

## EVALUATION OF PRODUCTIVE PARAMETERS OF CHIAPAS SHEEP IN THE MUNICIPALITY OF TEOPISCA UNDER A SEMI-INTENSIVE SYSTEM

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**Abstract:** In Chiapas there is a diversity of sheep breeds, however, there is a wool sheep biotype in the Altos and Sierra regions “the Chiapas sheep” has a double function in the Tzotzil communities, which is the production of manure and the production of wool. The present investigation had as objective the evaluation of the productive parameters of the Chiapas sheep of CETNO-UNACH in the municipality of Teopisca in the Tsotsil-Tzeltal zone. The study subjects were 168 specimens (59 Males and 109 Females) with different age range (1-8) and phenotype (39 White, 92 Black and 37 Brown), they were fed during the months of August-October based on stubble, ground corn, mineral salt, soybean paste; The variables of: live weight, age, body condition, wool length (long and short wool length, presence of heterotypic fibers, washing performance) were analyzed. Weight gain at the end of the study reached an average weight of 0.8 kg total. The length of the wick in the males was found a general average of long-thick fibers of  $10.1 \pm 1.4$  cm and short-thin fibers of  $5.7 \pm 0.8$  cm. In the length of the wick in the females, according to the phenotypic variety, I present a general average of long-thick fibers of  $10.4 \pm 0.75$  cm and short-thin fibers of  $6.1 \pm 0.45$  cm. The total average unwashed weight was  $41.4 \pm 9.8$  gr and a washed weight of  $34.5 \pm 7.6$  gr, obtaining a yield of 84.3%.

**Keywords:** Sheep Chiapas, wool, fleece.

## INTRODUCTION

In the mountainous areas of the state, a Creole sheep has been managed for 500 years, having as ancestors Spanish breeds such as Churra, Lacha and Manchega sheep; The result was highly rustic animals, capable of producing in difficult conditions of handling, feeding and climate. Being this the Chiapas sheep, it is traditionally located in the mountainous region of Los Altos de

Chiapas, mainly in the municipalities of San Juan Chamula, Zinacantán, Teopisca and San Cristóbal de Las Casas. It has a double function in the Tzotzil communities, which is the production of manure to fertilize the crops and the production of wool. Wool being the main raw material that is used to become threads and fabrics that are used to make clothing, carpets and handicrafts, which generate economic income for the different indigenous communities (Perezgrovas and Castro, 2000). The present investigation had as objective the evaluation of the productive parameters of the Chiapas sheep of the CETNO-UNACH (Center for Ethnoagro-livestock Studies of the Autonomous University of Chiapas).

## MATERIAL AND METHODS

It was carried out at the facilities of the Centro Ovino Teopisca Ranch belonging to the Center for Ethnoagricultural Studies of the UNACH, located in the municipality of Teopisca, Chiapas, with coordinates of  $16^{\circ} 32' 24''$  north latitude,  $92^{\circ} 28' 19''$  west longitude at an altitude of 1760 masl, presenting an average annual temperature of  $16.6^{\circ}\text{C}$ . The study subjects were 168 specimens (59 Males and 109 Females) of Chiapas Sheep with different age range (1-8) and phenotype (39 White, 92 Black and 37 Brown), belonging to the CETNO-UNACH in the Tsotsil-Tzeltal. Weekly visits were made to the CETNO-UNACH farm, during 2018. 169 animals were worked, which were provided throughout the period with a diet similar to what indigenous women provide their animals based on: stubble, ground corn, mineral salt and soybean paste. The following variables were obtained from each sheep: live weight and wool fiber production was monitored, for which male and female wool samples were analyzed and the following variables were analyzed: long wool length and short wool and washing performance according to what was described

## RESULTS AND DISCUSSION

The diet provided by the indigenous women does not cover the nutritional requirements of the sheep, particularly what is related to the level of protein (Table 1).

FOOD	WET BASE (%)	DRY BASE (%)
DRY MATTER	92.3	100
TOTAL HUMIDITY	3.25	0
ETHERIAL EXTRACT	4.65	4.87
ASHES	9	10.1
RAW P.	10	11.35
NITROGEN EXTRACT FREE	76.95	80.58

Table 1. Bromatological analysis of food

Throughout the study, the females maintained an average weight of 22.9 kg, without significant statistical differences being observed between the phenotypic varieties. In the case of males, the average weight remained at 30.1 kg, likewise no significant statistical differences were found between the different varieties. The weight found in this work is lower than that reported by Pedraza et al., 1992 who reported a weight of 28 kg. This low weight of the animals could be caused by the percentage of protein in the diet that did not cover the nutritional requirements of the Chiapas sheep, in accordance with the provisions of the NRC nutritional requirements tables (2007).

Regarding fleece quality, the results of the wick length in the males according to the variety presented a general average of long-thick fibers of  $10.1 \pm 1.4$  cm and short-thin fibers of  $5.7 \pm 0.8$  cm. When analyzing the data by phenotypic variety, particularly the length of the fibers, the animals of the white variety were longer ( $11.2 \pm 2.1$  cm). This is lower than what was described by Galdámez et al., 2012 who, working with a native Formosa sheep from Argentina, found that the length of long-

thick fibers was  $12.00 \pm 6.9$  cm.

The length of the wick in females according to the phenotypic variety presented a general mean of long-thick fibers of  $10.4 \pm 0.75$  cm and short-thin fibers of  $6.1 \pm 0.45$  cm (Table 1), observing that the Blanca variety presented greater length. of wick ( $11.3 \pm 2.0$  cm) with respect to the other varieties.

These results coincide with what was reported by Perezgrovas and Castro, 1998, who reported that wool production and growth are significantly higher in the white variety of Chiapas sheep.

Significant differences were found in the length of the wick and the proportion of long-thick fibers between the phenotypic varieties and this may be associated with the fact that these animals have been empirically selected by the indigenous women of the Tsotsil-Tseltal region.

VARIETY	LONG FIBER	SHORT FIBER	FH (%)
WHITE	$11.3 \pm 2.0$	$6.6 \pm 1.4$	$21 \pm 27.2$
COFFEE	$9.9 \pm 1.3$	$5.7 \pm 1.4$	$35 \pm 22.6$
BLACK	$10.1 \pm 1.9$	$6.0 \pm 1.1$	0
TOTAL	$10.4 \pm 0.75$	$6.1 \pm 0.45$	$28 \pm 9.8$

Table 1. Length of long fibers, short fibers and percentage of heterotypic fibers (FH) in females

The washing performance of this wool was an average of 84.3%. The White phenotypic variety had a yield of 83.3%, while the Black phenotypic variety sheep had a yield of 85.4%. However, this yield is much higher than that described by Flores et al., 2012 who, working with sheep specialized in wool production, report washing yields of 77.95%. The lowest performance was obtained by the sheep of the phenotypic variety Coffee with 70%.

## CONCLUSIONS

The bromatological analysis showed that the diet did not cover the nutritional requirements of the Chiapas sheep. Weight was kept low in both males and females. The highest average length of the wick was obtained in animals of the Blanca variety. The wool produced by the animals showed a very high washing performance despite the deficiencies in the food, with yields between 85.4 and 70%.

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