

FAECAL NITROGEN OF GIRAFFES FEEDING ON EVERGREEN OR DECIDUOUS PLANTS IN WINTER



Beanélri B. Janecke & G. Nico Smit

Animal-, Wildlife & Grassland Sciences
University of the Free State
PO Box 339, Bloemfontein, 9300
janeckbb@ufs.ac.za

INTRODUCTION

Faecal nitrogen:

- N most limiting nutrient
- non-destructive, inexpensive indicator
- critical levels published in literature



Indicating
body condition losses &
mortalities



OBJECTIVES:

- compare N_f from two localities that differ in tree species composition; and
- use N_f as indicator of nutritional status compared to known critical values.



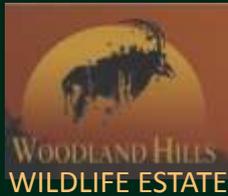
Winter species: evergreen, less palatable



Preferred species: Winter Deciduous

STUDY AREAS

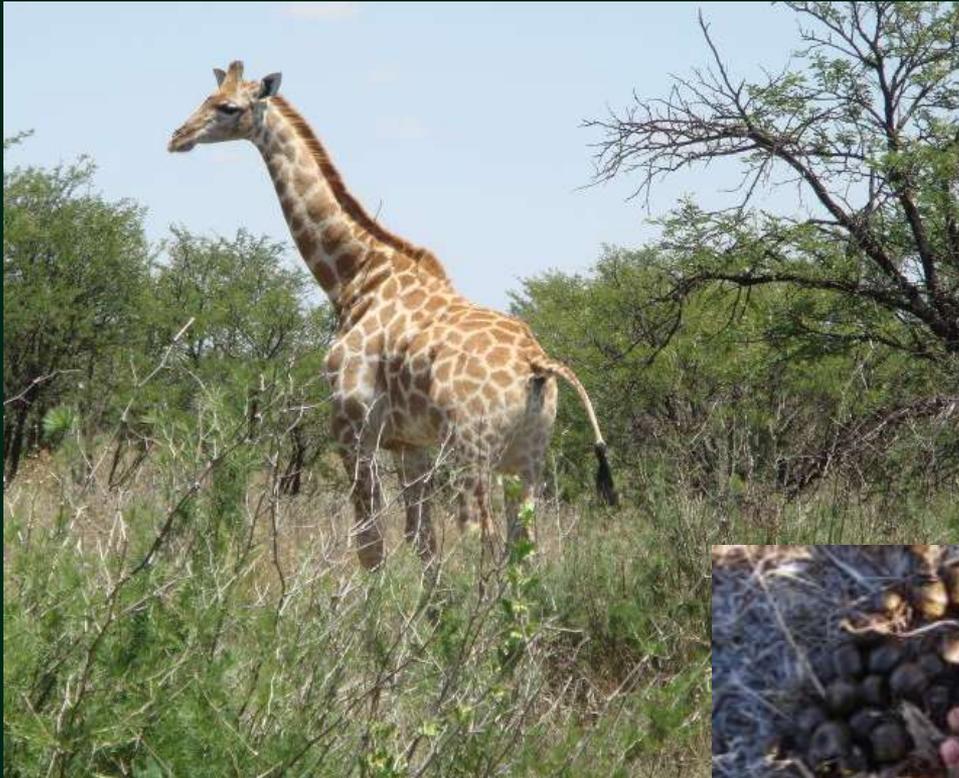
Vegetation type: *Acacia karroo* Riparian Thicket

		
Size	437 ha suitable habitat	440 ha of which 50% is suitable habitat
Location	30 km north of Bloemfontein	Outskirts of Bloemfontein
Food available	Only deciduous & small semi-deciduous spp. necessitating supply of lucerne based feed & game pellets in winter.	Similar deciduous spp. and evergreen species, such as <i>Olea europaea</i> and <i>Searsia lancea</i>. No feed supplied.

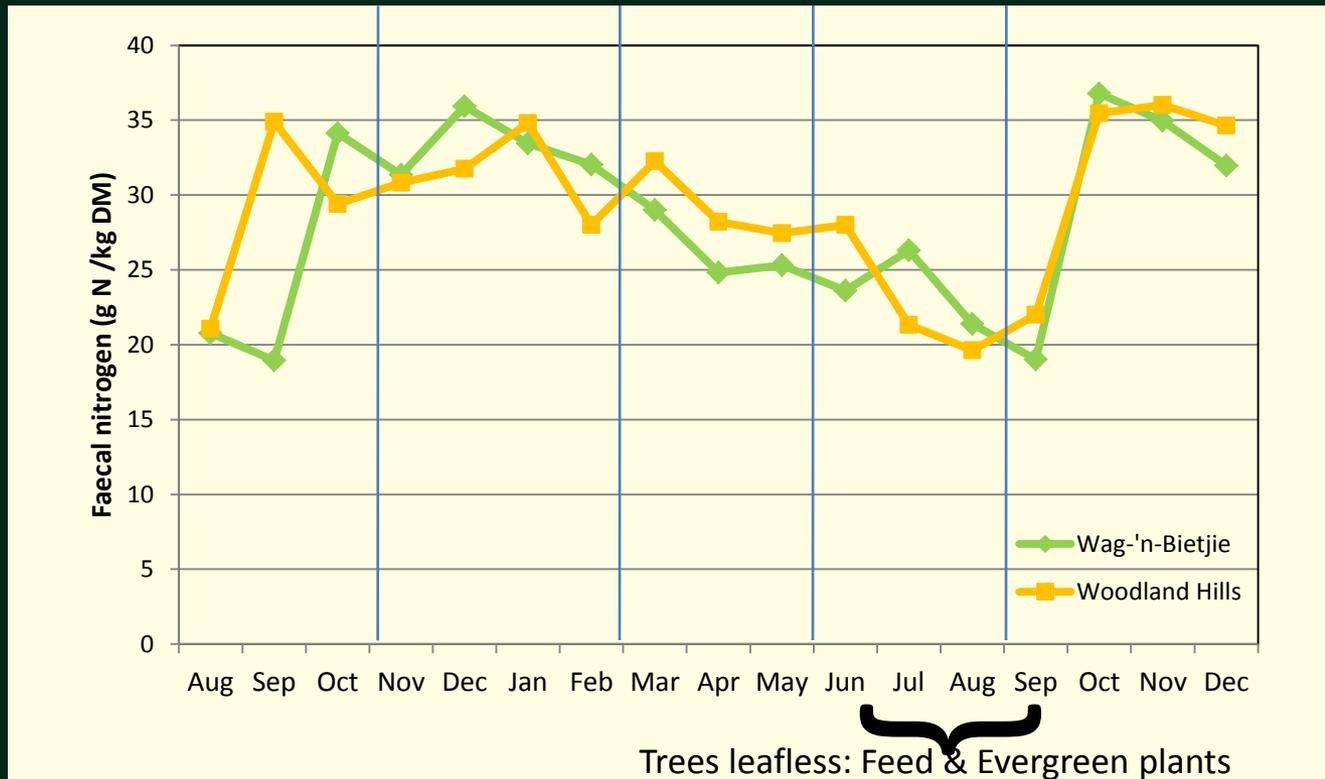
PROCEDURE

Fresh giraffe droppings were collected monthly, dried (100 C) and milled (Tecator mill, 1mm sieve).

N_f determined with Leco Nitrogen Analyser.



RESULTS



Monthly faecal nitrogen of giraffe for each of the study areas.

Giraffe on Wag-'n-Bietjie feed on deciduous plants and those in Woodland Hills on evergreen plants.

No significant differences between study areas ($p = 0.6$, $n = 34$)

DISCUSSION

Minimum to maximum N_f range:

- Wag-'n-Bietjie 18.9 – 36.8 g N/kg DM
- Woodland Hills 19.6 – 36.0 g N/kg DM

Critical level for browsers = 15.5 g N/kg (Stoltz 1999, quoting Grant)
for kudu = 18.0 g N/kg (Grant *et al.* 1995, Van der Waal *et al.* 2003)

Available habitat at the applied stocking rate:

- Wag-'n-Bietjie 50 ha/giraffe
- Woodland Hills 28 ha/giraffe
- Minimum area 80 ha/giraffe*

(*recommended for this vegetation type)

Wag-'n-Bietjie – deciduous species

Woodland Hills – evergreen species



- Grant CC, Meissner HH & Schultheiss WA 1995. The nutritive value of veld as indicated by faecal phosphorous and nitrogen and its relation to condition and movement of prominent ruminants during the 1992-1993 drought in the Kruger National Park. *Koedoe* 38(1): 17-31.
- Stoltz I 1999. Misontleding ingespan vir optimale produksie (Onderhoud met Dr CC Grant). *Landbouweekblad*, 19 February. pp 28-29.
- Van der Waal C 2005. Kudu foraging behaviour: influenced by animal density? *African Journal of Range & Forage Science* 22(1): 11-16.

CONCLUSIONS

- Higher N_f values are anticipated where palatable evergreen plants are available but where giraffe numbers are closer to the browsing capacity.
- Where only deciduous plants present, N_f drop during winter in the absence of feed is expected to be more pronounced and may reach critical nutritional levels.
- Evergreen plants proved invaluable to giraffe since that enabled them to survive the winter in acceptable condition without the need for feed.
- N_f proved a useful indicator of nutritional status, especially in the critical period when quantity of more acceptable, nutritional browse declines.

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