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Silages of Tropical Forages for Feeding Pigs

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Abstract

Tropical legumes and some grasses show high levels of crude protein content which makes them attractive not only for ruminant nutrition but also for monogastric farm animals. The use of fresh forages for pig feeding is however limited because of different reasons: their fiber, bulkiness, high water content and low energy concentration, their seasonal availability sometimes being restricted and their content of anti-nutritional components such as tannins and trypsin inhibitory activity. Thus, processing to silage was tested as one option for conservation, during which water content and anti-nutritional factors might be reduced.

The legumes *Vigna unguiculata*, *Stylosanthes guianensis*, *Centrosema brasilianum*, *Cratylia argentea*, *Flemingia macrophylla*, *Desmodium velutinum*, *Leucaena diversifolia* and the grass *Brachiaria* hybrid Mulato II were harvested before flowering, chopped and ensiled at a target dry matter of >30% in small plastic bags on lab scale in 4 different treatments: control, addition of sucrose (2% of fresh weight), inoculated with a lactic acid bacteria (LAB) strain and LAB+sucrose.

Samples were analysed before ensiling on their nutritional value. After 3d and after 90d of ensiling, silages were evaluated at 25°C on DM losses, quality and aerobic stability. Buffering capacity before ensiling, which can restrict acidification, was highest in *Vigna* (13.6) and lowest in *Flemingia* (3.3). The pH after 3d of ensiling was always lowest in the treatment with LAB+ sucrose. This trend was maintained over the 90d of ensiling. In the control treatment after 90d, lowest pH was found in the grass (4.5) as expected, and was ≥ 4.9 in all legumes. Both are too high according to Deutsche Landwirtschafts-Gesellschaft in relation to the corresponding DM. The five best silages in this respect were obtained with *Desmodium* with LAB (without or with sugar), *Flemingia* and Mulato II when treated with LAB+sucrose and *Stylosanthes* with sucrose (without or with LAB). Worst silages were from *Centrosema* without sucrose indicated by a strong butyric acid smell. Highest overall DM losses were observed in Mulato II, *Cratylia* and *Vigna* silages (30–19%), followed by *Desmodium* control silage (16%).

In general, silages were stable over 4 days of exposure to air.

Keywords: *Brachiaria*, *Centrosema brasilianum*, *Cratylia argentea*, *Desmodium velutinum*, *Flemingia macrophylla*, *Leucaena diversifolia*, pigs, silage, *Stylosanthes guianensis*, *Vigna unguiculata*