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The XXI International Grassland Congress / VIII International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Presenter Information

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Protein and carbohydrate fractions in sorghum silage with addition of urea and two storage periods

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Key words: nutritious, fiber carbohydrate, nitrogen, Cornell, *Sorghum bicolor*

Introduction Urea additions can increase the nutritional value of silage because it can alter the nitrogen and carbohydrates ratio. However interactions between amount of urea and duration of treatment period can also affect silage composition (Garcia & Pires, 1998). This experiment was conducted to evaluate urea addition to sorghum during ensiling on nitrogen and carbohydrate fractions after two storage periods.

Materials and methods The principal parameters were urea dose (0; 2.5; 5.0; 7.5 % in dry matter, DM) and ensiling periods (30 and 60 days), using a 4 x 2 factorial design with four replicates for each treatment. Silage was made in PVC silos (50 cm high and 10 cm diameter) and need more info of the composition of sorghum and its preparation for ensiling. After 30 or 60 days, NIR analysis determined the crude protein (CP) and fractions of soluble nitrogen (A), borate phosphate true protein (B1 and B2), potentially degradable protein (B3), acid detergent insoluble protein (C) as well as total carbohydrates (CT), non-fiber carbohydrates (A+B1), fiber available fraction (B2) and C fraction of CT.

Results Just upon C fraction of CT (Table 1), there was interaction between urea doses and storage period. Urea dose rates had a positive linear effect on CP content and its A fraction and negative linear effects on B1+B2, B3 and C fractions, without effect of ensiling time. In relation to the carbohydrate fractions, urea doses had negative linear effect upon total CT (Sniffen et al., 1992) and A+B1 fractions and a positive linear effect upon the B2 fraction. Ensiling time did what to the A+B1 fraction?

Table 1 Regression equations, coefficient of variation (CV) and coefficient of determination (r^2) for nitrogen and carbohydrates fractions in relation to urea doses (D; UNITS) in sorghum ensilage after 30 (C/P30) and 60 days (C/P60).

Item	Equation	CV (%)	r^2
CP	$\tilde{Y}=7.86976+3.18884 * D$	6.52	0.99
A ¹	$\tilde{Y}=62.3239+3.839356 * D$	2.62	0.87
B1+B2 ¹	$\tilde{Y}=20.4456 - 2.102948 * D$	12.99	0.85
B3 ¹	$\tilde{Y}=8.20895 - 0.642696 * D$	21.29	0.95
C ¹	$\tilde{Y}=10.4808 - 1.162152 * D$	14.00	0.90
CT	$\tilde{Y}=84.6171 - 3.049968 * D$	1.23	0.99
A+B1 ²	$\tilde{Y}=25.5050 - 2.702944 * D$	13.21	0.96
B2 ²	$\tilde{Y}=62.6041+2.469064 * D$	3.36	0.97
C/P30 ²	$\tilde{Y}=12.46$	9.41	-
C/P60 ²	$\tilde{Y}=11.6956+0.45424 * D$	11.23	0.86

¹%CP; ²%CT

Conclusion The urea addition in the sorghum ensilage reduce the undegradables nutrients fractions of the silages and increase availability of the A fraction of CP.

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