasites, dewormed of helminths and identified using ear tags. The calves on creep diet were offered 1kg/head/day in the morning before being allowed to follow their dams, the control group and their dams, the control group and their dams for grazing natural pasture from 0900 hrs to 1500 hrs. The creep diet contained 50% cotton seed cake, 40% maize offal and 10% molasses while the control consisted of grazing natural pasture only. The feeding trial lasted 140 days and the calves were weighed fortnightly. Salt lick and clean water were provided free choice. The data collected were subject to student 't' test for comparing difference between two treatments.

### RESULTS AND DISCUSSION

The proximate composition of the creep ration and the various ingredients used is shown in Table 1. The creep ration was adequate in CP level (19.7%). The performance of the N'dama X Bunaji crossbred calves showed that creep fed calves had significantly ( $P < 0.05$ ) higher mean final weight ( $1.44.57 \pm 8.19$  versus  $107.75 \pm 5.74$  kg), mean total weight gain ( $85.2 \pm 3.9$  versus  $55.7 \pm 3.43$  kg) and average daily gain ( $0.61 \pm 0.05$  versus  $0.39 \pm 0.01$  kg) than the control (Table 2). The response of the crossbred calves to creep feeding was very positive as the calves attained an additional weaning weight of 36.8kg over that of the control when both creep-fed and control calves were 7-9 months of age.

This finding is in agreement with earlier workers (5,6) that creep feeding increased weaning weight of sucking calves. In Oklahoma, U.S.A., only 12.8kg greater weaning weight between creep and non-creep fed calves was reported (8). In this study, the higher growth of the creep fed calves over the non-creep may be as a result of the quality of creep diet with 17.9% CP and high energy ingredients (molasses and maize offal) (Table 1) compared to the non-creep diet made up entirely of natural pastures that were known to be highly fibrous, low in protein and deficient in phosphorus and magnesium during the wet and dry seasons of the year (9).

**Table 1: Proximate composition of the creep ration and the various ingredients used (DM basis)**

	DM %	Ash %	CF %	CP %	EE %	NFE %
Creep Ration	85.0	8.22	13.35	19.7	4.7	38.38
Cotton Seed Cake	88.7	10.8	9.64	42.7	0.75	24.78
Maize Offal	89.5	8.5	11.78	10.9	6.55	51.78
Molasses	76.7	5.8		1.6	0.40	66.4

In both creep and control groups, male calves were significantly ( $P < 0.05$ ) heavier than female calves (Table 2) from 28 days to 140 days. Within the creep group, for example, average daily weight gain of male and female calves were  $0.64 \pm 0.06$  kg and  $0.057 \pm 0.05$  kg, respectively while in the control group, male and female calves' average daily weight gain were  $0.45 \pm 0.02$  kg and  $0.36 \pm 0.04$  kg, respectively (Table 2). The significantly ( $P < 0.05$ ) heavier male calves than female calves obtained in this study is similar to previous findings (10,11,12) and may probably be due to sex hormone balance of the female since the predominating secretion of oestrogen from the ovaries at weaning and postweaning is known to have a depressing effect on growth (12).

**Table 2: The response of N'dama X Bunaji crossbred calves to creep feeding and their non-creep fed counterparts.**

	Control	Creep calves
Number of calves	7	7
Duration of trial (days)	140	140
Mean initial weight (kg)	$52 \pm 5.3$	$59.28 \pm 6.03$
Mean final weight (kg)	$107.75 \pm 5.74^a$	$144.57 \pm 8.19^b$
Mean total weight gain (kg)	$55.75 \pm 3.43^a$	$85.2 \pm 3.94^b$
Average daily weight gain (ADG) kg	$0.39 \pm 0.01^a$	$0.61 \pm 0.05^b$
ADG male (kg)	$0.45 \pm 0.02$	$0.64 \pm 0.06$
ADG female (kg)	$0.36 \pm 0.04$	$0.57 \pm 0.05$

<sup>a,b</sup>Mean in the same row with different superscripts differ significantly ( $P < 0.05$ )

The costs and returns analysis of creep feeding revealed that the economic returns on creep was ₦1809.40 per head higher than that of control group representing a growth response to creep feeding of 39% and a 75% gross margin over creep feed consumed (Table 3). This improved returns from creep feeding is in agreement with those of (5 and 6) and higher than a growth response of 24% representing a 60% gross margin over creep feed consumed which was regarded as an economic venture (13).

**Table 3: Cost and returns analysis of creep feeding per calf.**

Variable	Control	Creep calves
<b>A: Mean total creep feed consumed (kg)</b>	0.00	111.74
Cost per kg creep feed (₦)	0.00	5.90
Price of 1kg liveweight calf (₦)	83.00	83.00
<b>B: Returns</b>		
Sale of calf	8947.40	12001.80
<b>C: Variable cost</b>		
Cost of calf	4316.00	4897.00
Cost of creep feed consumed	0.00	659.00
Cost of drugs	3.00	3.00
Cost of labour	20.00	25.00
Total	4339.00	5584.00
<b>D: Fixed cost</b>		
Depreciation of facilities	0.50	0.50
Cost of water	5.00	5.00
Maintenance cost	1.00	1.00
Total	6.50	6.50
<b>E: Grand Total (C + D)</b>	4345.50	5590.50
<b>F: Net income (B - E)</b>	4601.90	6411.30
<b>G: Economic return on creep-feeding</b>	0.00	1809.40

### CONCLUSIONS AND APPLICATION

On the basis of the performance data for the duration of the study, it is concluded that the creep feeding strategy of the crossbred calves is economical. However, in order for the farmers to adopt creep feeding in Nigeria, trials covering others seasons of the year namely late rainy season (October-November) and dry season (December-February) should be carried out.

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