

AN OVERVIEW OF GOAT'S NATURAL BROWSING POTENTIALS: SHORT COMMUNICATIONS

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ABSTRACT

The aim of this paper is to provide an insight on the browse nature of goat. Therefore, having knowledge and clear understanding on how goat browses and certain morphological features that qualify goat to be a good browser will be of significant importance and part of management practices that goat keepers will put into consideration. Browsing helps goats to acquire self-medications improve nutrient efficiency, ability to detoxify poisonous plant, control bush encroachment and helps to minimize cropland conflict. Among of the feature that make goat good browser are morphological nature of the goat lip, bipedal standing ability, has greater bitter taste tolerance, climbing ability, and feed preference nature of goats. The emergence of many browsing styles and increased exhibiting many browsing behaviors by goats necessitated the need for a clear understanding of causes, importance and morphological features that make goats a good browser. This will provide avenue and enable researchers from different disciplines such as pasture agronomist, ruminant nutritionists, and physiologist to come out with a holistic idea in relation to mechanisms that make goat exhibit browsing characteristics.

Key words: Goats, Natural Browsers, Potential and Short Communications.

INTRODUCTION

Goats are natural browsers and if given the opportunity, they select over 60% of their daily diets from browses, woody and broadleaf plants (Luginbuhl and Green, 2005; Peischet, 2014). They are able to select the most nutritious part of plants and can adequately meet their nutritional needs. Beside nutritional benefits, other advantages of browses include lower the internal parasite cases due to higher grazing heights and consumption of condensed tannin-containing browse species (Min *et al.*, 2004).

Goats consume significant quantities of shrubs, vines, and tree leaves and twigs when such vegetation are available in their grazing areas. Several studies have shown that goat spend a substantial amount of time browsing (32-90% depending on the season, freshness, plant species present in the grazing system, and time of the day) as reported by Bhattarai *et al.*, 2018; Sharme *et al.*, 1998; Yayneshet *et al.*, 2008. In several countries around the world, where goat raising has been a tradition for hundreds of years, browse species are widely used to feed goats either through the cut and carry system or through grazing. However, such practices are common in African countries like Nigeria. Goat can graze very well in a pasture developed for cattle or sheep, although goats have quite different vegetation preference than other ruminants. When goats graze close to the ground surface, they often suffer from gastrointestinal parasites problems, especially in warm humid and wet pasture conditions. To minimize health problems and improve performance of goats, inclusion of a good amount of browse (50-60%) in the grazing system is necessary. Hence call for intercropping of browses and pasture to provide information on the effect of browses on the performance of goat. The objective of this paper was to provide an insight on goat browsing nature.

Table 1: Diet preferences differences between different ruminant species (percentage of diet)

Plant nature	Horse	Cattle	Sheep	Goat
Grass	90	70	60	20
Weeds	4	20	30	20
Browse	6	10	10	60

(Source: Gurung, 2018)

Features that make goat good browser

Morphological nature of goat lip: the goat mouth morphological features make the goat to be a successful browser. Their small mouth, narrow muzzle and mobile upper lip which lack the dividing *philtrum* of the sheep enable them to grasp, tear and pick small leaves, flowers, fruits and other plant parts, thus choosing only the most nutritious available feed.

Bipedal standing ability: another important morphological feature of goat being a good browser is the ability to assume a bipedal stance when feeding. Goats have been observed to stand on their hind legs and stretch up to browse tree leaves or throw their bodies against saplings to bring the top within reach. Goats even sometimes climb into trees or shrubs, wall or any other available inclination materials to consume the desired forage as presented in the below photographs.

Greater bitter taste tolerance: goats can distinguish between sweet, sour, bitter and salty. The ability of goat to have greater tolerance for bitter taste than cattle and sheep which allow for a wider range of plant species to browse. It shows that goat has a higher tolerance for bitter tasting feed than most other ruminant like cattle and sheep.

Climbing and travel longer distance ability: goat can climb trees in order to reach parts of tree they prefer. They utilize rough, mountainous area which sheep and cattle avoid. Goats have ability to travel longer distance in search of preferred forage than other domestic ruminants.

Goat feed preference nature: goats do not thrive very well on single feed for long time. Goat prefers to select from a variety of feeds. Goats are capable to adapt their grazing preferences.



Importance of Goat's Browsing Nature

Browsing by goats helps to improve the overall forage utilization

Self-medication: aid in gastrointestinal parasite control. Browse plants contain condensed tannins which help to reduce bloat.

Improve nutrient efficiency: some browse plants contain condensed tannins which have the ability to combine with proteins, carbohydrates, minerals and vitamin to improve nutrient efficiency.

Ability to detoxify poisonous plant: some goat's farmers are much worried and concerned about toxic plants in goat grazing area, but every plant is poisonous at some stage in its lifecycle and animals manage to avoid toxicity. Goat can graze many toxic species without encountering toxicity. This is due to goats consuming a diversity of species on any given day. The goats never consume a toxic dose of any one species, their greater size of liver as a % of bodyweight gives them extra capability to detoxify toxins. Also, some plant species may counteract the toxicity of other plant species. If goats have adequate quantity and array of forage species to choose from they will seldom get toxicity. Goats learn from their mothers what plants to eat and what plant to avoid. If goats are moved to an area with very different forage species, they may not have the knowledge to select against toxic plants. Also, in plants those are normally non-toxic that goats are used to eating, if there is occasional toxicity such as due to environmental factors, animals may not be able to identify the plant as being toxic and avoid it. Generally, toxicity is rare in goats. The preference of goats for consuming browse can be used on the control of bush encroachment. The browsing nature of goats helps to reduce cropland conflict.

CONCLUSION

The emergence of many browsing styles and increased exhibiting many browsing behaviors by goats necessitated the need for a clear understanding of causes, importance and morphological features that make goats a good browser. This will provide avenue and enable researchers from different disciplines such as pasture agronomist, ruminant nutritionists, and physiologist to come out with a holistic idea in relation to mechanisms that make goat exhibit browsing characteristics.

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