UTILIZATION OF CAMEL'S FOOT (PILIOSTIGMA RETICULATUM) (Hochst.) PODS AMONG RUMINANT FARMERS IN ARUGUNGU LOCAL GOVERNMENT AREA OF KEBBI STATE, NIGERIA

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ABSTRACT

A survey was conducted in Argungu Local Government Area of Kebbi State comprising of 3 villages. A structured questionnaire was administered to 60 farmers within the study area. The data collected was analyzed by using simple statistical tools such as frequency counts and percentages. Majority (48.33%) of the respondents reared cattle, sheep and goats with about 48.33% having the highest flock/herd size of about 21-30 animals. Most (90%) of the farmers offered Kalgo parts as feed to their animals in combination with other ingredients and about 58.33% offered Kalgo parts in dried form to feed their animals with sheep and goats (58.93%) preferring Kalgo parts most. The parts of the Kalgo mostly preferred by ruminants indicated that the pods are mostly (70%) preferred and 21.67% of animals prefers the leaves alone. Kalgo parts is obtained for usage in the dry season as agreed by all (100%) the respondents with about 61.67% covering a distance of 1-2km from their homes/farms before obtaining Kalgo for usage. About 75% and15% obtained the kalgo parts by self and by purchase respectively. The parts are offered as whole as observed in this study, there is no any form of processing such as grinding, pounding and milling done on the leaves/pods before serving it to the animals. All the respondents (100%) in the study area agreed to the fact that Kalgo is naturally occurring plant. The results obtained in this work revealed that Kalgo is an important browse for ruminant production among the farmers.

Key words: Kalgo, utilization, ruminant farmers, Kebbi State

INTRODUCTION

Rural dwellers people generally recognize the trees and shrubs which are well appreciated by ruminants, and their nutritive importance (Thapa *et al.*, 1997; Briggs *et al.*, 1999; Thorne *et al.*, 1999; Komwihangilo *et al.*, 2001; Muftau *et al*., 2019). The role of browse during periods of drought has been recognized and has attracted attention from scientists (Hadja, 2007). Hence, farmers' preference of browse species was related to their availability, palatability and drought resistance.

In a previous survey conducted by Hassan *et al*. (2010), the authors observed that parts of browse species utilized by livestock were leaves, pods twigs and flowers. The pods of *Piliostigma reticulatum* were important feed resources for goats, sheep and cattle during the dry season (Nounhoun *et al*., 2013). Earlier study (Muftau, 2018) indicated that Camel's foot is highly abundant in Kebbi State and as a potential feed resource in the diet of sheep.

It is against the above back ground of the importance of woody shrubs and trees in rangelands that the study was embarked upon to investigate and ascertain the claim made by farmers on the utilization of *Piliostigma reticulatum* which is commonly known as Camel's foot and locally called Kalgo in the northern region of Nigeria as a potential feed resource in Kebbi Sate.

MATERIALS AND METHOD

Study Area

The survey was conducted in Argungu Local Government Area (LGA) of Kebbi State during the dry season period of 2017. Argungu LGA is located between latitudes 12^0 44'N $4^0$31'E/ and longitudes 12.733^0N 4.517^0E. The area has a longer dry season of 8 to 9 months and short rainy season of 4 to 5

months, the vegetation of the area is Sudan type with farming as the major activities of the people residing in this area. The Argungu Local Government also hosts an annual international fishing competition (KARDA, 2014),

Data collection and analysis

A total of 60 structured questionnaires were administered to randomly selected livestock farmers within the Local Government covering 3 out of 6 villages with 20 respondents per village during the dry season of 2017. The respondents were selected by systematic sampling procedure and interviewed. The structured questionnaires captured, flock size; species kept, availability and utilization of Kalgo among others. Statistical tools such as frequency distribution and percentage were used in analyzing the collected data.

RESULTS AND DISCUSSION

All the respondents in this study (Table 1) reared ruminant animals with the majority rearing more than one ruminant species mostly dominated by cattle, sheep and goats (48.33%). This might be attributed to complementary in feeding habits of the species. This finding is in line with the work of Smith (2006) who reported that cattle and sheep grazes lower grasses while goats browse shrubs and trees. Majority of the respondents (48.33%) had a flock/herd size of about 21-30 in numbers. Kalgo plant parts for usage in the study area (Table 1) are obtained mostly (100%) during the dry season (late October to late March). This is in line with the findings of Heuze and Tran (2011) who reported that browse species are particularly available for usage during the cool and hot dry season, which correspond to their fructification period (Yelemou *et al*., 2009) when herbaceous forages are scarce. Ways of obtaining Kalgo pods in this study (Table 2) includes; by self (75%) and by purchase (15%). However some farmers (10%) obtained the pods in both by self and purchasing. This observation is in agreement with the findings of Nounhoun *et al*. (2013) who reported that children and women in the northern Sudanian zone of Burkina Faso are engaged in the collection and storage of the pods of *P. reticulatum* and *F. albida* for sales at local fodder markets. Most of the respondents (61.67%) covered a distance of about 1-2km from their homes/farms before obtaining Kalgo for usage (Table 1). The distance travelled as observed in this study is lower than those reported by Nounhoun *et al*. (2013). All (100%) the respondents in the study areas agreed to the fact that Kalgo is naturally occurring plant which is in line with the reports of (Simbaya, 2000; Akinsoji, 2003; Ugbogu and Akinyemi, 2004; Fayemi *et al*., 2011).

Table 1: Animal species kept and numbers, availability and accessibility of Kalgo plant

Items	n=60 frequency	Percentage (%)
A. Types of Animal kept		
i. Cattle	11	18.33
ii. Sheep	5	8.33
iii. Goat	1	1.67
iv. Sheep and Goat	14	23.33
v. Cattle, Sheep and Goat	27	48.33
B. Numbers of animal kept		
i. bellow 20	18	30.00
ii. 21 – 30	29	48.33
iii. 31 – 40	5	8.33
iv. 41 – 50	7	11.67
v. Above 50	1	1.67
B. In what season is Kalgo obtained for usage?		
i. Dry season	60	100
ii. Rainy season	0	0
C. How is Kalgo plant obtained?		
i. Self	45	75
ii. Purchase	09	15

iii. Both	06	10
D.Distance covered to obtained Kalgo from the farm/home		
i.1-2km	37	61.67
ii. 3-5km	14	23.33
iii. 5km above	9	15
E. Is Kalgo naturally occurred or planted?		
i. Naturally occurring	60	100
ii. Propagated	0	0

Source: field survey, 2017

Different forms of using Kalgo parts (Table 2) for feeding animals in the study area revealed that majority (58.33%) of the farmers preferred the dry form especially the pods. The parts are offered as whole to the animals as observed in this study, there is no any form of processing such as grinding, pounding and milling done on the leaves/pods before serving it to the animals. Most of the farmers (90%) offered Kalgo parts to their animals in combination with other ingredients such as concentrates and supplements. This is in agreement with the work of Crowder and Chheda (1982) who reported that browse plants alone can keep animals in a fair condition but may be inadequate as the sole feed stuff. All the farmers reported an increased use of the parts of kalgo (leaves/pods) by ruminants. Sheep and goats (58.93%) are found to prefer Kalgo (leaves and pods) than cattle (21.43%) in this study (Table 2). This observation was in line with the report of Nouhoun *et al*. (2013); they reported that some browse plants preferred by small ruminants in the sub-sahalian zone were not used by cattle while goats and sheep had nine browse plants preferred in common. All the parts of Kalgo (leaves/pods) are preferred by ruminants but the most (70%) preferred part is the pods as shown in Table2. Nouhoun *et al*. (2013) observed that pods of some browse plants such as *Piliostigma spp* and *F. albida* are especially preferred and used by all ruminant species across the Sahelian zone of Burkina Faso.

The use of Kalgo for animal health apart from feeding as agreed by all (100%) the farmers (Table 2) is in line with the findings of Garba and Muhammad (2008); Awohouedji *et al*. (2013); Nounhoun *et al*. (2013). These authors reported the various uses of browse plants for animal health care ranging from stimulation of milk in cows and goats, and anthelmintic.

Table 2: Kalgo plant usage, preference and method of utilization

Items	n=60 frequency	Percentage (%)
A. In what form is Kalgo fed to animals?		
i. Fresh (pods/leaves)	04	6.67
ii. Dry (pods/leaved)	35	58.33
iii. Wilted (pods/leaves)	21	35
B. How is Kalgo offered to animals?		
i. Kalgo alone	06	10
ii. Kalgo with other ingredients	54	90
C. Part of Kalgo used in feeding animals		
i. Leaves	05	8.33
ii. Pods	42	70
iii. Both	13	21.67
D.Which of the animal species prefers Kalgo most?		
i. Cattle	12	21.43
ii. Sheep	23	41.07
iii. Goats	21	37.50
E. Other usage of Kalgo plant		
i. Animal health	60	100
ii. Others, specify	0	0

Source: field survey, 2017

CONCLUSION AND RECOMMENDATION

Browse plant is an important component in ruminant production especially during the long dry season in the semi-arid environment. The results obtained in this work revealed that Kalgo plant is a permanent browse indigenous to the semi-arid environments. Kalgo is an important browse for ruminant production among the farmers in the study area. Management is however necessary in the production of Camel's foot (Piliostiga reticulatum) in order to improve ruminant production. It is recommended that the pods should be milled and incorporated with other ingredients for effective utilization by animals.

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