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## Quality Improvement Of Silages Using Additives

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### Abstract:

In the present experiment the hybrid Napier foliage was chopped and used for silage making. It was treated with urea + molasses with treatment level 0%, 0.5% and 1.0 % on the basis of fresh weight of the material. Chemical composition of silages made from hybrid Napier foliages treated with urea and molasses table 1. indicated that the protein content in the control silages sample was 9.43 % which is increased to 11.25 % in the silage enriched with 0.5% urea+ molasses and 11.98 in 1% urea + molasses enriched silage. Urea supplementation as a cheap source of NPN is suggested to meet an animal protein requirement particularly during scarcity. Other nutrients did not show any changes.

**keywords:** silage, hybrid Napier grass, additive, urea, molasses

### Introduction:

Due to acute shortage of green fodder and quality feed, the majority of our cattle have to depend mainly on poor quality roughages. These roughages are deficient in both energy as well as protein. When Fed alone their consumption is less than 1% to 1.5 % of the body weight ,which is insufficient even to support maintenance requirement of the animals, Therefore it is imperative that at least the palatability of poor quality roughages be improved either through supplementation of small quantity of molasses alone as energy source or along with urea as source of nitrogen (MahaSingh et al,2001, Senger,2001, Das,2010, Venkateswarlu et al 2013). Practically molasses cannot be used as sole/ major feed but it has immense value when a small amount of it is used as an appetizer to induce stock to consume abundantly available unpalatable roughages. When forage CP falls below 6%, the intake is reduced which could be enriched by supplementation with protein or non-protein nitrogenous compounds like urea. When these poor-quality roughages are fed along with molasses and urea there is less residual straw resulting in less wastage of coarser parts. For this purpose, molasses (either alone or with urea is diluted with 1to2 parts of water and sprinkled over the roughages (Bhar and Pande 2001). Hence the present experiment was carried using additives like urea + molasses on foliages of hybrid Napier grass.

### Materials and Methods

For the present study the hybrid Napier foliages which are chopped and used for silage making. It was treated with urea + molasses with treatment level 0% 0. 5% and 1% on the basis of fresh weight of the material. For this purpose molasses (either alone or with urea) is diluted with one or two part of water and sprinkled over roughsges.The chopped material was placed in a plastic container (18.5 × 10cm) and pressed, making it compact and excluding air. The container was capped and sealed with wax. These containers or 'laboratory silos' were left at room temperature in the dark until used. After 45 days of ensiling the boxes were opened and physical characteristics i.e. colour, texture, odour etc. of resulting silages were examined. A sample of 40 gms, fresh silage was mixed with 40ml distilled water, placed on cotton cloth, pressed and the juice was collected in a beaker. The pH was measured using glass electrodes. To determine titratable acidity (TA), 5 gms of fresh silage was mixed in 75 ml distilled water; boiled for a few minutes, filter through cotton cloth, diluted to 100 ml and titrated against 0.1N NaOH using phenolphthalein indicator. Total volatile fatty acids

(TVFA) were estimated by steam distillation method as described by Chaudhory (1970). Buffering capacity (BC) was determined following Playne and McDonald (1966). Lactic acid was estimated using the method of barker and Summerson (1941) as described by Oser (1979). Another sample of silage was dried in an electric oven, at 95±5 degree centigrade till constant weight. The dry samples were ground to a fine powder and used for subsequent analysis.

Dry matter and moisture content in the sample were measured by considering loss in weight during drying. The measurement of water-soluble reducing sugar (WSRS) in terms of glucose was done using folin-Wu-tubes Oser (1979). The Nitrogen content was determined by microKjeldahl method and CP was expressed at N×6.25 (Bailey,1967). A. O. A. C. (1970) method was followed for the estimation of crude fat (Ether Extract), ash, acid insoluble ash (AIA), Nitrogen free extract (NFE), total carbohydrate (TC) and Calcium (Ca) along with crude fibres (CF) and phosphorus (P).

## Results and discussion

The hybrid Napier of foliages which are chopped in 2 to 3 pieces and treated with additives (urea + molasses) with different treatment levels (0% 0.5% and 1% on the basis of fresh weight of the material). The results are presented in a table 1 and 2

Chemical composition of silage is made from hybrid Napier foliages treated with urea and molasses (table 1) indicated that the protein contained in the control silage sample was 9.43 % which is increased to 11.25% in the silage enriched with 0.5% urea +molasses and 11.98% in 1% urea +molasses enriched silage. Urea supplementation, as a cheap source of NPN, is suggested to meet the animal protein requirement particularly during scarcity. Similar results were also reported by Singh and Pandita (1984); Chauhan (1985) and MahaSingh (2001) for hybrid Napier silage treated which urea +molasses. Other nutrients did not show any changes .

The concentration of total volatile fatty acid (TVFA) varied considerably (7.4 to 9.82). The pH in various silages were widely affected due to urea enrichment the lactic acid production decrease from 3.68% to 1.06 %. The reason for little lactic acid production may be e high urea content (Chauhan ,1985). Titratable acidity (TA) increased from 70.2 to 74.2. Buffering capacity (BC ) showed non-significant changes. Water soluble reducing sugar values ranges between 1.85 to 1.98. Moisture content decreased from 78.4 to 77%.

The overall results indicate that the use of additives improves the quality of roughages and it can preserve feed for a longer period (Bakshi and langer ,1992; Bhar and Pande, 2001). During storage of green fodder treated with chemical preservative natural nutrients and biological active substances are more fully retained than that in normal silage. (Thakur and Sharma ,1990).

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Table 01

Chemical compositions of silages made from chopped Hybrid Napier foliages pretreated with Urea + molasses.

Crop	Treatment level	Moisture (%)	Titratable acidity m.equiv/100gm DM	Buffering capacity m.equiv/100gm DM	pH	Lactic acid (% of DM)	Total volatile fatty acid TYFA M.m/100 gm	Water soluble reducing sugar (% of DM)
Hybrid Napier	0	78.4	70.2	54.8	4.65	3.68	7.40	1.85
	0.5	77.8	73.6	55.6	4.97	2.36	8.79	1.95
	1.0	77.0	74.2	54.9	5.88	1.06	9.82	1.98

Table 02

Nutrient content of silages made from chopped Hybrid Napier foliages pretreated with Urea +molasses.

Crop	Treatment level	% dry matter DM	% of dry matter (DM)								
			Crude protein (CP)	Crude Fibre (CF)	Ether Extract (EE)	Ash	ASA	NFE	TC	Ca	P
Hybrid Napier	0	21.6	9.43	30.30	1.90	12.80	11.20	45.5	75.8	0.63	0.32
	0.5	22.2	11.25	30.50	1.92	12.67	11.26	43.6	74.1	0.61	0.32
	1.0	23.0	11.98	30.57	1.94	12.72	11.29	41.8	73.4	0.62	0.30