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

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**Keywords:** Forage, chemical composition, acceptability, tannins, goat.

**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-Sahara 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 subtropical 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 ± 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 (Ikhimiya 2008). The neutral detergent fibre was below the upper limit of 60% (Meissner et al. 1991 cited by Ikhimiya 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 | 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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