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Strategic supplementation for compensatory growth in Tharparkar calves fed low quality forages

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Introduction

When animals are kept under feed restriction for a certain period of time followed by availability of feed again had high growth rate and even exceeded those of animals that were well fed throughout the same period (Tolla *et al*., 2003), because of physiological impulse called compensatory gain. Thus it improves feed efficiency and reduces feeding cost (Neto *et al.*, 2011). However, when this happens in females growing calves it is desirable, provided it does not occur during puberty so that there is no reproductive damage. But compensatory growth varies depending upon the intensity and duration of under nutrition before re-alimentation. In the present study the effects of moderate level of feed restriction and later re-alimentation with strategic supplementation approach (a mixture of protein and energy sources) on nutritional status and growth performances were recorded in female growing calves.

Materials and Methods

Tharparkar female calves (18), divided into 3 groups (G_1, G_2 and G_3), were fed rations of concentrate mixture and low quality forages (dry grass/wheat straw) as total mixed rations at different levels (100, 75 and 75%, respectively) of 300 g daily targeted growth (NRC, 1989) during feed restriction phase of 60 days duration. Calves under G_1 group were offered diets to meet 100% of 300 g daily targeted growth, while both G_2 and G_3 groups were offered diets to meet only 75% of 300 g daily targeted growth. In re-alimentation phase of another 60 days duration, again calves of G_1 group were continued under the same feeding regime, but calves of G_2 and G_3 groups were strategically supplemented with a mixture of barley and mustard cake @ 250 and 500 g/head/day, respectively, besides meeting 75% of nutritional requirements for control group (G_1).

Results and Discussion

Feed restriction resulted decrease in intake of feed/dry matter (DM) and other nutrients. However, digestibility of nutrients like DM, OM, CP and NDF were comparable among the groups. Calves fed 100% of targeted growth (G_1), gained their body weights @ 324 g/day, while those fed @ 75% of targeted growth (G_2 & G_3) gained body weights @ 258 & 249 g per day, respectively (Table 1). When those growing calves were strategically supplemented with a mixture of barley and mustard cake @ 250 g/head/d (G_2) or 500 g/head/d (G_3), besides meeting 75% of nutritional requirements for control group (G_1) during re-alimentation phase, they gained weights @ 327 and 365 g/d, respectively. However, improved weight gain through strategic supplementation during re-alimentation phase was not adequate to compensate the lost body weight when compared to control group. On the contrary, feed restriction up to 40% of dry matter was recommended in Guzera female calves as nutrition management practice for efficient utilization of feed resources (Neto *et al*., 2011).

Table 1: Growth performances of experimental calves

Attributes	**Treatment groups**		
	G_1	**G_2**	**G_3**
Phase-I: Feed restriction			
Initial weight (kg)	140.8	140.3	139.2
Final weight (kg)	160.2	155.8	154.1
Total gain (kg)	19.4^{a}	15.5^{b}	14.9^{b}
Average daily gain (g)*	324^{a}	258^{b}	249^{b}
Phase-II: Strategic re-alimentation			
Initial weight (kg)	160.2	155.8	154.1
Final weight (kg)	180.9	175.4	176.0
Total gain (kg)	20.6	19.6	21.9

Average daily gain (g)	344	327	365
Overall growth			
Total gain (kg)	40.1	35.1	36.9
Average daily gain (g)	334	292	307

Means bearing different superscripts in a row differ significantly (* $P < 0.05$; **$P<0.01$)

Conclusion

It was concluded that strategic supplementation of a mixture of barley and mustard cake (@250-500 g/day) to female calves during re-alimentation phase improved weight gain, but it was not adequate to compensate the lost body weight when compared to calves fed for 300 g targeted growth without any feed restriction.

References

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