# PERFORMANCE OF HOLSTEIN FRIESIAN CROSSBRED CATTLE FED ON UREA TREATED SUGARCANE TOP SILAGE

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## ABSTRACT

The present experimental study was undertaken on eighteen (18) Holstein Friesian (HF) crossbred cows for a period of ninety days in well organised HF crossbred cattle farm at KVK, Baramati, Dist-Pune, Maharashtra. The selected cows were allotted randomly to three groups, six in each group. The control group ( $T_0$ ) was maintained without replacement of green maize by sugarcane top silage, while in treatment group the green maize was replaced with sugarcane top silage on the basis of Dry Matter (DM) @ 50 and 75 %, for  $T_1$  and  $T_2$  groups, respectively. The experimental cows were offered pelleted concentrate feed along with jowar kadbi as routine practice of farm. The average daily milk yield of experimental HF cows ranged from 16.73 ( $T_2$ ) to 19.71 ( $T_0$ ) kg per cow and found statistically significant. However, Fat Corrected Milk (FCM) (4% fat) yield ranged from 16.85 ( $T_2$ ) to 20.30 ( $T_0$ ) kg per cow and results indicated significant effect. The average milk fat, milk protein, and solid not fat were analysed and were not found to differ significantly among groups. Thus, in present study the inclusion of 50% of sugarcane top silage in the diet of lactating Holstein Friesian crossbred cows showed no deleterious effect on milk production and milk composition.

Keywords: Holstein Friesian crossbred cows, Milk composition, Milk yield, Sugarcane top silage

In order to mitigate the shortage of feeds and fodder and to make animal production viable and profitable, ruminants receive most of their dietary needs from native grasses, crop residues and industrial by-products. The sugarcane top is a major by-product of the sugar industry. It is generally highly palatable and its voluntary consumption is good when they are chaffed and fed. However, urea treated sugarcane top increased the digestibility of dry matter and total digestible nutrients intake of sugarcane forage. Thus, the main objective of this research work was to increase the nutritive value of sugarcane top and determine the best amount of treated sugarcane top silage to replace maize fodder in feeding of ruminants under field condition.

#### MATERIALS AND METHODS

The present experimental study was undertaken on eighteen (18) Holstein Friesian (HF) crossbred cows for a period of ninety days. The selected HF crossbred cows were allotted randomly to three groups, six in each group. The selected cows were in mid lactation and the average daily milk yield was 18.62 kg/day/animal. The control group  $(T_0)$  was maintained without replacement of green maize by sugarcane top silage, while in treatment group the green maize was replaced with sugarcane top silage on dry matter basis (a) 50 and 75 %, for  $T_1$  and  $T_2$  groups, respectively. The experimental animals were offered pelleted concentrate feed along with jowar kadbi as routine practice of farm. The sugarcane top silage was prepared by chopping sugarcane top and ensiling in silage unit with 1.0% urea, 0.5% of common salt and 1% of mineral mixture on dry matter (DM) basis. The silage unit was opened 60 days after ensiling, and silage was fed to experimental animals. The experimental animals were fed different quantity of sugarcane tops silage of 50 and 75% substituted for maize. All the HF cows were fed concentrate mixture to meet 1/3rd of dry matter requirement. The weighed quantity of prepared sugarcane top silage was fed to each experimental animal for the period of 90 days.

The milk yield of each HF cow was recorded every day, both morning and evening for the whole experimental period of 90 days and the total milk yield was calculated. The weekly (average) milk yield was calculated and converted to FCM as per the formula: 4% FCM= 0.4 (Total milk in kg) + 0.15 (Total fat %) given by Gains (1928). Weekly milk samples were collected and composite samples were analysed for fat, protein, and SNF by complete Milk Analyser (FOSS MilkScanTM Minor). The data collected from the entire experiment were subjected to statistical analysis by as per the standard method of Snedecor and Cochran (1994).

### **RESULTS AND DISCUSSION**

The weekly average daily milk yield and milk composition of experimental animals are presented in Table 1. The average daily milk yield of experimental animals was observed as  $19.71\pm0.03$ ,  $19.66\pm0.05$ ,  $16.73\pm0.04$  kg of per HF cow in T<sub>0</sub>, T<sub>1</sub> and T<sub>2</sub> group, respectively. The T<sub>0</sub> and T<sub>1</sub> group's milk yield was statistically similar, but T<sub>2</sub> showed significantly lowered milk production among the experimental group. The decreased production of milk in treatment groups T<sub>2</sub> with 75% of replacement might be due to low energy in

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Details of milk yield, milk composition of experimental HF crossbred Cows			
Parameters	T <sub>0</sub> (Concentrate mixture + Maize Silage + jowar kadbi)	$T_1$ (Concentrate mixture + 50% Maize Silage + 50% sugarcane top silage + jowar kadbi)	$T_2$ (Concentrate mixture + 25% Maize Silage + 75% sugarcane top silage + jowar kadbi)
Milk Yield (kg)	19.71±0.03ª	19.66±0.05ª	16.73±0.04 <sup>b</sup>
Fat corrected milk(kg)	$20.30{\pm}0.98^{a}$	20.10±0.13ª	$16.85 \pm 0.07^{\text{b}}$
Milk Protein (%)	3.21±0.04	3.20±0.04	3.12±0.02
Solid Not Fat (%)	8.27±0.02	8.47±0.04	8.27±0.02
Milk Fat (%)	4.18±0.03	$4.14{\pm}0.04$	$4.05 \pm 0.02$

 Table 1

 Details of milk yield, milk composition of experimental HF crossbred Cows

<sup>a, b</sup>means with different superscripts in a row differ significantly (P<0.05)

sugarcane top compare to maize fodder. The present study is in agreement with Naseeven (1988), Suksombat and Junpanichcharoen (2005), Alemzadeh and Noroozy (2006); Noroozy and Alemzadeh (2006) and Karbhari *et al.* (2007). The average fat corrected milk yield (FCM) for  $T_0$ ,  $T_1$  and  $T_2$  groups were calculated as 20.30±0.98, 20.10±0.13, 16.85±0.07 kg, respectively and found that it was significantly different. Thus, experimental animals in group  $T_1$  with replacement of maize silage @ 50 % at this level indicated the non significant effect on FCM. Huhtanen *et al.* (2003) reported similar results. Karbhari *et al.* (2007) also observed similar findings and reported that the milk yield and daily fat corrected milk yield reduced only marginally in cows fed sugarcane top silage.

The milk protein, milk fat and SNF content did not differ significantly between treatment and control group (Table 1). The results of analysis of milk composition in present study with respect to the fat per cent, solid not fat (SNF), average milk protein values are in agreement with findings of Hanafy *et al.* (2000), Suksombat and Junpanichcharoen (2005) and Noroozy and Alemzadeh (2006).

Thus, the result of present study indicated that, replacement of green maize by sugarcane top silage in the diet of lactating HF crossbred cattle @ 50% had no significant effect on milk yield and did not show any adverse effect on milk parameters like milk fat, milk protein, and solid not fat.

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