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## Botanical Characteristics, Yield and Chemical Compositions of 4 Varieties of *Sorghum Bicolor* Moench under the Humid Tropical Climate in Southern Thailand

ONG-ARGE INSUNG

*Rajamangala University of Technology Srivijaya, Nakhonsithammarat Campus, Thailand*

### Abstract

The research was conducted in 2 consecutive trials to study the botanical characteristics, yields and chemical compositions of 4 varieties of sorghum, i.e. Native sorghum; Khek noi (Nt-KN), Commercialized sweet sorghum (Com-SS), Klangdong1 hybrid sweet sorghum (Hyb-KD1) and Nameun hybrid-sweet sorghum (Hyb-NM), planted under the humid tropical climate at Nakhonsithammarat campus, Rajamangala University of Technology Srivijaya, southern Thailand. The first trial coped with the study of the botanical characteristics of 4 varieties of sorghums. Sorghums were planted in a 5 × 10 m plot until the cutting ages at three stages, i.e. flowering stage (F), milk stage (M) and dent stage (D). The plants were cut for study of the botanical characteristics and yields. The experimental units were allocated according to the 4 × 3 Factorial experiments in Randomised complete block design. It was found that the Hyb-NM provided the highest yield, number of leaves, height of stem, stem diameter, and leaf weight ( $p < 0.01$ ). The Hyb-KD1 had the longest inflorescent ( $p < 0.01$ ), whereas the Com-SS provided the highest weight of the inflorescent ( $p < 0.01$ ). The second trial coped with the study of the influences of varieties, cutting age and the preservative methods on the pH, the neutral detergent fiber (NDF) and on the acid detergent fiber (ADF) of ensiled plant. The plants at different cutting ages from the first trial were used for ensilage with 4 different methods i.e. non-ensiled (NE), ensiled without any additives (E), ensiled with molasses (EM), and ensiled with molasses and inoculums (EMI). The experimental units were arranged according to the 3 × 4 × 4 Factorial experiment in Randomised complete block design. It was found that the Hyb-KD1 had the highest NDF content ( $p < 0.01$ ). The ensilage method affected the NDF ( $p < 0.01$ ) but not the ADF content ( $p > 0.05$ ) of the ensiled plants. All ensilage methods provided good silage quality with a pH range from 3.58 to 4.05. This research result implies that sorghum for animal feed can be cultivated well under the humid tropical climate in the south of Thailand. The yield and quality of the sorghum depends on the varieties. Preservative method by ensilage improved the quality and utility of sorghum for the ruminants.

**Keywords:** Botanical, chemical composition, preservative methods, sorghum, yield