

NUTRIENT REQUIREMENT OF THE WILD BANTENG (*BOS JAVANICUS D'ALTON*)*

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RINGKASAN KEBUTUHAN MAKANAN BANTENG LIAR (*BOS JAVANICUS D'ALTON*)

Pendugaan kebutuhan makanan banteng liar dilakukan pada 12 banteng jantan dan betina dalam tangkapan (di Kebun Binatang Ragunan) dengan kisaran berat tubuh 189-415 kg dan memperoleh makanan berupa rumput potong campuran. Bahan kering (DM) yang dimakan sebanding dengan berat tubuh menurut rumus $Y = -2.8675 + 0.0325 X$ ($r = 0.876$); ($Y =$ DM kg, $X =$ berat tubuh kg). Untuk kebutuhan TDN (zat hara tercerna total) harian dan protein minimum diperoleh harga-harga berturut-turut 2.81 - 8.35 kg dan 188-850 g.

ABSTRACT

Nutrient requirement were estimated on 12 male and female captive wild banteng weighting from 189 to 425 kg fed mixed grasses. DM intake relates to bodyweight according to equation, $Y = -2.8675 + 0.0325 X$ ($r = 0.876$). Daily TDN and minimum protein requirements were 2.81 - 8.35 kg and 188-850 g, respectively.

Captive banteng, natural grasses, nutrient requirement

The wild banteng which number only a few thousands are found in restricted localities scattered over an area in the zone of deciduous monsoon forest in Southeast Asia. Habitats vary between the extremes of dry grassy plain savannas to tropical rain forests with small clearings (Halder 1976). Banteng prefer feeding on grass but feed also on herbs, young leaves, fruits, blossoms, juvenile trees, brush and young bamboo (Alikodra 1983). Most populations are endangered due to the expansion of human settlements. For conservation needs, research on the physiology e.g. nutrient requirements is needed.

Six male and six female wild banteng (189-415 kg) owned by the Ragunan Zoological Garden were used to study the nutrient requirements of this bovine species. All were mature animals except for two males and one female young banteng. Bodyweights were estimated from

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the chest circumference using the improved Schoorl-equation for the domesticated Bali cattle: $BW_{kg} = (\text{Circ}_{cm} + 22)^2 / 100 \times F$. The value of F is 0.8499 and 0.7944 for the male and the female animal respectively (Anonym 1982). The animals were individually measured in metabolic cages and offered a mixture of grasses *ad libitum* consisting of *Ischaemum muticum*, *Panicum repens*, *Axonopus compressus*, *Imperata cylindrica*, *Oryza sativa*, *Cyperus brevifolia* and a non-grass *Alysicarpus numumlarifolia*. The botanical composition represents the vegetation eaten by the banteng in their natural pasture-habitat of Ujung Kulon National Park. Chemical analysis has shown that on dry matter basis the feed mixture consists of 1.44% fat, 32.17% crude fibre, 9.10% crude protein, 36.50% N-free extract and 12.48% ash. An adaptation period of one week is allowed prior to the collection period of another week in the digestion trials. Each trial period measures three animals simultaneously.

Dry matter consumption ranges from 4.10 to 8.95 kg daily and is linearly related to bodyweight. The regression equation for all animals is $Y = -2.8675 + 0.0325 X$ ($r = 0.876$); Y = DM consumption (kg/day per animal), X = bodyweight (kg). Data on digestibility, daily TDN and protein intakes of the individual animals are tabulated in Table 1. The data show that the high fibre content of the diet does not lower the digestibility of the feed consumed by banteng. TDN intakes vary between 2.81 and 8.35 kg appear to be related to bodyweight.

Table 1. Data on bodyweight, sex, digestibility of feed, TDN and protein intakes of banteng measured in the digestion trials.

Individual animal code	Sex	Bodyweight** (kg)	Digestibility** (%)	TDN intake (kg/day)	Protein intake (g/day)
B ₁	F	289.8	47.9	2.81	431.7
B ₂	F	246.1	54.6	3.03	413.8
B ₃	F	263.1	58.4	3.47	463.4
B ₄	M	360.7	61.0	4.42	535.2
B ₅ ***	M	217.6	59.8	2/41	296.2
B ₆ ***	M	188.7	61.2	2.32	280.2
B ₇	M	415.1	77.0	8.35	1374.6
B ₈	F	277.8	76.9	4.87	798.3
B ₉	M	278.4	78.2	5.79	938.4
B ₁₀	M	411.4	70.4	5.94	922.9
B ₁₁	F	224.2	67.7	3.39	549.0
B ₁₂ ***	F	208.5	67.2	2.86	464.9

* Estimated from $BW_{kg} = (\text{circ}_{cm} + 22)^2 / 100 \times 0.8499$ for the male and

$BW_{kg} = (\text{circ}_{cm} + 22)^2 / 100 \times 0.7944$ for the female banteng.

** Measured on dry matter basis.

*** Non-mature. All the others are mature animals.

The amount of protein catabolized by the animal is estimated from nitrogen excretion with urine. When fecal protein is added to this amount, a total value is obtained which subsequently will produce the amount of protein retained by the animal by subtracting this total value from protein intake. The result of these calculations are presented in Table 2. The average daily protein intake per animal is 622.9 g while the minimum amount of protein required calculated from the total N excreted in urine and feces varies between 188 and 850 g (av. 393.7 g).

The result of this study indicate that this grass diet is adequate to supply the energy and protein requirements of mature banteng. The information gained will be used to improve pasture management as an effort to conserve banteng in Ujung Kulon.

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Table 2. Protein retention in banteng measured from balance trials.

Individual animal code	Urine-N exretion (g/day)	Pecal N-excretion (g/day)	Protein retention (g/day)
B ₁	16.32	40.10	79.0
B ₂	17.68	34.22	89.4
B ₃	17.16	32.32	154.0
B ₄	30.07	31.12	252.8
B ₅	12.62	17.50	108.0
B ₆	11.14	44.83	-69.6
B ₇	95.81	40.25	524.2
B ₈	42.24	26.85	366.5
B ₉	44.12	27.18	492.5
B ₁₀	51.58	32.65	396.5
B ₁₁	28.11	25.64	218.1
B ₁₂	18.76	17.61	237.6

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