The addition of probiotic starbio in dodol multinutrition on performance and income over feed cost bali cattle

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Abstract. The objectives of this Research would like to know the effect of probiotic starbio in dodol multinutrition (DM) on the performance of male bali cattle. This research was done in four treatment and periods usind 4 x 4 latin squared design (LSD). All animals were fed native grass ad libitum as a basal diet. The treatment were P0 (DM without the addition of probiotic starbio), P1 (DM with the addition of 2% probiotic starbio), P2 (DM with the addition of 4% probiotic starbio), P3 (DM with the addition of 6% probiotic starbio), with average initial body weight 157,25 ± 10,7kg. The result of this research indicated that the averages of feed consumption in dry matter (kg/head/day) such as: (3,50; 3,69; 3,83 and 3,88 respectively); average daily gain (ADG) (kg/head/day) such as: (0,52; 0,56; 0,60 and 0,63, respectively); Average of feed conversion ration such as: (6,711; 6,640; 6,369; and 6,198,respectively) and IOFC (Rp) such as : (182,132; 204,071; 234,798 and 251,004, respectively). The addition of probiotic starbio in the DM has a very significantly different (P<0,01) on feed intake and body weight gain of male bali cattle, however significant different (P<0,05) with feed conversion ration  male bali cattle. It could be concluded that probiotic starbio could be used to increase feed consumption, body weight gain, feed efficiency in feed and IOFC.

Keywords: Male Bali Cattle, Starbio, Dodol Multinutrition,

Introduction

In North Sumatra most of the farmer feed native grass as main forage for their bali cattle. Native grasses in the tropics frequently contain a low nutritive value compared with grass from sub tropics on the other hand, the grass are very much fluctuated depend on the season, particularly in dry season ruminant usually were fed with agricultural plant by-Product. Poppi et al.,(1997) said that the nutritive value grass in the tropic for manipulation rumen mikrobial protein (PMR) has low under minimal level (100g PMR/kg sapi). In that case ruminant fed low quality feed, ruminal microbial protein is the main protein source for host animal, according to Marchen(1988) that one of protein entered through duodenum was originally from bacterial and protozoa protein, furthermore about 80 percent nitrogen amino acid from microbial were synthesized in the rumen could be absorben by host animal(Ørskov, 1992).

The strategy to improved native grass such as, suplementation nutrient with high protein, energy and mineral feed stuffs. One of suplementasi technic which is consist of urea, molasses, rice bran, palm cerel cake, minerals and some minerals essential such as : Zn and Se available as organic matter which can increase livestock productivity. Probiotic starbio can decrease FCR, and finally feed cost will be decrease.

Probiotic starbio a brown powder, the developmen of modern bio technology research station Lembah Hijau Multifarm (LHM), which contains colonies isolated from nature,which are frendly to life. The use of probiotic starbio also reducse odors in manure. This is caused by increased digestibility and absorption of feed mixed with starbio that less manure and dry (Suharto,2004).

Materials and Methods

Materials used were four male bali cattle aged 12 moths with an average initial body weight 157.25±10.7 kg. The feed materials such as : forage, dodol multinutrition which is consisted of molasses, uera palm cerel cake, rice bran, starbio, lime, salt and premix. Drugs like worming wormzol-B, cypperkiller as fly repellent, carbolic acid as a disinfectant, vitamin B complex and drinking water.

The design of the study is a latin square design (LSD). The treatments studied were: P0 = Forage Field + (DM without addition of probiotic Starbio); P1 = Forage Field + (DM with the addition of 2% probiotic Starbio), P2 = Forage Field + (4% DM with the addition of
probiotics Starbio); P3 = forage field (DM with the addition of 6% probiotics Starbio). Mathematical model used is

\[ Y_{ijk} = \mu + \tau_i + \beta_j + K_k + \epsilon_{ijk} \]

where:
- \( Y_{ijk} \) = observation of treatment of the i-th row j and column k
- \( \tau_i \) = effect of treatment i-th
- \( \beta_j \) = effect of the j-th row
- \( K_k \) = effect of k-th column
- \( \mu \) = median public
- \( \epsilon_{ijk} \) = effect of treatment errors because the i-th row j and column k (Sastrosupadi, 2000).

The parameters measured in this study were: feed consumption in the form of dry ingredients, average daily gain, feed conversion and income over feed cost (IOFC)

**Results and Discussion**

**Table 1. Recapitulation of the research**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Feed consumption (kg/head/day)</th>
<th>ADG (kg/head/day)</th>
<th>FCR</th>
<th>IOFC (Rp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0</td>
<td>3.495 B</td>
<td>0.52 C</td>
<td>6.711 b</td>
<td>182,132</td>
</tr>
<tr>
<td>P1</td>
<td>3.693 B</td>
<td>0.56 BC</td>
<td>6.640 ab</td>
<td>204,071</td>
</tr>
<tr>
<td>P2</td>
<td>3.831 AB</td>
<td>0.60 AB</td>
<td>6.369 ab</td>
<td>234,798</td>
</tr>
<tr>
<td>P3</td>
<td>3.881 A</td>
<td>0.63 A</td>
<td>6.198 a</td>
<td>251,004</td>
</tr>
</tbody>
</table>

Description: Superscript same time showed no difference from each treatment.

**Feed consumption**

Feed consumption can be calculated by the reduction of the amount of feed given multinutrisi lunkhead can be seen in Table 1. Based on Table 1, it can be seen the highest average feed consumption contained in P3 treatment (addition of probiotics Starbio 6% on supplements multinutrition) of 3.881 kg / head / day, while the lowest was the average feed consumption in the treatment P0 (without the addition of probiotic supplements multinutrition) of 3.495 kg / head / day. Statistical analysisi pointed that P0, P1 and P3 significantly diffrent (P<0.05). Means more additions starbio level to the dodol multinutriti on the higher the amount of consumption of feed produced. This is consistent with the statement Murtidjo (1993) which states that the more weight the more the animal feed consumed by the animals themselves to make ends meet. This is supported by the statement of Wallace and Newbold (1992) which states that the administration of probiotics will boost the population of bacteria in the body so that the digestibility of crude fiber livestock will increase. This statement means that in addition there was an increase in the bacterial population Starbio selulotik (fibrolitik). In line with this, Apriyadi (1999) stated that the high and low digestibility of nutrients in livestock does not depend on the quality of feed protein but the crude fiber content and activities of microorganisms within the body of cattle, especially bacteria selulotik. Among species there selulotik that double in the digest roughage as well hemicellulose and cellulose-digesting starch.

In addition, the fourth level of palatability of feed treatment is affecting livestock consuming feed given. In accordance with the opinion of Lubis (1992) which states that the consumption of dry matter (DM) is influenced by several factors including: 1) factors feed, covering the digestibility and palatability, and 2) factors that include breed of the livestock, sex, age and health condition of livestock. This is also in accordance with the opinion Parakkasi (1995) who also stated that the palatability of feed is one of the factors that affect the amount of feed intake.
Average daily gain

Body weight gain in male Bali cattle this study were obtained from the results of weighing the final weight minus the initial weight weighing. Weight measurements made at intervals of 30 days. As shown in Table 1, it can be seen that the highest average daily gain found in treatment P3 (Starbio 6%) with average daily gain of 0.63 kg / head / day. While the lowest average daily gain found in the treatment P0 (Starbio 0%) at 0.52 kg / head / day. The addition of probiotic starbio to dodol multinutrition highly significant different (P <0.01) on body weight gain male Bali cattle. Statistical analysis pointed that is significantly different from P0 to P2 and P3, as well as in P1 to P3 significantly different. In the treatment P0 average body weight gain of cattle produced the lowest compared with other treatments, it is in accordance with the average feed consumption in Table 1, the average number of cattle feed consumption the lowest was on P0. the statement Davendra (1997) which states that animals that have a high potential had a good response to the feed given and it has a high feed efficiency. Significantly different from Cattle supplemented with dodol multinutriotions which was given probiotics Starbio has a higher digestibility that feed nutrition are also absorbed more and also the final body weight and body weight gain higher than dodol multinutrition without additional supplementation of probiotics Starbio (control). Increased final body weight and body weight gain of cattle fed on rations due Starbio.

Starbio as probiotic bacteria proteolytic, cellulolytic, lipolytic, and amylolytic Ignolitik and non-symbiotic nitrogen fixation that serves to break down carbohydrates, namely cellulose, hemicellulose and lignin break down proteins and fat (Suharto, 2000). The results study of Musofie et al. (1981) showed that the addition of concentrate as much as 1% - 1.5% of body weight can be increase body weight gain male Bali cattle about 0.5 kg - 0.6 kg / head / day. In other words dodol multinutrition supplementation in this study is much more efficient than that of the concentrate as it is quite a dodol multinutrisi giving as much as 250 grams / head / day in Bali cattle can result in average daily gain about 0.52 to 0.63 kg / head / days.

Feed conversion ratio

Feed conversion ratio was calculated by the amount of feed consumed to weight gain produced by livestock. The feed conversion obtained from this study can be seen in Table 1. Shows the highest average feed conversion are the treatment P0 (without Starbio) of 6.711, while the lowest average feed conversion or most efficient of all treatments are the treatment P3 (Starbio 6%) of 6.198, which means to raise 1 kg of body weight it requires 6.198 kg of cattle feed in the form of dry ingredients. But statistical analysis non significantly different( P>0.05) between P1,P2 from P0, while significantly different from P3.

The quality and quantity of feed produce good feed conversion value gets smaller. In other words, the better the efficiency of feed to body weight gain were higher. This is consistent with the statement of Campbell (1984) showed that feed conversion rate of feed usage levels where if the number gets smaller the feed conversion more efficient use of feed. The addition of probiotics in this study produced significant feed efficiency. It is powered by Samadi (2002) which states that probiotics are microorganisms that can improve growth and feed efficiency without causing the absorption component of probiotics in animal body, so there is no residue and no mutation in cattle. According Anggorodi (1990) stated that feed conversion is a technical indicator that can reflect the efficiency of feed utilization where lower numbers mean better feed conversion.

IOFC (Income Over Feed Cost)

Where the difference obtained from the sale of cattle at a cost of feed used during the study. IOFC each level of treatment can be seen in Table 1. From Table 1 also obtained by averaging the results of the treatment P0 IOFC Rp. 182,132, -; P1: Rp. 204,071, -; P2: Rp. 234,796, - and P3: Rp. 251,004, -, respectively. Found that the greatest average IOFC contained in P3: Rp. 251,004, - and the smallest at P1 Rp. 182,132, -. Although feed prices P3 is greater than the price of feed P0, P1 and P2, but P3 has a revenue from the sale of a large excess of the cost of feed than P0, P1 and P2, as well as statements from Prawirookusumo (1990) which states that IOFC is the difference between the income of farm business the cost of feed. Revenue is a multiplication of livestock production on the price, while the cost of feed is the amount it costs to produce these animals.
Conclusions
It could be concluded that probiotic starbio could be used to increase feed consumption, body weight gain, feed efficiency in feed and IOFC.

References