

YIELDS OF NATIVE FORBS OF THE SUDAN SAVANNA ZONE OF NIGERIA

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ABSTRACT

The objective of the study was to evaluate the yields of native forbs from conserved grazing land of Bayero University, Kano in the Sudan savanna zone of Nigeria. A total of sixteen (16) native forbs were identified from the area evaluated and included *Crotalaria goreensis*, *Tephrosia bracteolata*, *Ipomea asarifolia*, *Ipomea eriocarpa*, *Senna obtusifolia*, *Senna occidentalis*, *Waltheria indica*, *Stylosanthes fruticosa*, *Indigofera echinata*, *Alysicarpus glumaceus*, *Monechma ciliatum*, *Tephrosia linearis*, *Leucas martinicensis*, *Striga hermonthea*, *Zornia glochidiata* and *Indigofera hirsuta*. Data were collected on frequency of occurrence, vegetation cover and dry matter yields of the identified species. The results showed that *Stylosanthes fruticosa* had the highest occurrence (18.49%), *Striga hermonthea* was the highest in terms of vegetation cover (16.85%), while *Waltheria indica* was in trace. *Striga hermonthea* yielded higher (1170.00 kgDM/ha) while other species yielded between 149.80 to 714.00kgDM/ha. It was concluded that the species evaluated particularly *Striga hermonthea*, *Crotalaria goreensis*, *Alysicarpus glumaceus* and *Ipomea eriocarpa* are potential useful forages for inclusion in sown pasture production as they are palatable with prospect for extending the dry season supply of green forage under good management. However, there is need to determine the agronomic requirements, chemical composition and hence feeding values of the species evaluated.

Key Words: Forbs, native, Sudan savanna, yields.

INTRODUCTION

Livestock production constitutes a very important component of the agricultural economy of developing countries. Nigerian livestock population generally depends on the available natural pastures for their feed. The potential yield of native forage species has been reported by several authors (Ibrahim *et al.*, 2018; Ashiru *et al.*, 2019). They provide the cheapest and most important feed for our animals. Forbs are non-grass like, non woody, flowering herbaceous plants which are commonly referred to as weeds. When grazing a mixed sward, livestock prefer forbs. The preference for forbs by livestock makes them well suited to land scape management (FAO, 2010). In the Sudan savanna, numerous species of herbaceous diets especially from the genera *Crotalaria*, *Alysicarpus* and *Ipomea* are known to be widely used in livestock production (Mannetje, 2002). Quite often, they are plucked or cut and fed either as fresh or conserved fodder. Although there has been some interest among farmers of including herbaceous dicotyledonous plants in diets of animals, so far no deliberate attempt has been made to cultivate them to evaluate their agronomic requirements or nutritional value. Examination of the possible roles of the palatable species in livestock production system is also desirable. The objective of the present study was therefore to evaluate the yields of native forbs of the Sudan savanna zone of Nigeria.

MATERIALS AND METHODS

Study location

The study was conducted at the conserved grazing land of Bayero University, Kano Teaching and Research Farm (12° 30' N; 9° 30' E; alt. 415m above sea level) in the Sudan savanna zone of Nigeria (Olofin, 2007). The study area is characterized by a defined wet season which normally begins in May and ends in October. The natural vegetation is the savanna type which consists of moderately tall grasses such as *Andropogon gayanus*, *Panicum maximum*, *Pennisetum pedicellatum* etc and scattered browses such as *Acacia*, *Balanites*, *Faidherbia*, *Piliostigma* and *Zizipus spp*. The area supports good agricultural activities with sorghum, millet, cowpea and groundnut being the major crops cultivated. The most common livestock found are the Bunaji, Yankasa and the Red Sokoto breeds of cattle, sheep and goats, respectively.

Sampling and data collection

Land area measuring 75ft x 100ft at the study site was identified and demarcated. Thereafter, all the native forb species within were identified and recorded. Subsequently, the demarcated area was partitioned into five (5) equal transects. Along each transect (15ft x 20ft), 1.0m² quadrant was demarcated and within each quadrant the forb species, their occurrences and vegetation cover were recorded. Thereafter, the species within were harvested, weighed fresh, representative grab samples taken, weighed and oven-dried at 65⁰C for 48 hours for dry matter yield determination. The dry matter yield values obtained were related to literature report to draw an inference on the present status of yields from the forbs available in the study area.

Data analysis

The data collected were subjected to simple descriptive statistics to determine the frequency of occurrence of the identified species.

RESULTS AND DISCUSSION

The occurrence and vegetation cover of native forbs from conserved grazing land of Sudan savanna zone of Nigeria is presented in Table 1. A total of sixteen (16) species were encountered and the results showed that *Stylosanthes fruticosa* had the highest occurrence (18.49%), *Striga hermontheica* was the highest in terms of vegetation cover (16.85%), while *Waltheria indica* was in trace. The species encountered were in conformity with those reported for Sudan savanna by Muhammad *et al.* (2009). Forage species preponderance, vegetation cover, dry matter yield and chemical composition are good indices of herbage offered for economic livestock production. Payne (1990) observed that the best way to improve livestock production is on pasture. Table 2 shows the dry matter yield (kg/ha) of native forbs from conserved grazing land of Sudan savanna zone of Nigeria. *Striga hermontheica* yielded higher (1170.00 kgDM/ha) while other species yielded between 149.80 to 714.00kgDM/ha which were lower than those reported by other authors (Kallah *et al.*, 2000; Ashiru *et al.*, 2019). The differences observed could be attributed to differences in time of sampling and/or location of study. The lower values of dry matter yield obtained could also be due to the low productivity of the native. Earlier reports (Hare *et al.*, 2007) showed that dry matter yields of up to 3718kg/ha was obtained from *Stylosanthes* species. Dry matter yield of up to 4600kg/ha was also reported for *Alysicarpus vaginalis* (Mannetje, 2002). Apart from providing feed for livestock especially in the savanna zone of Nigeria, forbs also preserve the nutrients in the forb material. In another report (Kallah *et al.*, 2000) forbs are of great importance in balancing protein deficiency during the long dry summer season.

CONCLUSION

Based on the results of the present study, it was concluded that native forbs of the Sudan savanna zone of Nigeria have considerable yielding ability, provide feed for our animals and are potential useful forages for inclusion in sown pasture production. Future research should focus on the agronomic requirements and feeding values of the species evaluated.

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Table 1: Occurrence and vegetation cover of native forbs from conserved grazing land of Sudan savanna zone of Nigeria

Species	Frequency	Percentage	Vegetation cover (%)
<i>Crotalaria goreensis</i>	4	3.36	5.21
<i>Tephrosia bracteolata</i>	1	0.84	6.13
<i>Ipomea asarifolia</i>	9	7.56	7.35
<i>Ipomea eriocarpa</i>	16	13.45	3.86
<i>Senna obtusifolia</i>	10	8.40	3.74
<i>Senna occidentalis</i>	1	0.84	3.06
<i>Waltheria indica</i>	0	0.00	0.00
<i>Stylosanthes fructicosa</i>	22	18.49	10.23
<i>Indigofera echinata</i>	2	1.68	7.66
<i>Alysicarpus glumaceus</i>	9	7.56	7.60
<i>Monechma ciliatum</i>	18	15.13	6.62
<i>Tephrosia linearis</i>	11	9.25	6.86
<i>Leucas martinicensis</i>	2	1.68	2.14
<i>Striga hermonthea</i>	2	1.68	16.85
<i>Zornia glochidiata</i>	2	1.68	7.05
<i>Indigofera hirsuta</i>	10	8.40	5.64
SD	119	100.00	100.00
			± 3.31

SD = standard deviation

Table 2: Dry matter yield (kg/ha) of native forbs from conserved grazing land of Sudan savanna zone of Nigeria

Species	Dry matter yield (kg/ha)
<i>Crotalaria goreensis</i>	363.80
<i>Tephrosia bracteolata</i>	428.00
<i>Ipomea asarifolia</i>	513.60
<i>Ipomea eriocarpa</i>	270.00
<i>Senna obtusifolia</i>	261.10
<i>Senna occidentalis</i>	214.00
<i>Waltheria indica</i>	0.00
<i>Stylosanthes fructicosa</i>	714.00
<i>Indigofera echinata</i>	535.00
<i>Alysicarpus glumaceus</i>	532.60
<i>Monechma ciliatum</i>	463.70
<i>Tephrosia linearis</i>	478.60
<i>Leucas martinicensis</i>	149.80
<i>Striga hermonthea</i>	1177.00
<i>Zornia glochidiata</i>	492.20
<i>Indigofera hirsuta</i>	393.80
SD	± 231.52

SD = standard deviation