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Fragments of Eight Captured Ligneous Plants Consumed by Goats on the Mixteca Poblana, Mexico

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***Abstract* — Leaves, flowers and fruits are fragments of the plant with great importance and use in the feeding of goats, forage biomass where the leaves are harvested from the branches and twigs mixed with other fragments of the plant, it becomes natural hay for Consumed by these small ruminants. Objective: to know fragments captured in eight woody plants consumed by goats of Mixteca Poblana, Mexico. Five goats were identified to directly observe and count the bits to consumed fragments of the plant, Duncan simple test (ANAVA) was applied to the obtained data. The leaf was consumed by the goats in 86.6%, where 75% belonged to the legume family. There were significant differences of 39.0a and 9.5b for leaf and fruit respectively in bits given / hour to Goatee (Pithecellobium acatlense) in the study area.**

***Keywords* — Ligneous, Fragments, Goats, Forage, Silvopastoril.**

I. Introduction

Plants are the key to life on earth exists without them many living organisms disappear because of higher life forms directly or indirectly dependent on plants for food [1-2]. The goat for the mobility of his upper lip and prehensile tongue, has a very special ability to capture very small leaves, even in plants that have thorns and grass very short, so it is able to select very thoroughly their food [3]. The use of ligneous plants in agricultural production systems, where there is low rainfall and imported resources, this component is essential for food production and goats [2]. The plant has fundamental fragments that compose it, leaves, flowers and fruits (pods) in the case of legumes are highly valuable from a nutritional point of view for small ruminants [4]. Trees and shrubs contribute to the improvement of pastureland ecosystem providing forage, shade, protecting the soil from erosion, acting as a windbreak barrier, recycling nutrients through the leaves and preserving soil moisture [5].

So, the goats with greater ease accept bitter tastes; therefore they prefer woody fragments component in some regions [6].

In Mexico, especially in the Mixteca Poblana it has a ligneous type forage potential, unknown fragments of the most consumed plant woody component in the Mixteca region; therefore, the objective was to know fragments captured in eight woody plants consumed by goats of Mixteca Poblana, Mexico.

II. Materials And Methods

A. Location of the Study

Work in communities and Maninalcingo Tehuaxtla, located in the municipality of Piaxtla, within the specified region as the Mixteca Poblana south of the province of Puebla in Mexico. The study area is located in the parallel 17 ° 59 '00' '18 ° 12' 30 " north latitude, 98 ° 10 '54' '98 ° 21' 36 " West longitude [7] with an altitude of 1180 m and with an annual rainfall of 350-800 mm. Present-spinous low deciduous forest and xerófita, izotes scrub and tree-shrub vegetation types; further small localized areas of oak forest and pastures. The climate is warm humid with rains in summer and very warm semi-dry season, reaching an average temperature of 23 °C.

B. Study Methodology

5 units of family production (UPF) goats, with 5 goats / UPF (painted on the sides of goats number) scored for ramoneo and capturing fragments of the consumed plants were used; The pastor-guide, was an important part in identifying plants (common names) and parts consumed in the grazing area (8:00 a.m. to 1:00 p.m.) 5 goats marked; when viewed directly (in situ method), different samples of plants (twig of 20-25 cm) and harvested fragments (leaf, flower and fruit) with scissors cutting garden was collected, taking pictures of these ligneous studied. Finally, all this material (plants and fragments) was added to ligneous herbal School of Biology at the Autonomous University of Puebla. Encompassing times of rains and dry (February to October 2010).

C. Statistical Analysis of the Study Data

Descriptive statistics were applied to: analyze and consumed plant fragment, ligneous component, number of bites / hour / plant species, snacks / time / fragment of the plant. It was assessed by Duncan single test (ANOVA), all with the SPSS 10.0 software for Windows.

III. Results

It was found that the fragment of the plant consumed by goats, accounted for 35% for leaf, flower and unripe fruits, it reached 22.5% leaves, flowers and pods, reducing the percentage for the other remaining fragments of the plant (Figure 1).

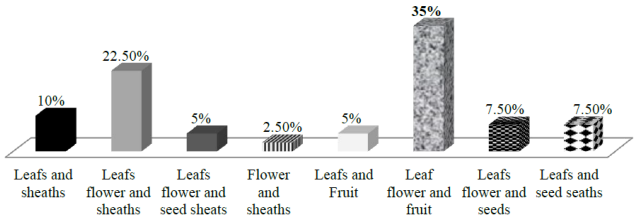

Fig. 1. Percentages of fragments in plants eaten by goats Mixteca Poblana

Is substantial point out that of the 9 groups consumed parts of ligneous component, the results throw 86.6% preference for the leaf, probably the phenological state of perennial ligneous plants that are present throughout the year in the area of study. As to woody component comprised of forty-shrubby tree, plants eight stories stood out for their preference to capture and consume in the area of grazing goats in the Mixteca Poblana. See table 1.

Table 1: Names and fragments captured than eight ligneous plants that consume goats in the Mixteca region

Common name	Scientific name	Family	Fragment consumed	Plant type
Goatee beard	Pithecellobium acatlense	Leguminosae	Leaf Sheath	Arboreal
White cubata	Acacia pennatula	Leguminosae	Sheath	Shrub
Huamuchil	Pithecellobium dulce	Leguminosae	Leaf Sheath Shell	Arboreal
Stick of brazil	Haemotoxylumb rasiletto	Leguminosae	Leaf Flower	Arboreal
Pochote of dry	Ceiba parvifolia	Bombacacea e	Fruit	Arboreal
Breaks-boots	Sennawislizenni . Var. Prenglei.	Leguminosae	Leaf	Shrub
Tehuistle	Acacia bilimekiiMcbrid evar. robusta	Leguminosae	Leaf Sheath Shell	Shrub
Black Tlaxistle	Amelanchir denticulata	Rosaceae	Leaf Shell	Arboreal

75% corresponds to the legume family, which represents an important source of proteins for their high nutritional value in the study area. The table 2, shows captured fragments (morsels/craps) of the eight preferred plants by goats at the production units in the Mixteca region of Puebla.

Table 2: Snacks / time consumed by goats fragment in eight plants in the Mixteca Poblana

Plants	Plant fragments			Signification
	Flower	Fruit	Leaf	
Goatte Beard	6.0^{a}	7.0^{b}	34.2^{a}	*
White Cubata	0.0	10.6	0.0	NS
Huamuchil	0.0^{b}	21.5^{b}	34.2^{a}	*
Palo de Brazil	6.0^{a}	7.0^{b}	34.2^{a}	*
Pochote of Dry	0.0	8.8	0.0	NS
Rompebotas	0.0^{b}	0.0^{b}	28.0^{a}	*
Tehuistle	0.0^{c}	16.2^{b}	31.3^{a}	*
Black Tlaxistle	0.0^{c}	6.38^{b}	30.3^{a}	*

Unequal superscripts indicate significant differences ($P < 0.05$).

IV. Discussion

Grazing animals usually prefer The leaves to the stems, and green material in Place of fodder dry or dead. The availability of leaves is important to conserve consumption forage, since by decreasing the availability of them decline consumption [4].

The plants are mainly in the caprine production systems in the Mixteca Poblana the only sources of silvopastoral life, since leaves, flowers, green fruits and pods with seeds, are nutritional parts of the woody component to support this livestock activity in Tehuaxtla and Maninalcingo; a similar aspect [8], with the great diversity of forest trees in tropical areas, where they represent a valuable resource of economic and forage importance, consuming parts of the woody plant as food for domestic livestock and wildlife.

Shrub legumes provide high quality protein fodder for the subsistence and commercial production of livestock in different parts of the world with dry tropic characteristics [9]. In this way, the presence of legumes in silvopastoral systems present in the Mixteca Poblana, are numerous and constitute more than 35% of the woody component [10].

Nevertheless; [11], when studying the plants consumed by goats in the arid zones of Mexico, conclude that the goat has a tendency to consume shrub species and tender plant shoots, and that grasses are consumed in limited quantities although Exist in sufficient quantity. On the other hand, in Venezuela [12], when working with goats of the experimental field of Loma de León in a semi-arid zone of the country, observe that the grasses were the plants most wanted by the goats, despite That it is not mentioned that parts of the plant were more desirable in woody plants with less consumption in that region, when being captured during the time of consumption for bits given.

Finally, the woody component present in the Mixteca Poblana when consumed is not random; but preferred by different spatial successions of the woody ones in the ecosystem; This is based on the theory of [13], when establishing that the hierarchical decision making where cattle during grazing is given as follows: feeding site, ramoneo sites within a landscape unit, species of forage, parts of the plant and morsel; the size of the morsel also has a large influence on forage consumption. decreasing the size of the morsel, due to the reduction of leaves available, animals make up for it temporarily increasing the number of morsel and grazing time [3].

Nevertheless, as availability continues to decline of leaf material, also decline number of morsels and time of grazing, resulting in lower forage consumption [4]. Factors that are added as topography, size of the plant, whether perennial or not, in addition to what type of forest belongs [14-4].

It is important to note that the selective consumption of certain plants or specific parts of plants depends on external and intrinsic factors of the animal, modulating the consumption behavior when there is a diversity of plants to be harvested in the habitat [15], the selectivity is a fundamental strategy in the dynamics of food consumption.

In addition, it is a process that determines the dynamics of plants in mixed botanical composition ecosystems and the potential in their nutritional value in each of the fragments of the plan [3-4].

V. Conclusion

The main parts that the goats consume in Mixteca Poblana are: leaves, flowers and fruits not ripe, where they reached 35% this group. As for the woody component, it was conformed in 75% by legumes of the 8 plants with more preference during the study; Likewise, the leaf reached 86.6% of the woody species consumed; Where a significant difference is shown for the captured and consumed part of the leaves and fruit 39.0a and 9.5 respectively, in terms of bits of goatee (Pithecellobium acatlense) in the Mixteca region of Puebla.

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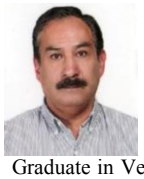
Author's Profile



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