

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

CONCENTRATION OF ORGANIC ACIDS OF SORGHUM SILAGE AND PAIAGUAS PALISADEGRASS IN DIFFERENT FEED SYSTEMS AND MATURITY STAGES

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As part of the search for sustainability in production systems, systems of annual crops intercropped with tropical forage plants have recently been used for silage production. Therefore, the present study aimed to evaluate the concentration organic acids of sorghum silage and Paiaguas palisadegrass in various feed systems and three maturity stages in the off-season. The experiment was conducted at the Instituto Federal Goiano, Campus Rio Verde. The experimental design used was a randomized complete block design with four replications in a factorial 5x3, and five forage systems: sorghum in monocropped, Paiaguas palisadegrass in monocropped, sorghum intercropped in rows with Paiaguas palisadegrass, intercropped between rows of Paiaguas palisadegrass and sorghum oversown and intercropped with Paiaguas palisadegrass, and three maturity stages: milk, soft dough and floury grains. The forages were harvested using costal mowing and material was crushed into particles of approximately 10 mm. The material was stored in experimental silos. After 50 days of fermentation, the silos were opened, for determination of the organic acids (lactic, acetic, propionic, and butyric) in a high-performance liquid chromatograph (HPLC) with a Shimadzu SPD-10A VP UV-vis detector at a 210 nm. The results obtained were subjected to an analysis of variance and the means were compared by the Tukey test at a 5% significance level. For the concentration of organic acids, an effect ($p < 0.05$) was observed for the forage systems and three maturity stages. The silage of monocropped Paiaguas palisadegrass had a lower concentration of lactic acid and higher concentrations of acetic, propionic, and butyric acids in all the maturity stages. The lactic acid concentration was higher ($p < 0.05$) in the sorghum silage, followed by the silages of the intercropping systems, due to the greater presence of soluble carbohydrates. The results showed that silages of monocropped sorghum and intercropped with Paiaguas palisadegrass, regardless of the sowing method, harvested at the farinaceous stage, showed higher concentration of lactic acid and lower concentration of acetic, propionic and butyric acids, improving silage stability. The intercropping of sorghum with Paiaguas palisadegrass in crop-livestock integration systems could become an attractive option for the production of silage because intercropping minimizes the inconveniences resulting from the fermentation processes of the silages of monocropped grasses and improves the quality of the silage.

Keywords: *Brachiaria brizantha*, crop-livestock integration system, ensiling, fermentation

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