Bromatological Characteristics of Sugarcane Silages Inoculated with *Lactobacillus buchneri*

José C. Pinto
Universidade Federal de Lavras, Brazil

Carla Luiza da Silva Ávila
Universidade Federal de Lavras, Brazil

H. C. P. Figueiredo
Universidade Federal de Lavras, Brazil

A. R. Morais
Universidade Federal de Lavras, Brazil

Odilon G. Pereira
Universidade Federal de Viçosa, Brazil

See next page for additional authors

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

Presenter Information

José C. Pinto, Carla Luiza da Silva Ávila, H. C. P. Figueiredo, A. R. Morais, Odilon G. Pereira, and R. F. Schwan

Bromatological characteristics of sugarcane silages inoculated with *Lactobacillus buchneri*

J . C . Pinto[1] , C . L . S . Ávila[1] , H . C . P . Figueiredo[1] , A . R . Morais[1] , O . G . Pereira[2] , R . F . Schwan[1] .
[1] Universidade Federal de Lavras and [2] Universidade Federal de Viçosa , Minas Gerais , Brazil .
E-mail : josecard@ufla .br

Key words : crude protein , dry matter , fermentation profile , fiber , inoculants , *Saccharum* spp

Introduction The intense alcoholic fermentation by yeasts during sugarcane ensiling results into high rates of DM losses . Inoculants containing the species *L . buchneri* have proved effective in inhibiting the growth of yeasts (Pedroso et al . , 2005) . The objective of this work was to evaluate the effect of the addition of two strains of *L . buchneri* , one from a commercial inoculant and the other isolated from sugarcane silage , upon the fermentation profile of this forage plant .

Materials and methods The experiment was conducted in the Animal Science and Biology Departments of the Federal University of Lavras-MG , Brazil , following a completely randomized design , with three replicates and the treatments arranged in a factorial scheme of the 3 x 6 type , that is , three silages and six silo opening times . The inoculants were previously prepared in the Microbiology Laboratory and added at the population of 10^8 cfu/g . For the evaluation of the bromatological characteristics , the silos were opened at 0 , 3 , 10 , 30 , 60 e 90 days fermentation .

Results In Table 1 , it was observed that the addition of the inoculants caused no significant effects on the contents of DM , CP , NDF and ADF of the silages , after 90 days fermentation . By comparing the chemical composition of the fresh sugarcane (time 0) with that of the corresponding silages , lower contents of DM and hemicellulose and higher of CP , NDF and ADF were observed with fermentation . In the studies conducted on sugarcane , these modifications have been associated further to DM losses as gases . The increase in the concentration of CP sugarcane was accounted for by the proportional reduction of DM contents . As regards , the temporal modifications occurred in the chemical composition of sugar cane , there was a significant influence ($P<0.01$) of the inoculants upon the contents of ADF , HEM and CP . The silages with commercial and experimental inoculants showed similar fermentation profiles , but different from the control .

Table 1 *Chemical composition of three sugarcane silages as related to the opening times of the silos .*

	Opening time of the silos (days)						Regression equation	R^2
	0	3	10	30	60	90		
					DM (%)			
Mean	29 .58	27 .01	27 .82	28 .05	28 .42	26 .85	$1x10^6x^4-3x10^4x^3+0.0162x^2-0.3034x+28.927$	0 .58
Silage*					CP (%)			
1	3 .4a	3 .0b	2 .9b	3 .0a	3 .4a	3 .6a	Non-significant	
2	3 .2a	4 .2a	3 .4a	3 .1a	3 .8a	3 .6a	$-1x10^6x^4+1x10^4x^3-0.006x^2+0.072x+3.48$	0 .43
3	2 .9a	3 .0a	3 .7a	3 .1a	4 .1a	3 .7a	$-1x10^6x^4+2x10^4x^3-0.010x^2+0.167x+2.79$	0 .95
					NDF (%)			
Mean	56 .94	61 .16	63 .01	62 .93	74 .85	61 .32	$-3x10^6x^4+6x10^4x^3-0.04x^2+0.962x+57.56$	0 .93
Silage					ADF (%)			
1	31 .85a	32 .46a	36 .57a	32 .90a	34 .92a	37 .86a	$-5x10^6x^4+9x10^4x^3-0.052x^2+0.91x+31.24$	0 .93
2	31 .99a	32 .99a	29 .68b	32 .43a	37 .04a	38 .77a	0 .0851x - 31 .08	0 .81
3	31 .46a	33 .58a	30 .18b	30 .76a	33 .93a	38 .30a	$0.0017x^2-0.0824x+32.054$	0 .87
Silage					Hemicellulose (%)			
1	25 .95a	26 .96a	22 .44b	30 .63a	22 .03b	22 .52b	$9x10^5x^4-0.0015\times3+0.073x^2-0.95x+27.14$	0 .88
2	25 .83a	29 .33a	35 .15a	31 .20a	23 .52b	21 .47b	$6x\ 10^5\ x^4+0.001\times3-0.078x^2+1.59x+25.60$	0 .99
3	24 .74a	28 .42a	33 .29a	31 .88a	25 .80a	25 .03a	$-4x10^5x^4+0.0009\times3-0.063x^2+1.39x+24.76$	0 .99

* Silage 1 : without an inoculant ; Silage 2 : with an experimental inoculant ; Silage 3 : with a commercial inoculant ; DM : dry matter ; CP : crude protein ; NDF : neutral detergent fiber , ADF : acid detergent fiber ; Means with different letters , in the columns , differ significantly ($P<0.01$) among the treatments .

Conclusion The temporal modifications occurred for the variables CP , ADF and hemicelullose that were influenced by the addition of inoculants . Nevertheless , they have not caused great modifications in the final bromatologic composition .

Acknowledgement Research supported by CNPq .

Reference

Pedroso , A .F . ; Nussio , L .G . ; Paziani , S .F . ; Loures , D .R .S . ; Igarasi , M .S . ; Coelho , R .M . ; Packer , I .H . ; Horii , J . ; Gomes , L .H . Dinâmica da fermentação e da microflora epífita em silagem de cana-de-açúcar . *Scientia Agricola* , Piracicaba , v . 62 , n . 5 , p . 427-432 , set ./out . 2005 .