

DRY MATTER YIELD AND NUTRITIVE VALUE OF COAST-CROSS N° 1 PRESERVED AS HAY, SILAGE AND HAYLAGE

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SUMMARY

Dry matter yield and nutritive value of coast-cross n° 1 (*Cynodon dactylon* (L.) Pers) preserved as hay, silage and haylage were studied. The forage was harvested after 28, 35, 42 and 49 days of growth. Fertilization was completed with 400 kg/ha single superphosphate and 500 kg/ha 20-0-20 at the beginning of the experiment. The experimental design for dry matter yield (2 x 2 m plots) was a randomized block with four replications. Nutritive value was also analyzed in a randomized block design being the treatments arranged in a 3 x 4 factorial (three preservation methods and four ages). Dry matter yield increased linearly ($P < 0,05$) with age, whilst crude protein content had an opposite effect. Dry matter content was not affected by age ($P > 0,05$). Nutritive value of haylage was greater than those observed for hay and silage.

KEYWORDS

Ages, nutritive value, hay, haylage and silage

INTRODUCTION

Coast-cross has been widely used for production of hay, silage and haylage. Data comparing preservation characteristics of different forages are not consistent (Lancaster and Rattary, 1977 e Wilkinson, 1983). There is, however, a slight advantage on ad libitum intake of hay when comparing to either silage or haylage.

DM content of the original forage is highly correlated with the quality of the silage and its ad libitum intake (Andrade, 1995). According to Ojeda (1988), DM content of silage made from tropical grasses is the most important factor affecting intake.

As a result of that, one would expect that wilting improves silage fermentation of low DM content grasses (Lavezzo et al., 1984).

The aim of the study was to assess DM yield and nutritive value of coast-cross (*Cynodon dactylon* (L.) Pers) preserved as hay, silage and haylage at different ages of growth (28, 35, 42 and 49 days).

MATERIALS AND METHODS

Experiment 1 - Dry matter yield and forage quality after 28, 35, 42 and 49 days growth, in a 3 years old stand of coast cross n° 1, were studied in 2 x 2 m plots. A 1 m² area was used for sampling within each plot. A randomized block design with four replicates per treatment was used.

Plots were fertilized at the beginning of the experiment with 400 kg/ha single superphosphate and 500 kg/ha 20-0-20.

Experiment 2 - Nutritive value of hay, silage and haylage from coast-cross harvested after 28, 35, 42 and 49 days of growth was assessed in digestibility trials with sheep, using the first ten days for adaptation, the following ten days for voluntary intake determination and the last seven days for faeces collection. The treatments were arranged in a 3 x 4 factorial design experiment with three replicates/treatment. Silage and haylage were preserved in 200 l plastic barrels. Haylage was prepared by cutting the grass and leaving it wilting under sunlight for 3 hours. For haylage and silage preparing the grass was chopped in 10 cm pieces.

RESULTS AND DISCUSSION

Dry matter yield - DM yield of coast-cross increased linearly with age, $Y = 0.2815 + 0.03224 X$, ($P < 0,05$) and $R^2 = 0.8697$. Where $Y = t$ of DM/ha and $X =$ days of regrowth. Coast-cross yield per day was 32.2 kg/ha. Such a low production can be explained by the high amount of rain in a short period, which may have leached both N and K previously added as fertilizer. Also, the limited radiation (48%) may have had a negative effect on coast-cross production.

Protein content was negatively affected by age, $Y = 16.8562 - 0.1039 X$, ($P < 0,05$) and $R^2 = 0.9634$, varying from 11.73 to 13.79%. Where $Y = CP\%$ and $X =$ days of regrowth. DM content was not affected ($P > 0,05$) by age (avg. = 23.44%).

Such a DM content is considerably greater than that observed for Elephant grass (13%) when harvested after 62 days of growth (Andrade, 1995).

Nutritive value of hay, silage and haylage - DM of coast-cross silage and haylage harvested after 28, 35, 42 and 49 days of growth were as following: 30.83, 27.86, 31.70 and 35.70% and 49.81, 48.15, 50.85 and 51.15%, respectively.

DM intake and total digestible nutrients (TDN) of haylage were significantly greater than those of silage and hay (Table 1).

There was no significant difference when CP and NDF digestibility were compared. Similar results regarding the superiority of haylage over hay and silage were observed by Wilkinson (1983).

Although Lancaster and Rattary (1977) and Wilkinson (1983) did not find significant differences between preservation methods, data from the present study suggested that wilting does have a positive effect when tropical grasses are preserved. The lower CP digestibility of silage when compared to haylage can be explained by an overheating during silage fermentation (Goering et al., 1972). The greater DM intake observed for haylage can be explained by the effect of DM content "per se" (Ojeda, 1988).

As shown in Table 2 regardless of the preservation method used, nutritive value was always negatively affected by age of growth.

CONCLUSION

Data from this study suggest that haylage is the best preservation method for coast-cross and that forage should be harvested within 28-35 days of age.

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Table 1
Effect of preservation method on nutritive value of coast-cross.

	SILAGE	HAYLAGE	HAY
Organic matter digest.	62.34 ^{ab}	65.23 ^a	61.98 ^b
Crude protein digest.	66.94 ^b	71.39 ^a	70.61 ^{ab}
NDF digest.	61.02 ^b	65.10 ^{ab}	67.35 ^a
TDN	64.64 ^b	75.73 ^a	68.51 ^b
D.M. intake (% BW)	2.26 ^b	2.54 ^a	2.14 ^b

Means on the same line with different superscripts differ significantly (P < 0.05).

Table 2
Effect of age on nutritive value of coast-cross preserved as hay, silage and haylage.

	HARVEST (DAYS)				REGRESSION	R ²
	28	35	42	49		
Organic matter digest	66.41	63.27	61.75	61.30	Y = 72.4617 - 0.2410 X	0.8862
Crude protein digest	74.47	69.25	67.91	66.95	Y = 82.7966 - 0.3416 X	0.8478
NDF digest	69.98	65.16	61.20	61.62	Y = 80.4550 - 0.4146 X	0.8493
D.M. intake (% BW)	2.58	2.39	2.21	2.09	Y = 71.6436 - 0.5232 X	0.9907