

**RESEARCH ARTICLE :**

# Front line demonstration on effect of urea treatment of wheat straw prepared by farm women as complete feed on milk yield of lactating buffaloes of Mehsana district, Gujarat

■ S.M. SONI AND M.V. PATEL

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**SUMMARY :** Front line demonstration was conducted on 180 lactating buffaloes, were randomly divided into two groups on the basis of milk yield (7 to 8 kg/day) and day of calving less than 60 days to see the effect of feeding urea treated wheat straw on milk production for continuous three years (2012-2013, 2013-2014, 2014-2015). Buffaloes were fed concentrate, green and dry fodder and un treated wheat straw in control groups and concentrate, green and dry fodder and urea treated wheat straw was given in treatment group. Experimental feeding was continued upto 90 days. The average milk production was significantly higher in treatment group. It was concluded that animals fed with urea treated wheat straw significantly increase the milk production over the control group.

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**KEY WORDS:**

Buffalo, Milk  
production, Urea  
treated wheat straw

**BACKGROUND AND OBJECTIVES**

Fibrous crop residues (FCR) play an important role in the supply of large ruminant feeds. Wheat straws are low density feeds consist of mainly lignified cellulose and hemicelluloses and have been traditionally used as a main feed ingredients of ruminant's diet in India. Due to high lignifications these crop residues are less palatable, less digestible and low in nutritive value. Since feeding these low protein roughages on their own results in considerable production losses, much effort

has been directed to up grading them through treatment with either urea or ammonia solutions (Delberg, 1992). Untreated straws having 3 to 4 per cent crude protein initially could be improved to have potential crude protein levels of 7 to 9 per cent after treatment, which is normally considered the minimum necessary in the diet for adequate intake, digestive activity of micro-organisms and maintenance of live weight (Chriyaa *et al.*, 1997). Though use of a cheap source of nitrogen such as urea to improve the nitrogen makes it a technically feasible method to

**Author for correspondence :****M.V. PATEL**

Krishi Vigyan Kendra,  
Ganpat Vidyagar,  
MEHSANA (GUJARAT)  
INDIA

Email: kvkmehsana@  
yahoo.co.in

See end of the article for  
authors' affiliations

improve the nutritive value of straw.

Urea treatment of straw is one of the technologies that has been tried in most of the tropical countries and found effective in improving nutrient content and feeding value of various types of straw. It has been reported that urea treatment increases digestibility, palatability and nutrient content of the straw (Dahiya *et al.*, 1992). Dhaubhadel and Tiwari (1991) have found that feeding urea treated straw to lactating buffaloes increased milk yield. Experiments were conducted to study the effect of feeding urea treated wheat straw on milk yield of lactating buffaloes under farmers condition in different villages of Mehsana district.

## RESOURCES AND METHODS

Experiment to study the effect of feeding urea treated wheat straw to lactating buffaloes was conducted continuous for three years (from 2012 to 2015) at different villages of Mehsana district. Total 90 lactating buffaloes of same age group were selected for treatment group. Other side 90 buffaloes of same age group selected as control group same as three years. These buffaloes were selected such that their milk yield was very close to each other.

Wheat straw were treated with 4 per cent urea (DM basis) dissolved in water and the solution was sprinkled over the straw in 1:1 ratio (w/v). Urea dissolved water was sprinkled uniformly over the straw and mixed thoroughly. The treated straw was then filled in a pit (depth – 1.5 m and diameter – 1 m) where polythene sheet was spread for ensiling and pressed manually by trampling. The pit was sealed by a polythene sheet, plastered with soil for making the pit air tight and ensiled for 3 weeks.

### Feeding of wheat straw :

Treated straw was taken out from the pit as per the daily requirements of the animals after three weeks of ensiling. Animals were fed with treated wheat straw after exposing the ensiled material for two hours to avoid the

inhalation of ammonia by the animals. Untreated wheat straw was fed immediately after taking out from the barn to control animals. All animals were given an initial adaptation period of ten days, and milk yield and feed intake was monitored for successive 21 days. Introduction of urea treated straw was gradual. All animals were also given concentrate, green and dry fodder as per the farmers practice. Water was made available twice daily. They were kept completely under stall feeding conditions. All other management practices were similar as far as possible to control and experimental buffaloes.

## OBSERVATIONS AND ANALYSIS

Table 1 shows the average milk production of lactating buffaloes fed with urea treated wheat straw increased by 10.3 per cent over animals fed untreated wheat straw. Increased milk yield due to urea treated straw feeding to lactating buffaloes has been reported by Doyle *et al.* (1986) and Dhaubhadel and Tiwari (1991) was closely in agreement with this results.

Urea treatment increases microbial protein synthetic activity (Garg, 1998) in the rumen making more microbial protein yield available in the lower gut for higher milk production. Increased milk yield might also be due to increased total DMI when urea treated straw was fed to the experimental animals. Besides, urea treatment might have changed the intrinsic properties of wheat straw for higher energy yields (Moss *et al.*, 1994) and reduced methane emission from it (Leng, 1991). This energy might have been utilized for increased milk production.

### Conclusion :

Farmers' perception and response to urea treatment wheat straw was also collected at the end of the experiment. In general all farmers liked the urea treatment technology because it improved milk production, animals like it and consumed more. Farmers believed that body condition was improved upon feeding of treated straw.

**Table 1 : Milk production performance in buffaloes**

Year	Particulars	Control	Treatment group	Significance
2012-13	Average milk yield per animal	7.07 ± 0.99	7.90 ± 0.95	< 0.01
2013-14	Average milk yield per animal	7.59 ± 0.88	8.21 ± 0.92	< 0.01
2014-15	Average milk yield per animal	7.71 ± 0.68	8.60 ± 0.59	< 0.01
Pooled of three years	Average milk yield per animal	7.47 ± 0.46	8.24 ± 0.42	< 0.01

Values in rows are significance at P<0.01

Persistency in the milk yield even after withdrawal of feeding urea treated straw was liked very much by the farmers. Since the experiments were conducted by the farmers themselves, its relevance to and adaptability by the farmers is relatively high. It can help in addressing the winter feed scarcity. Farmers' response to the overall technology was also very positive.

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Authors' affiliations :

S.M. SONI, Krishi Vigyan Kendra, Ganpat Vidyanagar, MEHSANA (GUJARAT) INDIA

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