

Fodder production responses to pruning height and fodder quality of some trees and shrubs in a forest-savanna transition zone in southwestern Nigeria

A. Larbi, A. A. Awojide, I. O. Adekunle, D. O. Ladipo and J. A. Akinlade

Abstract

Seasonal fodder production responses of five shrubs (*Centrosema arenarium*, *Desmodium strigillosum*, *Desmodium velutinum*, *Phyllodium pulchellum*, and *Tadehagi triquetrum*) and five trees (*Albizia gummifera*, *Berlinia grandiflora*, *Albizia niopoides*, *Bauhinia monandra*, and *Inga edulis*) to pruning heights ranging from 15 to 75 cm were evaluated during the main-wet, minor-wet, and dry seasons of 1993 and 1994 in the forest-savanna transition zone of West Africa. Fodder from the main-wet season was analysed for nitrogen (N) and phosphorus (P), and dry matter degradation characteristics after 6, 12, 24, 48, 72 and 96 h of incubation in rumen-fistulated N'Dama steers. In the minor-wet season, fodder production of all species increased in response to increasing pruning height with the exception of *P. pulchellum* and *A. gummifera*. Highest fodder production was attained at a pruning height of 45 cm for the *Desmodium* species, 50 cm for *P. pulchellum*, and 75 cm for the rest of the species. Concentrations of N and P varied significantly among the species; for N the ranges were 28.7–38.8 g kg⁻¹ (shrubs) and 25.3–44.5 g kg⁻¹ (trees), while for P the ranges were 3.26–7.04 g mg⁻¹ (shrubs) and 3.58–6.76 g mg⁻¹ (trees). Dry matter degradation characteristics differed significantly among shrubs and trees; ranges for shrubs were: soluble fraction (a), 128–185; degradable fraction (b), 664–703; potential degradability (PD), 793–857, as g kg⁻¹; rate of degradation (c), 0.0241–0.0308 as % h⁻¹ while for trees ranges were: (a), 139–160; (b), 651–826; (PD), 824–970, as g kg⁻¹; (c), 0.0143–0.0227 as % h⁻¹. Based on fodder production and quality, *C. arenarium*, *D. strigillosum*, *D. velutinum*, *B. monandra*, *I. edulis*, and *A. niopoides* were the most promising species for the development of animal agroforestry technologies in the west African forest-savanna transition zone and similar environments in the tropics.

Key words: nitrogen and phosphorus, rumen degradation, season