

2nd



GREEN Technology Farming FOR SUSTAINABLE LIVESTOCK PRODUCTION



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**GREEN TECHNOLOGY FARMING FOR
SUSTAINABLE LIVESTOCK PRODUCTION**

M. Afzal
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ENHANCING THE PRODUCTIVITY OF BALI CATTLE THROUGH USING FERRMENTED AGRICULTURAL BY-PRODUCT AS A FEED

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Bali cattle are an indigenous breed in Indonesia known for its high carcass weight although it is categorized as the medium size cow. This breed can survive in areas where there are limited sources of feed. It is able to utilize almost all kinds of agricultural by-product for example rice straw (RS), corn stover (CS) and soya bean straw (SBS). Rice straw for example consists of 3-4 % of crude protein and 32-40 % of crude fibre with the dry matter degradation of around 35-37% (1). Therefore, there is need to improve the nutrient quality of agricultural waste for animal feed. Biotechnology such as ammonia treatment, silage and fermentation is one of ways to solve this problem. Hence, the aim of this study was to investigate the optimal treatment of using agricultural by-product to improve the productivity of Bali cows.

Twelve male Bali cattle, 8-15 months old, weighing 150-200 kg, placed in individual crates, were used in this study. A digestibility trial was conducted with 15 days of adaptation period followed with 60 days data collections. Animals were fed with the experimental diets, namely Treat A (70% field grass and 30% of concentrate (C)), Treat B (35% of fermented RS + 35,6 of fields grass + and 30% C), Treat C (35% of fermented CS + 15% of fields grass + and 30% C), and Treat D (35% of fermented SBS + 35% of field grass + and 30% C). RS, CS and SBS were collected from the Muaro Tebo Regency. RS, CS and SBS were fermented with urea and *Trichoderma spp.* prior to the animal trial (2). Animals were fed twice at 0h.00 and 17.00 and free access of water. Parameters measured were dry matter digestibility, weight gain, body dimension (chest circumference, body length and height). The design of this experiment was Randomized Block Design with 4 treatments and 3 blocks of replications. Data were analyzed using ANOVA followed with Duncan Multiple Range Test.

Tabel I. The means of DMD, WG, CC, BL and H of experimental cows

Treatment	DMD (%)	WG (kg/d)	CC (cm/d)	BL (cm/d)	H (cm/d)
A	66.35±4.21	0,43± 12	0,11±12	0.13±0.01	0.03±0.003
B	48.58±5.50	0.57±0.06	0,19±0.06	0,10±0.04	0.09±0.01
C	45.72±1.43	0.50±0.24	0,10 ±0.06	0.12±0.05	0,03±0.01
D	55.64±g.89	0.54±0.09	0,22±0.09	0.13±0.06	0.11±0.09

The dry matter digestibility (DMD), weight gains (WG), chest circumference (CC), body length (BL) and height (H) of experimental are shown in Table 1. There were no significant difference ($P>0.05$) among treatments on the DMD of diet suggesting that fermented agricultural by-product were similar in quality to that of field grass.

The purpose of fermentation is to break down the complex lignocellulose and increase cellulose composition in order to be broken down by cellulolase produced by microbes (3). The cellulose microbe plays an important role in improving the quality of

nutrient in feed. Factors affecting the fermentation of feed substrate were pH, temperature, aeration, humidity, microbial properties, substrate type and the length of fermentation (4). Fermentation using additive material could result in the feed depolymerisation for improving its digestibility and it could influence these physical characteristics could enhance the microbial protein. Fermentation could also alter the fibre component such as cellulose and lignin to be monosaccharide or sellobiose (4). The result showed the treatments did not significantly ($P>0.03$) affect on the WG. This might be that the fermentation of RS, CS and SBS provide the same effect on WG. It appears that the fermentation of the roughage increases the quality can substitute the field grass. Similarly, There were no significant ($P>0.05$) effect of different ration on CC, BL and H. This might be possibly due to there was no significant effect of treatment on the dry matter digestibility and weight gain therefore this also would result in the same effect on the body dimension of cow

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