Short Communication

Chemical composition of some plants used as feed for rabbits in Bauchi metropolis

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Abstract

The study examined the nutrient composition of twelve plant species used as feed for rabbits in Bauchi metropolis. They were collected during the month of April which is considered the peak of the dry season. The plants were divided into four groups: Trees, grasses, leguminous herbs, and non-leguminous herbs. The result showed that the crude protein content ranged from 13.61% for the leguminous herbs to 17.9% for non-leguminous herbs. The crude fibre content ranged from 14.12% for non-leguminous herbs to 18.95% for leguminous herbs. The result also showed that the plants have light nitrogen free extract and mineral contents. It can be concluded that most of the plants examined could satisfy the nutrient requirement of rabbits with little supplementation especially during the dry season when there is acute shortage of feeds.

Key Words: Chemical composition, plants, dry season, rabbits

Introduction.

In an attempt to source for locally available, non-conventional, low-cost but nutritionally adequate feedstuff for rabbits, considerable attention is being focused on assessing the nutritive quality of different forages. In addition to being good sources of protein some of these green feeds are good sources of potassium, calcium, phosphorus and indigestible fibre (Cheeke, 1987). The potential of forage as feed for rabbits is particularly significant because of their ability to effectively digest leaf protein (Cheeke and Patton, 1980). Rabbits are herbivores that have the ability to utilize house hold wastes and fibrous feed stuffs. They eat different kinds of green plants most of which are considered as weeds of cultivated crops. These green plants can play an important role in increasing animal protein availability particularly in developing countries like Nigeria.

Although tropical forages have high potential as sources of nutrients for rabbit, many rabbit raisers do not know the right type of forage to feed their rabbits, since they do not know the nutrient content of the forages. Also during the dry seasons rabbit producers are faced with the problem of acute shortage of this forages and consequently rabbits lose weight. In most cases the farmer is forced to cull some rabbits to prevent starvation. In order to sustain growth and reproduction, alternative sources of green forages must be sought. The purpose of this research is to determine the chemical composition of some local plants used as feed by rabbit farmers in Bauchi metropolis. The result is expected to be useful to rabbit farmers by providing information on the potential of these plants as rabbit feed especially during the long dry season.

Materials and methods

The forage analyzed were selected based on information supplied by rabbit raisers and their availability during the dry season in Bauchi metropolis. In order to conform the acceptability of these plants they were first fed to rabbits and only the parts selected by the animals were there after collected for analysis.

Sample collection

Most of the plant used for the study were collected from the edges of the yelwa stream in ABTU campus Bauchi during the month of April. These include *Cynodon dactylon*, *kyllinga bulbosa*, *Ipomoea aquatica* and *Boerhavia diffusa*. While *Tridax procumbens* and *Euphorbia hirta* were collected from farm lands on campus. *Khaya senegalensis* and *Angelanthus spp* were collected from trees around. *Zeamays* and *Amaranthus hybridus* were collected from

irrigated farm lands. The samples were dried under the shade for 3-4 days and ground in a hammer mill through a 1mm sieve. The proximate analysis was carried out by the A.O.A.C (1985) methods. The samples were classified into four groups namely. Trees (*Angelanthus spp* and *Khaya senega lensis*), Leguminous herbs (*Amarathus hybridus*, *Eurphobia hirta*, *Boerhaviua diffusa*, *Ipomoea aguatica* and *Tridax procumbens*) and grasses (*Zeamays*, *Cynodon dactylon* and *Kyllinga bulbosa*).

Results and discussion

A list of plant species identified by their scientific and local names, their availability during the dry season and parts analyzed is presented in Table 1.

Table 1 Local names and availability of plants used as feed for rabbits in Bauchi

Plant	Local name	Parts analyzed	Availability
<i>Angelanthus spp</i>	Kauci	Young leaves	Readily available
<i>Khas senegalensis</i>	Madaci	Young leaves	Readily available
<i>Arachis hypogea</i>	Harawan	Leave and stem	Readily available
<i>Canavalis ensiformis</i>	Tumfafiya	Leaves	Available as ornamental crop
<i>Zeamays</i>	Ganyen masara	Leaves	Available under irrigation
<i>Cynodon dactylon</i>	Kiri kiri	Leave and stem	Available under irrigation and near streams
<i>Kylinga bulbosa</i>	Ayaa ayaa	Leave and stem	Available under irrigation And near streams
<i>Amaranthus hybridus</i>	Aleyafo	Leave and stem	Available under irrigation
<i>Euphorbia hirta</i>	Nonon Kurciya	Leave and stem	Readily available
<i>Boerhavia diffusa</i>	Babban Juji	Leave and stem	Available near stream
<i>Ipomoea aquatica</i>	Awarwaro	Leave and stem	Available near stream
<i>Tridax procumbens</i>	Karkashin Para	Leaves and stem	Readily available

Most of the grassed and non leguminous herbs are available near streams during the dry season. While others like *Euphorbia hirta* and *Tridax procumbens* can be seen on farm lands and roadsides. They've been reported by Aduku et

al., 1989 to be drought resistant and to remain green and succulent year round. It is a common sight, seeing small boys collecting the plants for rabbits. The chemical composition of the plants are in Table 2.

Chemical composition of plants used as feed for rabbits

Table 2: Chemical composition (%) of various plants used food for rabbits in Bauchi

Samples	DM	CP	CF	Ash	EE	NFE
Trees						
<i>Angelanthus spp</i>	29.40	17.5	7.31	13.85	5.00	56.42
<i>Khas senegalensis</i>	40.00	12.20	24.20	7.40	2.60	53.20
Mean	34.70	14.85	15.76	10.63	3.80	54.81
Grasses						
<i>Kylinga bulbosa</i>	15.6	15.31	14.14	10.90	2.44	59.2
<i>Zeamays</i>	23.5	13.50	25.00	9.50	2.70	49.30
<i>Cynodon dactylon</i>	17.50	24.80	17.30	14.60	7.70	35.60
Mean	18.87	17.87	18.90	11.16	4.28	48.03
Non-leguminous herbs						
<i>Boerhavia diffusa</i>	13.90	9.90	27.20	13.40	3.10	46.40
<i>Amaranthus hybridus</i>	8.32	29.70	5.00	19.90	3.10	42.30
<i>Euphorbia hirta</i>	18.10	16.30	8.80	10.90	4.30	59.70
<i>Ipomoea aquatica</i>	12.25	17.22	13.40	16.50	1.20	52.60
<i>Tridax procumbens</i>	20.50	16.35	16.20	16.70	1.50	49.30
Mean	14.61	17.89	14.14	15.34	2.64	50.06
Leguminous herbs						
<i>Arachis hypogea</i>	31.30	10.31	25.20	9.30	1.10	54.10
<i>Canavalis ensiformis</i>	30.20	16.91	12.70	11.40	2.60	56.40
Mean	30.75	13.61	18.95	10.35	1.85	55.25

The crude protein content of the samples even though ranged from 9.9 to 29.7% majority were between 12 - 17.5%, the high crude protein value (17%) of grasses and non-leguminous herbs compared to the leguminous herbs (13.6%) could be due to the fact that the legumes particularly *Arachis hypogea* were harvested at the matured stage when the leave to stem ratio is high and hence higher crude fibre and lower crude protein values. This could also be attributed to the fact that the grasses were collected from well fertilized and irrigated lands. The highest crude protein for *Amaranthus hybridus* (29.7) is comparable to value of 28.1% reported by Aduku *et al.*, (1989), while the lowest value of 10.3% was recorded for *Arachis hypogea*. The value for *Arachis hypogea* is however lower than 8.27% reported by Oyenua (1969). This differences could be attributed to differences in stage of harvesting and nature of the soils. Likewise, 16.3, 17.22 and 17.35% crude protein recorded for *Euphorbia hirta*, *Ipomoea aquatica* and *Tridax procumbens*

respectively were slightly higher than value of 12.25, 15.31 and 12.47, reported by Ekpeyong (1986). This could be due to differences in ages, seasons, nature of soil and parts analysed. Since this work was based on what is available during the peak of the dry season.

The crude protein value of 13.5 and 16.35% obtained for *Zeamays* and *Tridax procumbens* were lower than 15 and 25% respectively reported by Aduku *et al.*, (1989). This could be due to the fact that the maize leaves were collected after harvesting of crops, which means higher crude fibre and lower crude protein content. Likewise the crude fibre of *Euphorbia hirta* (8.7%) and *Tridax procumbens* (16.2%) are also lower than 18.94 and 24.36% respectively reported by Ekpeyong (1986).

The most important nutrients in rabbit nutrition are crude protein and crude fibre. Though rabbits have been known to compensate for lower energy in their diet by increasing feed intake, the same does not apply when protein deficiency occur (Sahloanut, 1987). Rajarjo *et*

al., (1986) recommended crude protein intake of 16% for rabbits. Crude fibre intake of 10 – 15% have been recommended for optimum production of rabbits (Deblas *et al.*, 1986). Lower levels have been shown to depress growth rate and increase the incidence of diarrhoea where as higher levels (>19%) also depresses growth rate by restricting energy intake.

Most of the non-leguminous herbs analyzed would go a long way in meeting the nutrient requirement of rabbits particularly of crude protein and crude fibre. They are also readily available during the dry season except for *Ipomoea aquatica*. *Euphorbia hirta* and *Tridax procumbens* have been reported by many rabbits raisers as being highly relished by rabbits and also resistant to draught. In a feed preference study of sixteen different fresh greens found in Tropical region by Aduku *et al.*, (1989) more of TRP leaves followed by *Zeamays* leaves were consumed compared to the other forages. The crude fibre of *Tridax procumbens* (16.2%) is also within the range recommended for rabbits (Deblas *et al.*, 1986). The crude protein value of 16.3% recorded for *Tridax procumbens* and *Euphorbia hirta* is within the recommended level by different reporters (Abdella *et al.*, 1988; Raharjo *et al.*, 1986). In spite of the high crude protein of *Amaranthus hybridus* it can be recommended for rabbits feeding because it is not well accepted by rabbits (Aduku *et al.*, 1989). Its high nitrogen content makes it poisonous to animals (Argrandis *et al.*, 1985).

The leguminous herbs could also contribute towards meeting nutrient requirement of rabbits especially *Canavalis ensiformis* which is rarely used for human consumption or feeding of other livestock. Its crude protein and crude fibre content are enough to meet the requirement of different classes of rabbits (Abdella *et al.*, 1988; Deblas *et al.*, 1986). Its cultivation for rabbits feeding should therefore be encouraged. The low crude protein and high crude fibre obtained should therefore be encouraged. The low crude protein and high crude fibre obtained for *Arachis hypogea* could be improved upon if the

leaves are harvested early, although this would be at the expense of the pods.

The leaves from trees would also go a long way in solving the problem of rabbit feeding because they are most readily available in all environments during the dry season. Of particular importance is *Angelanthus spp* which has high crude protein value of 17.5% and low crude fibre of 7.31%. the grasses also appear to have a lot of potential as rabbit feed because of their high crude protein and crude fibre values. Reports by Aduku *et al.*, (1989) also showed that they are highly acceptable to rabbits. In their report more of *Zeamays* leave was consumed than even the legume. The main factors limiting their use as rabbit feed is that they are only found on irrigated farmlands or near streams during the dry season.

Conclusion

The result obtained in this study show that most of the forages analyzed have potential for supplying enough nutrients for rabbit feeding based on nutritive value and availability during the dry season. *Tridax procumbens*, *Angelanthus spp*, *Canavalis ensiformis* and *Euphorbia hirta* are recommended for rabbits feeding. The forages recommended possess over 16% food protein up and are readily available in the study area during the dry season. However there is need for further research into their acceptability, digestibility and presence of poisons.

References

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