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Effect of untreated, calcium, sodium bicarbonate and urea treated soybean straw on feed intake and dry matter intake of lactating cows

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Abstract

In present investigation 20 lactating cows were distributed into four treatment T₁, T₂, T₃, and T₄, with 5 cows in each groups. Treatment consist of T₁- untreated SBS, T₂-2% calcium treated SBS, T₃-2% sodium bicarbonate and T₄- urea treated SBS. The average weekly dry feed intake in T₁- 5.35, T₂-5.88, T₃-5.65 and 7.19 Kg. Average weekly total feed intake in T₁-12.35, T₂-12.88, T₃-12.62 and T₄-13.19 Kg. The average weekly dry matter intake were recorded as 7.82, 8.40, 8.21 and 8.66 Kg T₁, T₂, T₃, and T₄. Similarly, dry matter intake per 100 Kg body weight of cow were 2.59, 2.75, 2.76 and 2.86 Kg, respectively in T₁, T₂, T₃, and T₄ treatments groups.

Keywords: Dry matter, SBS, urea, sodium bicarbonate, calcium

Introduction

Animal Husbandry is next only to crop husbandry in importance and plays a vital role in providing subsidiary income to vast majority of the rural population. Soybean is equally important as fodder as well as oil seed crop. In India soybean considered as one of the best crop. Its green yield is however, slightly less than other kharif pulses. Soybean straw offers an alternative to conventional straw like Jowar, Bajara, Maize and Wheat etc. During couple of years it is noticed that the area under soybean crop has shown a growth of 15% in Maharashtra, giving a setback to cereals, pulses and oil seeds crops. But one can expect soybean by-products in large quantity for animal feeding. Soybean meal is being used as a major protein supplying source in livestock feed which is reported to improve animal weight and milk yield. Therefore, soybean meal importance in International Market has increased over the years. Besides this, green soybean and crop residues as soybean straw has been successfully used in animal feeding.

Methodology

Selection of Experimental Cows

Twenty early to mid-lactation stage lactating cows were selected from the herd on the nearness in stage of lactation, milk production and body weight. The selected cows were divided in the four groups on the basis of nearness in different productive characters. The differences between parameters were found non-significant, indicating formation of homogenous group.

Feeding Treatments

T₁ = untreated soybean straw + green fodder 5 kg + 2 kg concentrate

T₂ = 2% calcium treated soybean straw + green fodder 5 kg + 2kg concentrate

T₃ = 2% sodium bicarbonate treated soybean straw + green fodder 5 kg + 2 Kg concentrate

T₄ = 2% urea treated soybean straw + green fodder 5 kg + 1 kg concentrate

Result and Discussion

Average weekly dry feed intake (Kg/day/cow) over experimental period on different treatments

In average weekly dry feed intake over the experimental period of 17 weeks it was observed that there was a significant difference in straw intake between treatments. The overall average daily straw intake was 6.01 Kg/cow. From all the treatments, the cow from 2% urea treated

SBS group (T₄) consumed significantly more straw (7.19 Kg/cow) followed by T₂, 2% calcium treated SBS (5.88 Kg/cow), T₃ 2% sodium bicarbonate treated SBS (5.62 Kg/cow) over that of untreated SBS (T₁) i.e (5.35 Kg/cow). The rate of increase in straw consumption in T₄ was more by 34.39, 22.27 and 27.93 per cent than that of straw intake in T₁, T₂, T₃, groups, respectively. These trends therefore indicate clearly that treatment to the SBS either with urea or alkali proved beneficial and effective for increasing acceptability and palatability of fibrous hard textured SBS in cows. Puriand Gupta (2001) [6], Kahate (2012) [5], Shelke (2013) [7]. also noticed that increase in acceptability of feed intake on 2% urea treatment to SBS. These observation are supportive to present results.

Average weekly total feed intake (TFI) (Kg/day/cow) over experimental period on different treatments

It was observed that TFI was differing significantly between feeding treatments. The cows reared on T₄-2% urea treated SBS diet consumed more TFI (13.19 Kg/day/cow) followed by T₂- 2% calcium treated SBS (12.88 Kg/day/cow) T₃-2% sodium bicarbonate treated SBS (12.62 Kg/day/cow) and T₁-untreated SBS (12.35 Kg/day/cow). Cows fed on 2% urea treated soybean straw consumed more feed by about 6.80, 2.40 and 4.51 per cent as compared to T₁, T₂, T₃, respectively. However, in spite of being less concentrates feeding in T₄ accounts more total feed intake than T₁, T₂, T₃ groups. More intake dry feed in T₄ might be the reason behind the increased total feed intake. On the other hand cow relished more urea enriched SBS in quantity so that the reduced amount of concentrates could get compensated.

Similarly Chaturvedi *et al.* (1973) [1], Gawai (1995) [3], Janorkar (1995) [4] Kahate (2012) [5]. And Shelke (2013) [7]. Also reported an increase in total feed intake when cow were fed with the alkali treated wheat straw and SBS. This observation supports the present trend.

Average weekly dry matter intake (DMI) (Kg/day/cow) over experimental period on different treatments

With reference to DMI revealed that DMI in cows was influenced significantly by feeding treatments. The cows from T₄ -2% urea treated SBS group received significantly more DM over that of untreated SBS group i.e. T₁. The average dry matter intake was 7.82, 8.40, 8.21 and 8.66 in T₁, T₂, T₃, and T₄ groups respectively. This trend indicate that DMI in cow fed with 2% urea treated SBS received more DM by 10.74, 3.09 and 5.48 per cent as compared to T₁, T₂ and T₃ groups, respectively. However enrichment of SBS with 2% calcium, sodium bicarbonate and urea resulted in improving significantly DMI in cows. This means treatments of SBS was beneficial to improve the acceptability of straw and thereby the DM intake in cows. In this reference Chopade *et al.* (2010) [2]. And Kahate (2012) [5]. indicated higher DMI by 3.23, 4.14 and 3.25% in kid, CB calves, respectively.

Average weekly dry matter intake (DMI) (100 Kg BW/cow/day) over experimental period on different treatments

It was noted that the average DMI/100 Kg BW was 2.59, 2.75, 2.76 and 2.86 Kg in T₁, T₂, T₃, and T₄ groups respectively. However the cows from T₄ groups receive more DMI/100Kg BW by 10.42, 4.00 and 3.62 in comparison with T₁, T₂, and T₃ groups, respectively. Moreover, per cent on feeding urea treated SBS was significantly more by 10.42% over that of untreated SBS group. This means enrichment of

SBS with 2% urea was advantageous to increase the DMI per unit body size. Janorkar (1995) [4], Kahate (2012) [5]. And Shelke (2013) [7]. reported in large ruminants in the range of 2.57 to 2.73 Kg/100 Kg BW by feeding untreated SBS which is nearer to present value.

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