NUTRITIVE VALUE OF UREA TREATED SORGHUM STOVER

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CERTIFICATE

This is to certify that the thesis entitled "NUTRITIVE VALUE OF UREA TREATED SORGHUM STOVER" submitted in partial fulfilment of the requirements for the degree of MASTER OF VETERINARY SCIENCE in ANIMAL NUTRITION to the TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY, MADRAS is a record of bonafide research work carried out by Thiru A. NATARAJAN under my supervision and guidance and that no part of this thesis has been submitted for the award of any other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

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ABSTRACT

Title: NUTRITIVE VALUE OF UREA TREATED SORGHUM STOVER

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Sorghum stover (sorghum vulgare) was treated with 4, 5 and 6 per cent urea each at 40, 50, and 60 per cent moisture and stored for 14 or 28 days. The mean crude protein (CP) increased from 3.9 to 15.2 and 14.1 percent immediately at the end of 14 and 28 day storage periods respectively. The CP content increased with increase in urea level but decreased as moisture level increased.

The mean CP content of dried samples was maximum in 14 day stored samples (11.8%) than 28 day stored samples (10.8%). A maximum CP content of 14.3 per cent was observed in stover treated with 6 per cent urea and 40 per cent moisture combination.

Urea treatment increased in sacco degradability of dry matter (DMD), crude fibre (CFD) and crude protein (CPD) at all combinations.

After 72 h of incubation, irrespective of moisture levels, 4 per cent urea treatment resulted in higher DMD (64.19%) in 28 day stored samples while no
difference in DMD values was observed between urea levels in 14 day stored samples. A higher mean DMD value of 64.98% was observed at 40 per cent moisture level in 14 day stored samples irrespective of urea levels. The storage period did not influence the DMD, irrespective of urea and moisture levels (62.99 and 62.74% in 14 and 28 day stored samples respectively).

The mean CFDs, after 72 h of incubation, were 69.7 and 69.6 percentage units for 14 and 28 day stored samples respectively, irrespective of level of urea and moisture.

The CPD of 14 day stored samples showed an increase of 4 per cent units over the 28 day stored samples at the end of 72 h incubation. Irrespective of moisture levels and storage periods, 5 per cent urea treatment in 14 day stored (82.4%) and 4 per cent urea treatment in 28 day stored (78.6%) samples showed higher CFD.

The potential degradability and effective degradabilities of dry matter (EDDM), crude fibre (EDCF) and crude protein (EDCP) were increased due to urea treatment and were maximum in 14 day stored samples than 28 day stored samples. In 14 day stored samples, the mean EDDM was higher in 4 per cent urea treated samples (33.73%). The mean EDDM was maximum (34.31%) in 40 per cent moisture treated samples irrespective of urea levels. An increase in urea level increased EDCF but change in moisture level did not cause any effect. The mean EDCP was maximum in 5 per cent urea level irrespective of moisture levels and 60 per cent moisture level irrespective of urea levels.

Four per cent urea, 40 per cent moisture and 14 day storage period were optimum in improving the nutritive value of sorghum stover. Urea treatment
improved the voluntary DMI in Surti buffaloes by 19 per cent. There was also a significant increase in nutrient digestibility in these samples. The digestibility coefficient of DM, OM, CP, EE and CF were improved by 8.2, 6.1, 42.0, 4.9 and 6.2 percentage units respectively. The urea treated sorghum stover had a TDN value of 56.1 per cent and DCP of 11.2 per cent as against 50.6 and 1.7 per cent for untreated stover respectively.

Feeding urea treated sorghum stover in Murrah buffaloes improved the DMI and increased the daily milk yield from 5.5 to 5.96 kg/animal. The composition of milk was not influenced by feeding urea treated sorghum stover.

The cost of producing 1 kg of milk was less by 45 paise by including urea treated stover in the ration.

The cost of urea treatment worked out to Rs.0.13 p/kg sorghum stover.