

# Agronomic Performance of Five Rice Varieties and Nutritive Value of the Straw from these Varieties

T. Ansah<sup>1\*</sup>, W. Dogbe<sup>2</sup>, S. Cudjoe<sup>1</sup>, A-R, Abdul-Basit Iddrisu<sup>2</sup> and A.S. Eseoghene<sup>1</sup>

<sup>1</sup> University for Development Studies, Faculty of Agriculture, Department of Animal Science, Tamale, Ghana

<sup>2</sup> Council for Scientific and Industrial Research (CSIR)-Savanna Agricultural Research Institute (SARI)

\*Corresponding author; Email: tansah@uds.edu.gh

## Abstract

Two separate experiments were conducted to assess the grain and straw yield (Exp. 1), chemical composition and *in vitro* gas production (Exp. 2) of five varieties of rice; Hybrid, Exbaika, Jasmine 85, IR841 and Long grain ordinary 2. Experiment 1 was conducted in a randomized complete block design with four replicates per variety. After harvesting, the rice straw from each variety was combined with Kapok leaf meal (KLM) at three inclusion levels (0, 25, 50%) to formulate a diet. The sole rice straw and formulated diets were analyzed for crude protein (CP), neutral detergent fiber (NDF), acid detergent fiber (ADF) and Ash. Approximately 0.2 g of each diet (sole and formulated) was incubated in a McDougall's buffered rumen fluid under anaerobic condition for the *in vitro* gas production. The varieties differed ( $P < 0.05$ ) in relation to plant height, maturity days, percentage emergence, tiller number, straw yield and harvest index but did not differ in grain yield. The percentage emergence was in the range of 72.5 and 85.0% with the highest ( $P = 0.003$ ) recorded in the Hybrid variety. Plant height ranged from 90.5 to 110.8 cm with the highest ( $P = 0.046$ ) reported in variety Long grain ordinary 2. Variety Long grain ordinary 2 had the longest ( $P < 0.001$ ) mean maturity days with the least recorded in the Hybrid variety. The highest ( $P < 0.05$ ) straw yield was reported in variety Exbaika whilst Jasmine 85 had the least straw yield and harvest index. The CP concentration of the rice straw varieties increased numerically with an increase in the level of KLM. The NDF ranged from 622 g/kg DM to 913 g/kg DM for IR842 variety with 0% KLM and Long grain ordinary 2 variety with 25% KLM respectively. The ADF was in the range of 299.7 g/kg DM to 483.6 g/kg DM with the lowest reported in IR842 variety with 50% KLM. Mean asymptote gas production (b), fractional rate of gas production (c), *in vitro* gas production (IVGP) and *in vitro* organic matter digestibility (IVOMD) were not affected ( $P < 0.05$ ) by the variety x KLM inclusion level interaction. However, IVGP at 24 h and IVOMD both differed ( $P < 0.05$ ) by variety. Varieties Jasmine 85, IR842 and Long grain ordinary 2 had higher IVGP and IVOMD as compared to the other two varieties. It was observed from the study that varieties IR841 and Long grain ordinary 2 provided higher grain and fodder production. The use of KLM as a replacement enhanced the nutrient composition, fermentation characteristics and digestibility.