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Fresh rice straw treated with urea and lime as feed for dairy cattle in An Giang province, Vietnam

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Abstract

This thesis focuses on the evaluation of fresh rice straw treated with urea and lime and used as partial replacement for Para grass in dairy cattle diets. There were two experiments conducted as follows:

In the first experiment, there were two trials. In trial 1, there were nine treatments, with fresh rice straw preserved with 30g lime kg⁻¹ dry matter DM only and with 4 levels of urea: 20, 30, 40, 50 g kg⁻¹ DM with and without 30g lime kg⁻¹ DM straw in small bags (5kg). All treatments were allocated in a complete randomized design with 2 storage periods (3 and 9 weeks) and 3 replications. In trial 2, there were two treatments with fresh rice straw treated with 30g lime / kg DM and 2 levels of urea (30 and 40g kg⁻¹ DM) in bales (52-54 kg, packed by machine) in a complete randomized design with 2 storage periods and 4 replicates. Treated straw preserved in the two trials had good quality in the evaluation of color, ammonia smell, mold appearance and the value of pH, except the treatment using 3% lime alone. Crude protein (CP) contents of the treated straw were increased by 1.8 -2.4 fold and increased with the added urea levels (p<0.05). Urea treatment increased the DM degradation by nearly 12% in the highest urea treatment with lime, but it was reduced with the low level of urea (p<0.05). It is concluded that fresh rice straw can be preserved and the CP content and degradation of treated straw improved by treating it with urea and lime in bags or bales covered with plastic. The treatment level of 30 g urea and 30 g lime kg⁻¹ DM straw seemed to be a good and economical level.

In the feeding experiment, eight crossbred Holstein lactating cows in their second to fourth lactation and in mid – lactation were arranged in a balanced design with two squares consisting of 4 periods x 4 treatments (100% grass *ad libitum* as a control; 75% grass + urea-lime treated fresh rice straw (ULTFRS) *ad libitum*; 50%

grass + ULTFRS *ad libitum*, and 25% grass + ULTFRS *ad libitum* in one square. A concentrate supplement was given at a rate of 400g per day per kg of milk produced. Dry matter intake (DMI) was higher for the mixture of ULTFRS and Para grass and highest when half and one – third of roughage was ULTFRS. Increasing substitution of Para grass with ULTFRS up to 75% of the roughage component increased milk fat content and had no effect milk yield and other milk composition parameters. ULTFRS can partially replace Para grass in the diets of lactating cows in the dry season and in the flood season.

Key words: Urea – Lime Treated Fresh Rice Straw, pH, Crude Protein, Ammonia, DM degradation, Para Grass, Dry matter intake, Milk Yield, Milk composition.

