

EFFECT OF HAY QUALITY AND GRAIN SUPPLEMENTATION ON FEED INTAKE, LIVEWEIGHT AND DIGESTIBILITY IN YOUNG RUSA DEER (*Cervus timorensis*) STAGS

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Rusa deer farming in Queensland is largely based on tropical and subtropical native or sown grasses (Sinclair 1997). Growth of animals grazing such pastures is generally low compared to that obtained from temperate grasses (Bolam *et al.* 1996). Strategies to improve liveweight gains in rusa deer are required if farmers are to produce animals which yield hot carcase weights of 45 kg or more at 12 to 13 months. This experiment studied the responses of rusa deer stags fed three different subtropical forages conserved as hay, alone and then supplemented with barley grain (B).

Ten six-month old rusa deer stags (liveweight 35.9 ± 2.9 kg; mean $\pm$ SD) were divided into two groups of five animals. Each group was fed on each of the tested hays for two periods of 21 days. In the first period, hay was fed alone; in the second, whole barley grain (B) was given at 30% of hay DM intake in previous period, with hay available *ad libitum*. Hays were lucerne (LH), rhodes grass (RG) and soybean (SB). They contained 41, 9 and 26 g nitrogen (N)/kg dry matter (DM) respectively, while B contained 16 g N/kg DM. Measurements were growth from liveweights taken every 21 days, average group feed intake (g DM/kgW^{0.75}/day), and digestibilities of DM, N and gross energy (GE) which were measured in three deer in each group using an internal marker acid detergent lignin in faeces samples collected three times a day for five days during each period.

Animals fed on RG lost weight, but adding B significantly increased weight gain and DM, N and GE digestibilities (Table 1). Adding B to LH and SB resulted in significant increases in DM and GE digestibilities of the whole diet, but did not have any significant effect on weight gain or N digestibility. Animals fed on SB selected against stem and dusty material but no selection was observed with RG or LH.

Table 1. Effect of hay quality and grain supplementation on feed intake, liveweight gain and digestibility in young rusa deer stags

	Diets ^A					
	LH	LH+B	RG	RG+B	SB	SB+B
Dry matter intake (g/kgW ^{0.75} /d)	66.9 ^c	76.5 ^d	22.1 ^a	39.9 ^b	73.3 ^d	72.5 ^d
Digestible DM intake (g/kgW ^{0.75} /d)	40.5 ^c	51.1 ^f	14.1 ^a	27.5 ^b	43.7 ^d	48.5 ^e
Liveweight gain (g/d)	200.0 ^c	220.0 ^c	-94.4 ^a	43.7 ^b	190.0 ^c	225.0 ^c
Nutrient digestibility (%)						
Dry matter	60.8 ^{ab}	66.9 ^{cd}	64.0 ^{bc}	69.1 ^d	59.8 ^a	67.1 ^{cd}
Nitrogen	75.6 ^c	73.5 ^c	45.3 ^a	58.1 ^b	70.5 ^c	70.0 ^c
Gross energy	57.3 ^a	67.3 ^{bc}	64.5 ^b	68.9 ^c	57.9 ^a	66.9 ^{bc}

^A See text for abbreviations. Means within rows with different notations are significantly different ($P < 0.05$)

Growth rate was highly correlated ($r = 0.981$) with digestible DM intake across all diets. Voluntary intake is an important determinant of performance; although the digestibility of GE in RG was higher than for LH or SB, RG gave very poor growth. SB hay can be fed to rusa deer with resulting performance comparable to LH, and at these growth rates, deer will reach an acceptable slaughter weight by 13 months. Added cereal grain may not be needed with LH or SB, but is required with RG.

BOLAM, M.J., POPPI, D.P. and MCLENNAN, S.R. (1996). *Proc. Aust. Soc. Anim. Prod.* **21**, 492.

SINCLAIR, S.E. (1997). 'Deer farming in Queensland - 1997 Farm Survey Report'. (Queensland Department of Primary Industries: Brisbane).