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Presenter Information

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Microbiological profile of sugarcane silages inoculated with *Lactobacillus buchneri*

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Introduction Sugarcane (*Saccharum* spp.) ensiling is recommended with the objective of making its management more ease on the farm. Nevertheless, over the processing of its ensiling occurs intense alcoholic fermentation by yeasts, resulting into high losses of dry matter (DM). Inoculants containing the species *L. buchneri* have proved effective in inhibiting the growth of yeasts in silages as related to the increased production of acetic acid or lactic acid (Filya, 2003). The compatibility between the forage plant and microorganisms is a factor determining for the successful application of microbial inoculants in silages. The objective of this work was to evaluate the effect of two strains of *L. buchneri*, one from a commercial inoculant and the other isolated from the local sugarcane silage, on 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 to a completely randomized design with three replicates in factorial scheme of the 3 x 6 type, that is, three silages and five times of silo opening. The treatments were: sugarcane silages without any inoculant, with an experimental inoculant and with a commercial inoculant. The inoculants were previously prepared in the Microbiology Laboratory and added at the population of 10⁸ cfu/g. For the evaluation of the fermentation profile of the silages, the silos were opened with 0, 3, 10, 30, 60 and 90 days of fermentation and, at each time, samples were taken for evaluation of the population of lactic acid bacteria (LAB), yeasts and filamentous fungi, by surface plating.

Results In Figure 1, it is found that at time 0, the forage without an inoculant showed a lower population of LAB (3.6 log cfu/g of forage) than the inoculated forages. The yeast and filamentous fungi populations were similar to the three silages with respective average values of 7.78 and 5.4 log cfu/g of forage. At 3 days fermentation occurred an increase in the population of LAB, comparing to those of the inoculated silages. This increase in LAB is common and was observed in previous studies. From the third to the tenth days of fermentation, a new fall in the population of LAB, its being more marked in the silage without an inoculant. This presented a high population of yeast, along the fermentative process, there being no inhibition by anaerobiosis or acidity. The addition of inoculants caused a similar effect upon the growth of yeasts, with a linear decrease till the 90 days fermentation, when the population were below the detectable level (< 2.0 log cfu/g). Throughout the fermentation process, the population of filamentous fungi were below the detectable level (< 2.0 log cfu/g).

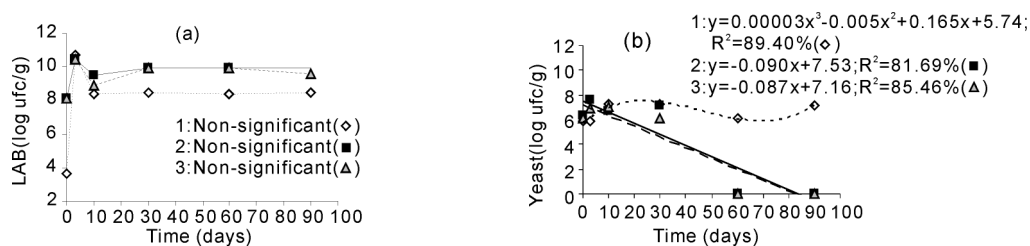


Figure 1 Populations of LAB (a) and yeasts (b) of the sugarcane silages without an inoculant (1) and with experimental (2) and commercial (3) inoculants along the fermentation process.

Conclusion The two inoculants improved in a similar manner, the microbiologic profile of sugarcane silages.

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Reference

Filya, I. The effect of *Lactobacillus buchneri* with or without homofermentative lactic acid bacteria, on the fermentation, aerobic stability and ruminal degradability of wheat, sorghum and maize silages. *Journal of Applied Microbiology*. v. 95, p. 1080-1086, 2003.