

Strategies for Increasing Body Condition Score of Ongole and Bali Cows in Indonesian Villages

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Good body condition score (BCS) is essential for high reproduction rates in cattle. The BCS of Ongole cows in Indonesian villages is often low, with approximately 20-60% of cows in BCS less than 3 (on 1-5 scale) at calving across villages (Affandhy *et al* 2011). Smallholder farmers require a low cost diet to increase BCS based on locally available resources. The aim of this experiment was to compare different feeding strategies for increasing the BCS of cows in Indonesian villages.

Fifteen Ongole (*Bos indicus*) cows (331 ± 10 kg (SEM) liveweight, BCS 2.4 ± 0.1 out of 5) and 15 Bali (*Bos sondaicus*) cows (180 ± 4 kg, BCS 2.3 ± 0.1) were allocated to one of 3 dietary treatments in a randomized block design, with 5 cows of each breed per treatment. All cows were non-pregnant and non-lactating. Cows were housed in individual pens at the Beef Cattle Research Institute in East Java, Indonesia, for 24 weeks. They had unlimited access to fresh drinking water. The diets offered to the cows were; rice straw *ad libitum* + Gliricidia (*Gliricidia sepium*) (3 g DM/kg W.d⁻¹) (RSG3), rice straw (10 g DM/kg W.d⁻¹) + Gliricidia (10 g DM/kg W.d⁻¹) (RSG10), and Elephant grass (*Pennisetum purpureum*) *ad libitum* (EG). In week 18 of the experiment the diet offered to cows in group RSG3 was changed to rice straw *ad libitum* + rice bran (10 g DM/kg W.d⁻¹) (RSB10). These treatments were analysed separately. Feed intake was determined daily and liveweight was measured every second week before feeding. Organic matter digestibility (OMD) was measured by total faecal collection over 7 consecutive days on 3 separate occasions during weeks 4, 12, and 22 of the experimental period. Differences between the treatments were analyzed using ANOVA with Tukey's pairwise comparisons in Genstat (13th edition).

The highest liveweight gain and OMD for both breeds was from cows fed EG (Table 1). Increasing the proportion of Gliricidia in the diet increased the OMD, but this was only significant in the Bali cows. Increasing the level of Gliricidia did not increase daily liveweight gain ($P>0.05$). With the exception of the RSG3 treatment, there was no difference in daily liveweight gain between Ongole and Bali cattle for each treatment ($P>0.05$).

Table 1. Average dry matter intake, organic matter digestibility (OMD) and liveweight gain of Ongole and Bali cows fed rice straw and Gliricidia (RSG3, RSG10), elephant grass (EG) or rice straw and rice bran (RSB10)

	Ongole cows				Bali cows			
	RSG3	RSG10	EG	RSB10	RSG3	RSG10	EG	RSB10
Feed intake (g DM/kg W ^{0.75} .day)								
Elephant grass	0 ^a	0 ^a	81 ^b	0 ^a	0 ^a	0 ^a	98 ^c	0 ^a
Gliricidia	12 ^a	36 ^b	0 ^c	0 ^c	11 ^a	33 ^d	0 ^c	0 ^c
Rice bran	0 ^a	0 ^a	0 ^a	39 ^b	0 ^a	0 ^a	0 ^a	36 ^b
Rice straw	59 ^{ab}	38 ^{cd}	0 ^e	51 ^a	68 ^b	37 ^c	0 ^e	50 ^{ad}
Total	72 ^a	74 ^{ab}	81 ^{abc}	91 ^{cd}	80 ^{abc}	70 ^a	98 ^d	86 ^{bcd}
OMD (g/kg)	510 ^{abc}	566 ^{bd}	627 ^d	492 ^{ac}	436 ^a	522 ^{bc}	590 ^d	496 ^{ac}
Liveweight gain (kg/day)	-0.10 ^a	0.03 ^{ab}	0.23 ^{bc}	0.02 ^{ab}	0.13 ^{bc}	0.03 ^{ab}	0.31 ^c	0.15 ^{bc}

Means within each row with different letters are significant ($P<0.05$).

Elephant grass fed *ad libitum* was the best feeding strategy tested in this experiment. Based on the daily liveweight gain in Table 1, it would take Ongole and Bali cows approximately 209 and 97 days respectively to gain 1 BCS on the EG diet (Teleni *et al* 1993). For Bali cows, RSB10 and RSG3 could also be used to increase BCS, while the other diets could be considered sufficient for maintenance of non-pregnant, non-lactating cows. This study suggest that increasing BCS quickly within a 2-3 month period as is required in production systems is difficult with low input systems. Bali cows are able to reach target BCS quicker than Ongole cows. Maintaining a higher BCS rather than trying to gain it later would be a better management strategy.

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