

CASSAVA FORAGE AS A CATTLE FEED: APPARENT DIGESTIBILITY AND CONSUMPTION OF THE WHOLE FORAGE

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Four Zebu bulls of about 200 kg liveweight and two years of age were used to measure the digestibility of cassava forage (leaves, petiole and green stem). One animal selected leaves and petiole, while the other three ate the entire forage. The average digestibility (mean of three \pm SE_x) was 66.5 \pm 0.6% with a Consumption Index of 2.00 \pm 0.16 kg/100 kg liveweight. These values compare favourably with measurements made with sweet potato and banana forage.

Key Words: Cattle, cassava forage, digestibility, intake

A number of experiments have recently been carried out using the aerial part of cassava as a component of the diet to supply fibre and protein (Meyreles et al 1977a; Meyreles et al 1977b; Meyreles et al 1977c; Fernandez et al 1977; Fernandez et al 1978). It has generally been found that small additions of cassava forage to cane diets have been associated with only slight improvement in animal performance. However, when given as a forage source in molasses based diets, the rate of animal liveweight gain has been high. It is therefore important to know the apparent digestibility of the forage alone in order to have a better understanding of the way it functions as a dietary component.

Materials and Methods

Animals, Treatments and Design: Four Zebu bulls of approximately 200 kg were given chopped cassava forage (green stem, petiole and leaves). All four animals were on experiment at the same time.

Procedure: The animals were given the chopped cassava forage for one week before being put into digestibility crates for a second week. A total collection of faeces was made during the last six days of this second week. Food consumption was recorded daily, faeces were bulked in a plastic bin until the end of the collection period when they were weighed, mixed and dry matter determined. The cassava forage was offered ad libitum, fresh forage being offered daily in the morning after removal of the surplus from the previous day. At all times the animals had access to water and were given a mineral supplement of 60 g/d of salt and dicalcium phosphate (50:50 w/w).

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Forage: The cassava forage consisted of the whole aerial part cut about 30 cm above the ground at the point where the woody stem changes to the green stem. The forage was cut every morning, and brought to a stationary chopper (Heston) where it was coarsely chopped before being fed to the animals. Samples of chopped forage were taken every day to determine DM.

Results and Discussion

In Table 1 the results of digestibility and voluntary intake are tabulated for each animal. It was noted that animal #4 selected only the leaf and petiole component of the forage and left the green stem, while the other 3 animals chose to eat the whole forage. The DM of the whole cassava forage was 21.0% and that of the feed refusals was 20.3%, except for that of the fourth animal which had a DM content of 18.7% (of the DM content of 17.2% for stalk obtained by Meyreles et al 1977). For this reason, mean values of digestibility and consumption have been computed from the results of animals 1 to 3 only.

Summarised in Table 2 are the values for digestibility and consumption of other forages being investigated at this station, as sources of protein and fibre in cattle diets. It can be seen that cassava forage compares favourably with the other forages, and that digestibility and voluntary intake are similar to those of banana leaf.

Table 1:
Mean values of apparent digestibility and voluntary intake of whole cassava forage given to four 200 kg Zebu bulls kept in digestibility crates

	Animal				x±SE ¹
	1	2	3	4	
Apparent digestibility %	66.4	65.5	67.7	(41.8)	66.5 + 0.6
Voluntary consumption, kg DM/d	3.87	3.68	4.55	(4.62)	4.03 + 0.26
Digestible DM, kg DM/d	2.57	2.41	3.08	(1.93)	2.69 + 0.20
Consumption Index ²	1.80	1.87	2.32	(2.21)	2.00 + 0.16

¹ The mean and standard error of 3 values (animals 1 to 3)

² kg DM/100 kg liveweight

Table 2:

A comparison of apparent digestibility and consumption of whole cassava forage with other protein forages

Forage	Whole ¹ cassava forage	Whole ^{2,3} banana forage	Banana ³ leaf	Sweet ⁴ potato forage
Apparent digestibility, %	66.5±0.6 70.2±2.0	65.9±2.0	65.2±2.0	70.6±2.9
Consumption Index ⁵	2.00±0.16 2.06±0.03	1.47±0.39	2.15±0.39	2.00±0.18

¹ This experiment

² Espejo et al (1978)

³ Ffoulkes and Preston (1978)

⁴ Ffoulkes et al (1978)

⁵ kg DM/100 kg liveweight

References

- Espejo S, Ffoulkes D, Hovell F D DeB & Preston 1978 Digestibility of the stalk and leaves of the banana plant *Tropical Animal Production* 3:75 abs
- Fernandez A, MacLeod N A & Preston T R 1977 Cassava forage as a combined source of roughage and protein for cattle fed on molasses/urea *Tropical Animal Production* 2:195-199
- Fernandez A & Preston T R 1978 Cassava forage as a fibre and protein supplement in molasses based diets: effect of level of forage and supplementation with soybean *Tropical Animal Production* 3:109-113
- Ffoulkes D & Preston T R 1978 The banana plant as cattle feed: digestibility and voluntary intake of different proportions of leaf and pseudostem *Tropical Animal Production* 3:114-117
- Ffoulkes D, Hovell F D DeB & Preston T R 1978 Sweet potato forage as cattle feed: voluntary intake and digestibility of mixtures of sweet potato forage and sugar cane *Tropical Animal Production* 3:140-144
- Meyreles L, MacLeod N A & Preston T R 1977 Cassava forage as a source of protein: effect of population density and age at cutting *Tropical Animal Production* 2:18-26
- Meyreles L, MacLeod N A & Preston T R 1977a Cassava forage as a protein supplement in sugar cane diets for cattle: effect of different levels on growth and rumen fermentation *Tropical Animal Production* 2:73-80
- Meyreles L, MacLeod N A & Preston T R 1977b Cassava forage as a protein supplement in sugar cane diets for cattle: effects of different levels without urea on growth and on rumen fermentation *Tropical Animal Production* 2:200-205
- Meyreles L, MacLeod N A & Preston T R 1977c Cassava forage as a protein source in sugar cane diets for cattle: effect on rumen fermentation of different levels of cassava forage and urea *Tropical Animal Production* 2:300-305

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