QUALITY OF HAY MADE FROM GREEN FOLIAGES

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Manuscript Info

Manuscript History
Received: 10 June 2020
Final Accepted: 14 July 2020
Published: August 2020

Key words:-
Hay, Conservation, Hybrid Napier Grass, Cowpea

Abstract

Green fodders are considered to be the most important factor for the dairy industry as they play a key role in changing dairy farming into a profitable business. So, there is an urgent need for preservation of nutrients from green forages available during the peak period for feeding livestock during the lean period. Like silage, another way of preserving nutrients is to practice it in the form of hay. The principle of hay making is to preserve the nutritional value of forages by drying it to a level at which the activity of microbial decomposers is inhibited. The moisture content of 10-12% is the optimum level for halting the microbial activity (Balwinder Kumar et al. 2019). To mitigate the problem of animal feed shortage during the lean period, the conservation of forage appears to be the only alternative. Hybrid Napier grass (RBN 9) and Cowpea (EC 4216) resulted in good hay with 76.4% dry matter and 6.4% relative water content (RWC) and 91.8% dry matter and 1.5% relative water content (RWC) respectively when dried in Sun for 6 days.

Introduction:

India is an agriculture country with a large livestock population making dairy and livestock industry and an important subsidiary occupation of farmers. It boosts economy of the country by providing milk, meat, wool, etc. India has recently emerged as the largest producer of milk in the world though livestock productivity is very low as compared to the developed countries. The low productivity of the animals is chiefly due to an improper supply of nutrients. Poor supply of nutrients to livestock during the scarcity period is a matter of concern. Both quantitatively and qualitatively supply of feed nutrients which is further compounded during the lean and scarcity period (Singh and Mujumdar 1992; Kumar et al. 2014). Inadequate supply of quality fodder has been identified as one of the reasons for poor livestock productivity (Anjum et al 2012; Kumar et al 2016).

Forage conservation play important role for productive and efficient livestock farms. Forage conservation provides a good supply of quality feed when forage production is insufficient. Forage conservation also provides farmers with means of preserving forage when production is faster than can be adequately utilized by grazing animals. This prevents lush growth from becoming too mature. Consequently, forage conservation provides continuous high-quality forage for livestock throughout the year. The present communication deals with the hay prepared from Green foliage of hybrid Napier grass and Cowpea.

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Materials and Method:-
Green fodder of Hybrid Napier grass (Pennisetum purpureum Schum cultivar RBN-9) and Cowpea (Vigna anguiculata L walp cultivar EC-4216) was used for hay making. The crop was harvested early in the morning at the pre-flowering stage and batches of 1.5kg green forages where dried in different conditions that are in an oven, under the sun or in shade with or without cover with or without turnings.

The batches of green foliage were kept for drying under given conditions in the sun;the weight of the individual batches was recorded at the same time on a subsequent Day till constant weight.

The dry matter content in the foliage was a calculator with the figures obtained for oven-dried samples. To assess water loss from the sample relative water content (RWC) was calculated as described by Harris and Thaine (1975) using the following equation-

\[ RWC(\%) = \frac{Wt - Wd}{Ws - Wd} \times 100 \]

There Wt is the sample weight at time t, Ws is the saturation or initial weight and Wd is dry Weight.

Results and Discussion:-
The crops selected for this investigation resulted in good hay after drying. Based on colour, it was observed that when the sample was dried in an oven, it gives off its green colour resulting in pale green to grey hay. The sample, which was covered with polythene paper, resulted in a bad product with yellow colour and undesirable odour. This was probably due to the fomentation process which took place under an anaerobic condition created by polythene. The pH of the polythene sample was 4.1 indicating acid fermentation. The paper cover was better than the polythene cover as the sample could retain its colour; however, the rate of drying was poor. The sample, which was dried in shade resulted in green hay particularly when frequent turnover was given the fodder dried in sun made hay in less time but the resulting hay was not as green as that resulted from shade drying.

Table 1 gives an account of the drying rate of fodder species selected for hay making under different conditions. The table gives information on the decrease in weight and relative water content of the fodders under oven, sun, and shade drying. The table also provides information on % dry matter of resulting hay. Green fodder of RBN-9 variety of Hybrid Napier grass and EC-4216 variety of Cowpea resulted in good hay with 76.4% dry matter and 6.4% relative water content (RWC) and 91.8% dry matter and 1.5% relative water content (RWC) respectively when dried in sun for 6 days.

Statistical study shows that there was a maximum average decrease in weight in Hybrid Napier grass (835gm) than in Cowpea (712gm). However, the variation in a decrease in weight was more in Cowpea than in Hybrid Napier grass as indicated by the value of the coefficient of variation (CV).

<table>
<thead>
<tr>
<th>Crop and Cultivar</th>
<th>Dry ing period (days)</th>
<th>Oven (60°C)</th>
<th>Sun Drying</th>
<th>Turnover</th>
<th>Shade Drying</th>
<th>Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid Napier grass (RBN-9)</td>
<td>Weight (g)</td>
<td>RW C (%)</td>
<td>Weight (g)</td>
<td>RW C (%)</td>
<td>Weight (g)</td>
<td>RW C (%)</td>
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<tr>
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<td>100</td>
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<td>100</td>
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<td>62.9</td>
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<td>0</td>
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<td>34.7</td>
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<td>27.4</td>
<td>585</td>
<td>26.2</td>
<td>625</td>
<td>29.3</td>
</tr>
</tbody>
</table>
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2. Balwinder Kumar, Navjot Singh Brar, H. K. Verma, Anil Kumar, and Rajbir Singh 2019: Nutritious feed for farm animals during the lean period; Silage and hay, A review, Forage res. 45(1):10-22.


