

EFFECT OF REPLACEMENT OF MAIZE FODDER WITH MAIZE SILAGE ON DRY MATTER INTAKE, WEIGHT GAIN & FEED EFFICIENCY IN BUFFALO MALE CALVES

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ABSTRACT: The experiment was conducted to examine the replacement of maize fodder with maize silage on dry matter intake, weight gain and feed efficiency in male buffalo calves. Total of 18 no. of young male buffalo calves with body weight of 250 ± 20 kg and having age around 24 months were randomly distributed into three groups containing 6 in each group. A diet of 16% Crude Protein and 2.1 Mcal/kg energy was prepared and fed to calves at the rate of 1% of live body weight in all experimental groups. Apart from concentrate, 16 kg of maize fodder was offered to each calves of group A, 08 kg of maize fodder and 08 kg of maize silage to animals of group. Whereas 16kg of maize silage was individually given to buffalo calves of group C. The experiment was continued for 90 days followed by 10 days which were served for adjustment period. The group A, B and C had dry matter intake (DMI) of 4.82, 4.83 and 4.27 kg respectively. They posed a significant difference ($P < 0.0001$) among three groups. Whereas the difference was non significant difference ($P = 0.39$) in terms of daily weight gain. The average daily growth rate was 0.90, 0.92 and 0.91 kg for groups A, B and C respectively. The feed efficiency (feed intake per unit gain) of group C was the lowest i.e. 5.18 followed by group B 5.54 and highest feed efficiency value was 6.13, observed in group A. The difference was significant ($P < 0.0001$) for feed efficiency

Key words: Buffalo calves, Crude protein, Total Mixed Ration.

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INTRODUCTION

Rumen development is the most important goal of calf rearing and especially replacement heifer (Kehoe *et al.* 2018). Many research showed benefits of addition of forage to preweaned calves (Khan *et al.* 2011). Feeding sufficient quantities of excellent forages is the basis of profitable milk and livestock production. Corn silage is becoming popular in livestock production around the world (Keady *et al.* 2008, Burken 2014). Silage making is a well established fodder conservation technique. Corn and sorghum are common silage crops. It can also be made from leguminous crops like lucerne, berseem and oats are sown as Rabi or winter crops.

Silage is a fermented fodder, made by packing up harvested and chopped green fodder in silo under anaerobic conditions (Ensminger *et al.*, 1990). The green fodder is harvested at early bloom stage and preserved for feeding animals during scarcity of green fodder. (Ensminger *et al.*, 1990).

Silage makes it possible to increase the livestock carrying capacity of the farm or ranch. It makes it possible to remove the forage crops from the land earlier. It is cheapest form of good succular winter feed. Silage is comparatively very palatable and slightly laxative feed. It

is less dependent on weather. (Ensminger *et al.*, 1990). Corn silage is higher in nutrient value than corn stalk silage (He *et al.* 2018). Different ensiling procedures also contribute to variations in silage quality (McDonald *et al.* 1991). A variation in fermentation quality of silage affects the voluntary intake of cattle (Huhtanen *et al.*, 2008). Silage making can be adopted by progressive farmers and on public sector livestock and dairy farms. The objective of the study was to see effect of feeding corn silage on weight gain of buffalo male calves. (15-18 month)

MATERIALS AND METHODS

Eighteen buffaloes male calves (24 months of age) and uniform weight (250 ± 20 kg) were randomly assigned to three experimental treatments. The animals of group A acted as control group and were offered 16kg of green fodder (without silage), the animals of group B were offered 8 kg silage /calf/day plus 8 kg green fodder while group C were given 16kg silage/calf/day during the experimental period of 90 days. All the calves were fed concentrate mixture @ 1% of body weight. Fresh and clean water was provided twice a day. The calves were weighed at the start of the experiment and fortnightly

thereafter. Daily feed offered, feed refusal and feed intake were recorded.

Sample collection and chemical analyses: The samples of experimental diets and refusals were dried at 55 C in a forced air oven and then ground to 2 mm particle size through a Wiley mill. These samples were analyzed for DM, N content and ash by the methods of AOAC (1990), neutral detergent fiber (NDF), acid detergent fiber (ADF)

and acid detergent lignin (ADL) by the methods described by Van Soest *et al.* (1991).

Statistical analysis: The experiment data collected for each parameter (Dry matter intake, weight gain and feed efficiency) was analyzed according to Randomized Complete Design. The Duncan's Multiple Range test was applied in case of significant ($p < 0.05$) difference (Steel *et al.*, 1997).

Table 1. Composition of concentrate mixture.

Ingredients	Percentage
Corn (ground)	10
Cotton seed cake	25
Corn gluten meal 30%	25
Wheat bran	25
Molasses	13
DCP	1
Common salt	1
Total	100
CP%	14
ME M.cal/kg	2.1

RESULTS

Dry Matter Intake: The DMI of groups A, B and C was 4.82, 4.83 and 4.27 kg respectively. The difference was highly significant ($P < 0.0001$).

Weight gain: Overall average daily weight gain was 0.90, 0.92 and 0.91kg in the animals of group A, B, & C respectively. The highest weight gain was achieved in the animals of group –B fed on 50% silage and 50% green

fodder combination. However the difference was non significant ($P = 0.39$) statistically in all groups of the trial.

Feed efficiency: The feed efficiency (feed intake per unit gain) of group C was the lowest i.e. 5.18 followed by group B 5.54 and highest feed efficiency value were 6.13, observed in group A. A significant difference ($P < 0.0001$) was posed for feed efficiency.

The results of the study are summarized in table -2.

Parameters	Group A	Group B	Group C	P. Value
DMI (Kg)	4.82 ^a ±0.68	4.83 ^a ±0.68	4.27 ^b ±1.26	0.0001
Feed intake	5.34 ^a ±0.75	5.34 ^a ±0.75	4.70 ^b ±1.41	0.0001
Fodder/silage intake	8.72 ^a ±0.96	8.72 ^a ±0.96	13.68 ^b ±3.00	0.0001
Weight gain(Kg)	0.90±0.24	0.92±0.26	0.91±0.24	0.39
Feed Efficiency	6.13 ^a ±3.34	5.54 ^b ±1.48	5.18 ^c ±2.10	0.05

Values are mean ± standard deviation. Values within rows with varying superscripts differ significantly

DISCUSSION

Dry Matter Intake: Present study is in contradiction with Di Costanzo *et al.* 1997, Kehoe *et al.* 2019 and He *et al.* 2018. In this experiment a significant difference ($P < 0.0001$) was observed among various treatments regarding dry matter intake. The dry matter intake was higher in group B in which both silage and fodder was offered to buffalo calves. The difference in our study and above mentioned studies was due to species difference as

former studies were conducted in cattle calves whereas this study was carried out in buffalo calves .

Weight gain: Our study is in line with Di Costanzo *et al.* 1997, He *et al.* 2018 and Kehoe *et al.* 2019. No significant difference ($P > 0.05$) was noted for this experiment and above mentioned experiment. The average daily weight gain of the calves in different dietary treatments whether exclusively corn silage was given to calves or was mixed with corn fodder posed non significant difference ($P > 0.05$)

Feed efficiency: Our study is in contradiction with Di Costanzo et.al 1997, He *et al.* 2018 and Kehoe *et al.* 2019. In this study a significant difference ($P < 0.05$) was observed among various groups regarding feed efficiency. Feed efficiency was better (5.18) in group C in which both silage and fodder was offered to buffalo calves. The difference in our study and above mentioned studies was due to species difference as former studies were conducted in cattle calves whereas this study was carried out in buffalo calves.

Conclusion: It is proved from this study that animals performed better in terms of feed intake, weight gain and feed conversion ratio in the animals of group –B which were fed on 50% silage plus and 50% green fodder combination.

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