

## Effects of Nitrogen Fertilization Management Practice on the Yield and Straw Nutritional Quality of Commercial Rice Varieties

<sup>1</sup>Hollena Nori, <sup>2</sup>Ridzwan Abdul Halim, <sup>2</sup>Mohd. Fauzi Ramlan

<sup>1</sup>*Department of Plant Science and Environmental Ecology,*

*Faculty of Resource Sciences and Technology,*

*Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak.*

<sup>2</sup>*Department of Crop Science,*

*Faculty of Agriculture, Universiti Putra Malaysia,*

*43400 UPM, Serdang, Selangor.*

### ABSTRACT

An experiment with treatments comprising of five nitrogen rates (0, 120, 160, 200 and 240 kg N/ha) was carried out to assess the effects of nitrogen fertilization management practice on the grain yield and straw nutritive quality in two commercial rice varieties; MR 211 and MR 219. Increases in nitrogen application was found to increase ( $P<0.01$ ) the grain yield, total spikelets per square meter, number of spikelets per panicle and straw crude protein from 4.56% to a maximum level of 8.45%. It also decreased ( $P<0.05$ ) the *in vitro* true dry matter organic digestibility (IVTOMD) from 59.1% to 55.14%, neutral detergent fiber (NDF) and acid detergent fiber (ADF). There were varietal differences in the straw nutritional properties, where MR 219 had higher NDF, hemicellulose and cellulose ( $P<0.05$ ) concentration where as MR 211 had higher amount of acid detergent lignin (ADL) ( $P<0.01$ ) and silica ( $P<0.05$ ) in the straw. Between the two varieties, MR 219 is superior to MR 211 in view of the higher grain production and grain: straw ratio. The result from correlation between agronomic characteristics and straw nutritive quality implies that rice varieties with good agronomic characteristics have potential in yielding straws with better nutritive quality.