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PROXIMATE COMPOSITION ANALYSIS OF HAND-MADE AND MACHINE-MADE HYBRID SWEET SORGHUM SILAGES

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Hybrid Sweet Sorghum-HSS [*Sorghum bicolor* (L.) Moench] is a rapidly growing annual crop cultivated as a good quality forage in the livestock industry worldwide. Nutrient composition of forage is a crucial factor to be concerned in ration formulation. Hence, the present study aimed to assess the proximate composition of hand-made and machine-made HSS silage produced in the Vavuniya and Mullaitivu Districts in the Northern Province of Sri Lanka. First, a survey was conducted among farmers to collect information on major HSS silage users. Then 15 hand-made and five machine-made silage samples were collected from 20 medium-scale dairy cattle farmers (5−25 cows/herd) in each district. The proximate composition of the silage samples was determined following the Association of Official Agricultural Chemists (AOAC). The results of the survey showed that most farmers (75%) in the two Districts used hand-made HSS silage due to the lack of chopping machinery and low cost, while the rest of the farmers used machine-made HSS. The content of dry matter (DM), acid detergent fibre (ADF) and neutral detergent fibre (NDF) in both silages were significantly different ($p < 0.05$). However, the content of ash and crude protein did not differ significantly ($p > 0.05$). A higher amount of DM (28.2%) was recorded in hand-made HSS silage, while ADF (35.9%) and NDF (70.6%) contents were higher in machine-made HSS silage. When preparing hand-made HSS silage, the sorghum was harvested 90 days after planting, while in machine-made silage, sorghum was found to be harvested at different growth stages and processed simultaneously. The results of this study revealed that hand-made HSS silage would be a better option as forage than machine-made HSS silage in terms of proximate composition.

Keywords: Acid detergent fibre, Crude protein, Hybrid Sweet Sorghum, Neutral detergent fibre, Silage