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Silage Quality of the Legumes *Vigna unguiculata* and *Canavalia brasiliensis* solely and with Sweet Potato Roots as an Alternative Pig Feeding

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Abstract

As prices for feed concentrates are rising alternative options for small and medium pig producers in the tropics are searched. Locally grown legumes could contribute to the protein supply. Starchy roots and tubers such as sweet potato (*Ipomoea batatas*) could add to the energetic value.

Vigna unguiculata CIAT9611 and *Canavalia brasiliensis* CIAT17009 were evaluated at four different ages. *Vigna* was cut at 6 (pre-florescence), 8 (florescence), 10 (post-florescence) and 12 (pods ripening) weeks of growth; *Canavalia* was cut at 8, 12, 16 and 20 weeks of growth (no distinct generative stage observed). The forages were wilted to a target dry matter (DM) of 35% and then chopped. On each occasion sweet potato roots were harvested, washed, chopped and dried for several hours.

The samples were ensiled in PVC tubes of 1.8 l Volume in triplicates.

Three treatments were applied: *Vigna* or *Canavalia* only, *Vigna* or *Canavalia* mixed with sweet potatoes in the ratio 1:1 on fresh matter base, sweet potato only.

The silages were evaluated after storage of approximately 3 months at 25 °C assessing their smell, structure and colour according to the DLG key. The DM content was determined in triplicates at 105 °C and corrected. The pH was measured and judged according to the DLG key 1998 for evaluation of silages based on chemical analysis. Results indicated that when ensiling *Vigna* or *Canavalia* alone, the best fermentation results were achieved at 12 weeks age in both cases, with *Vigna* silage having a more desirable low pH. The mixture with sweet potato improved fermentation. The best *Vigna-Ipomoea* silage, however, resulted when sweet potato with an unintentionally high DM was used at 12 weeks age of *Vigna* (silage DM 57%). The best *Canavalia-Ipomoea* silage was obtained with 16 weeks old *Canavalia*. *Ipomoea* only silages with DM contents ranging from 22–40% had the lowest pH values from 3.6–4.2. It can be concluded that the legume harvest age plays a role in the suitability for ensiling and that addition of sweet potato improves legume silages.

Keywords: *Canavalia brasiliensis*, cutting age, *Ipomoea batatas*, silage, *Vigna unguiculata*