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RESEARCH ARTICLE

CONSERVATION OF GREEN FODDER WITH THE GREEN FOLIAGES OF MAIZE AND BARSEEM

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ABSTRACT

In view of the demand for fodder in the bulk, great importance is being laid on the involvement of high yielding, short duration and nutritive varieties of fodder crops as a result there is a glut of fodder during the peak periods of growth and scarcity during other periods, particularly in summer. The most practical solution of such fodder scarcity lies in conserving supplies of green fodder available during the favourable season to use during the scarcity period (Sohane and Chaudhary, 2001; BalwinderKumar et al 2019). Maize and Berseem resulted in good hay with 76.9 % dry matter and 6% relative water content (RWC) and 91.6% dry matter and 1.5% relative water content respectively when dried in Sun for 6 days.

INTRODUCTION

Hay is the conversion of green fodder into dry form without affecting the quality of the original material. While making hay some precautions are necessary to prevent losses of nutrients from the material. Morisson (1956) Patel et al (1966,1968) Chatterjee and Maiti (1981) and Patil andmungikar (1993). Have described proper methods of drying fodder to minimize nutrient losses, which includes the choice of right crop harvesting the crop at proper growth stage making hay in sunshine cooking with the use of tripod stand and Fencing. The objective behind making hay and silage is to preserve forage resources for the dry season or winter to ensure continuous regular feed for livestock either to sustain growth fattening or milk production or to continue production in difficult periods when market prices are highest. Hay making is easy and every farmer can easily adapt the technique. The only thing to keep in mind is the proper time of cutting, stages of cutting, and the size of chaff fodder. The present study deals with the hay prepared from the Green foliage of Maize and Berseem.

MATERIALS AND METHODS

Green fodder of Maize (*Zea mays* L cultivar African tall) and Berseem (*Trifoliumalexandrinum* L cultivar wardan) was used for hay making.

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The crop was harvested early in the morning at pre-flowering stage and batches of 1.5kg green foliage were 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 bad products with yellow colour and undesirable odour. This was probably due to the fermentation process which took place under an anaerobic condition created by polythene.

Table 1. Drying rates of Maize (African Tall) and Barseem (Vardan) under various conditions Duration from 17th February 2018 to 23rd February 2018

Crop and Cultiver	Drying period (days)	Method of drying										
		Oven (60 C)		Sun Drying		Turnover		Shade Drying		Turnover		
		Weight(g)	RWC (%)	Weight(g)	RWC (%)	Weight(g)	RWC (%)	Weight(g)	RWC (%)	Weight(g)	RWC (%)	
Maize (African tall)	0	1500	100	1500	100	1500	100	1500	100	1500	100	
	1	590	27.2	1020	61.6	990	56.2	1040	63.2	1100	63	
	2	270	1.6	800	44	780	42.4	820	45.6	840	47.2	
	3	250	0	690	35.2	645	31.6	700	36.0	730	38.4	
	4			570	25.6	580	26.4	610	28.8	630	30.4	
	5			440	15.2	485	18.8	520	21.6	540	23.2	
	6			325	6.0	350	8.0	415	13.2	470	17.6	
		% DM of hay	100		76.9		71.4		60.2		53.1	
		Mean	652		763		760		800		830	
		SD	507		348		325		342		372	
		CV (%)	77.3		45.6		42.7		42.7		44.8	
Berseem (Vardan)	0	1500	100	1500	100	1500	100	1500	100	1500	100	
	1	620	31.2	900	53.1	930	55.4	950	57	1080	67.1	
	2	240	17.1	690	36.7	710	38.2	690	36.7	740	40.6	
	3	220	0	510	22.6	580	28.1	495	21.4	550	35.7	
	4			360	10.9	440	17.1	400	14.06	450	17.9	
	5			300	6.2	360	10.9	340	9.3	380	12.5	
	6			240	1.5	290	5.4	310	7.0	340	9.3	
		% DM of hay	100		91.6		75.8		70.9		64.7	
		Mean	645		642		687		669		720	
		SD	518		410		388		398		389	
	CV (%)	80		63		56		59		54		

The pH of the polythene sample was 4.1 indicating acid fermentation. The paper cover was then 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 percent dry matter of resulting hay. Green fodder of African tall variety of Maize and warden variety of Barseem resulted in good hay with 76.9% dry matter and 6% relative water content (RWC) and 91.6% dry matter and 1.5% relative water content (RWC) respectively when dried in sun for 6 days. Statistical studies show that there was a maximum average decrease in weight in Maize (830gm) than in Berseem (720gm).

However, the variation in a decrease in weight was more in Berseem than in Maize as indicated by the value of the coefficient of variation (CV).

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