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Relative preference, palatability and intake of *Stylosanthes scabra* accessions adapted in Pretoria

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Introduction

Inadequate supply of forage particularly during dry season is the major constraint in livestock production in sub-Saharan Africa (Anele *et al.* 2011). Poor management of the available feeds, seasonal variability in weather and climate changes may contribute to the high fluctuation of forage quality and quantity between season and years (Sultan *et al.* 2008). To improve livestock production in sub-Saharan Africa there is a need to improve feed deficiencies both in quantity and quality. *Stylosanthes scabra* cv. Seca was evaluated for dry season feed supplementation, and was found to be adaptive and productive under sub-tropical climate of Gauteng Province, and can be used as alternative forage crop for animals. The objective of this study was to determine the preference, palatability and the intake of *Stylosanthes scabra* forages offered to Saanen goats.

Material and Methods

Five Saanen goats (48.7 kg \pm 2.78) were used for this study and each animal was housed in 8 m² pen. Following a 10-days of adaptation period, forage consumption data were collected for five consecutive days. Fresh branches of *Stylosanthes scabra* were mounted on a foraging board in a cafeteria system. Each animal was offered five forages for 30 minutes per day.

Forages were weighed before and after browsed by the goats to estimate daily intake (on as fed basis), and relative preference index (RPI) was calculated as described by Larbi *et al.* (1993). Chemical composition, plant secondary metabolites and gas production characteristics were determined using standard procedure. The data were analysed

by GLM procedure of SAS and where F value show significance difference at $P < 0.05$, means were separated using Duncan multiple range test.

Results

The chemical composition and digestibility of the studied *Stylosanthes scabra* accessions is presented in Table 1. The accession generally did not differ in terms of CP, NDF and total extractable tannin and gas production at 24 and 48 hours. However, there is a significant variation in terms of total extractable phenol and ash content. Generally the crude protein content of the forages was above the critical level (8%) that supports normal intake and rumen functioning (Ikhimioya 2008). The neutral detergent fibre was below the upper limit of 60% (Meissner *et al.* 1991 cited by Ikhimioya 2008) that limits intake of the forage by animal. Similarly the tannins content of the forage was lower than the critical level (9%) that affects digestion and intake by goats (Nastis and Malachek 1981). However, there were significant variations ($P < 0.01$) between the accessions in terms of average daily forage intake and relative palatability index (RPI) (Table 2).

Generally all the studied accessions were browsed by Saanen goats and thus were acceptable and palatable to animals. However, their relative preference index showed that accession no. 11604 was the most preferred whereas accession no. 11255 was the least preferred *S. scabra* accession. Accession ranked on the top had lower level of total extractable phenol and higher concentration of ash while those accessions ranked least in terms of preference ranking have higher total extractable phenol and lower ash concentration.

Table 1. Forage chemical composition, digestibility and gas production characteristics of the accessions.

ILRI accession No.	DM	% DM			g/kg DM			Gas production	
		OM*	CP	Ash*	NDF	TEP**	TET	G_24	G_48
9281	92.26a	90.31ab	18.41a	9.69ab	41.87a	1.99d	1.22a	80.04a	91.11a
11252	91.83a	90.64ab	17.75a	9.36ab	43.99a	2.60b	1.02a	75.37a	88.43a
11255	92.29a	91.99a	18.28a	8.01b	33.43a	2.90a	1.14a	76.16a	89.58a
11595	92.35a	90.56ab	18.54a	9.44ab	48.34a	2.51c	1.64a	78.86a	89.39a
11604	92.30a	89.75b	18.17a	10.27a	49.93a	2.04d	0.87a	78.71a	89.51a

Superscripts along the same column with different notation differ significantly * = $P < 0.05$ ** = $P < 0.001$

DM, dry matter; OM, organic matter; CP, crude protein; NDF, neutral detergent fiber; TEP, total extractable phenolics; TET, total extractable tannins

Table 2. Relative intake, preference and ranking of *Stylosanthes scabra* accessions forage fed to Saanen goats.

ILRI accession No	Average daily intake (g DM /day)**	Relative preference index (%)**	Preference ranking
9281	63.4b	40.5b	4
11252	95.3ab	60.9ab	3
11255	52.2b	35.5b	5
11595	112.2ab	67.0ab	2
11604	139.3a	84.4a	1

Superscripts along the same column with different notation differ significantly ** = $P < 0.01$

Conclusions

The result showed that all the *Stylosanthes scabra* accessions (forages) evaluated in the study are acceptable and palatable to goats. However, the *Stylosanthes scabra* accession no. 11604 was the most preferred by the Saanen goats. The first two most preferable accessions (11604 and 11595) can be used as alternative feed for strategic supplementation of goats.

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