

PERFORMANCE OF BALI HEIFERS AND CALVES PRIOR TO WEANING IN A FEEDLOT SYSTEM

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S U M M A R Y

A study on performance of Bali heifers and their first calves kept in a feedlot system was carried out using 20 heifers fed two feeding regimes namely elephant grass only (group A) and a mixture of 40 % elephant grass and 60 % concentrate containing 20.7 % CP and 77.3 % TDN (group B). Liveweight up to calving, production and quality of milk, calfbirth, and daily gain prior to weaning in this cattle breed were significantly affected ($P>0.05$) by concentrate supplementation. However, service per conception and gestation length was not significantly ($P>0.05$) different between the two groups of feeding regimes.

It seemed that in the short term, improvement in management particularly feeding a higher quality ration was needed to overcome the problem in performance degradation of Bali cattle which has become some concerned recently.

Key word : Feedlot, concentrate, performance.

KINERJA SAPI BALI BETINA DAN PEDET SEBELUM DISAPIH PADA SISTEM " FEEDLOT "

R I N G K A S A N

Pengamatan terhadap kinerja Sapi Bali betina dan anak-anaknya yang pertama pada sistem pemeliharaan " feedlot" dilaksanakan terhadap 20 ekor sapi yang diberi dua jenis pakan yaitu kelompok yang hanya diberi rumput gajah saja (kelompok A) dan kelompok yang diberi campuran 40 % rumput gajah dan 60 % konsentrat yang mengandung 20,7 % protein kasar dan 77,3 % TDN (kelompok B). Bobot badan sampai melahirkan, produksi dan kualitas susu, bobot sapih pedet dan pertambahan bobot badannya sebelum disapih secara nyata ($P>0.05$) dipengaruhi oleh pemberian tambahan konsentrat pada jenis sapi ini sangat tinggi, sedangkan angka keberhasilan perkawinan dan masa kebuntingannya tidak menunjukkan perbedaan yang nyata ($P>0.05$) antara kedua kelompok tersebut.

Nampaknya, dalam waktu yang singkat, peningkatan tatalaksana khususnya pemberian pakan dengan kualitas yang baik sangat diperlukan untuk mengatasi masalah merosotnya kinerja Sapi Bali yang disinyalir dewasa ini.

Kata kunci : Feedlot, konsentrat, kinerja.

INTRODUCTION

Until now farmers in Bali keep their cattle in a traditional system. The cattle are kept in a simple shed and fed with roughage using cut and carry system. Human population in Bali increases from year to year thus more and more green area is used for housing or other specific buildings. Moreover the development of business tourism in this island (Bali) is significantly reducing feed resources area particularly for cattle. Therefore, alternatives in animal management and feed supplementation of Bali cattle are needed besides improvement in their genetic potential, to improve performance of Bali cattle which is decreasing (Sonjaya and Idris, 1996 and Lay, 1997).

Effects of concentrate supplementation on growth and meat quality of male Bali cattle have been reported by Mastika *et al.* (1996). Significant improvement of daily weight gain and meat quality of this cattle breed were shown by the concentrate supplement group.

This paper reports the effects of concentrate supplementation on performance of Bali heifers and their calves prior to weaning.

MATERIALS AND METHODS

Twenty Bali heifers were kept in a feedlot system at the Faculty of Animal Science Farm, Udayana University, Bukit Campus. The animals were randomly allocated into two treatment groups (A and B) of ten with the average liveweight 170.58 kg for group A and 176.20 kg for group B. Group A was fed with elephant grass only (control diet) and group B was fed with 40% elephant grass and 60% concentrate supplementation (a mixture of 36% corn, 19% rice bran, 23% coconut meal, 16.5% soybean meal, 5% fish meal, and 0.5% salt) containing 20.7% crude protein and 77.3% Total Digestible Nutrient (TDN). The animals were fed twice daily *ad-libitum*. Feed refusal was weighed daily before feeding on the following day, to measure daily feed consumption.

Performance of heifers (live weight at mating, service per conception, gestation length, total weight gain during pregnancy and live weight at calving, milk production and composition,

feed intake and calves birth weight, pre-weaning growth rate up to 18 weeks of age were observed in this study.

Data of each characteristic were analyzed using student t-test (Sokal and Rohlf, 1969) to compare between the two treatment mean groups of feeding regimes (A and B).

RESULTS AND DISCUSSION

Live weight gain of heifers during pregnancy was significantly improved by concentrate supplementation in their feed. Table 1 shows the effects of concentrate supplementation on performance of Bali heifers and their calves prior to weaning. The average daily gain during pregnancy for the concentrate supplement group (B) was 0.424 gram compared to only 0.150 gram for group A. It means that growth and development in group B heifers were faster than those in group A. However, reproductive traits such as service per conception and gestation length were not affected by concentrate supplementation. The use of natural mating with the same bull and biological characteristics of Bali cattle might be the main factors determining their two performance. Feeding and management become an important role in improving performance of Bali heifers besides the genetic potential of this cattle breed. Concentrate supplementation increased liveweight of the heifers at calving, milk production and its components significantly. Schmidt (1971) described that milk yield and its persistency were closely related to energy intake during early lactation. In this study, the higher energy intake was supplied from concentrate supplementation. Consequently, this supplementation increased growth of the calves during suckling as shown in pre-weaning weight gain and liveweight of calves at 18 weeks old (Table 1). Higher protein and energy contents of the ration could increase milk yield and its components. Wirdahayati and Bamualim (1990) also reported that feed supplementation increased milk production of Bali cattle around 27.8 % in six months lactation. The higher concentration of milk components of Bali heifers in this study compared to other breeds of cattle might be the factors which could support the survival of their calves up to weaning although milk production of Bali cattle lower than other cattle breeds.

Table 1. Performance of Bali heifers and their calves prior to weaning

| Performance | Group A | Group B |
|-------------------------------------|-------------------|-------------------|
| Heifers | | |
| Initial live weight (kg) | 170.58a (10.58) | 176.20a (11.04) |
| Live weight at mating (kg) | 194.50a (12.13) | 232.00b (20.00) |
| Service per conception | 1.80a (0.79) | 2.00a (0.67) |
| Gestation length (days) | 288.11a (27.41) | 275.56a (13.56) |
| Live weight at calving (kg) | 225.70a (53.79) | 331.90b (40.25) |
| Total F.C. during pregnancy (kg DM) | 1658.20a (15.34) | 1686.60b (14.90) |
| Milk production (kg. day) | 1.10a (0.93) | 1.60b (0.34) |
| Milk Composition : | | |
| Total Solid (%) | 16.55a (0.53) | 17.59b (0.76) |
| Fat (%) | 5.45a (0.52) | 7.43b (0.27) |
| Protein (%) | 4.51a (0.48) | 4.99b (0.38) |
| Lactose (%) | 5.36a (0.31) | 5.42a (0.30) |
| Ca (%) | 0.17a (0.03) | 0.18a (0.02) |
| P (%) | 0.13a (0.01) | 0.13a (0.02) |
| Energy (kcal/ g) | 1.22a (0.11) | 1.92a (0.03) |
| Daily F.C. during suckling (kg DM) | 6.23a (0.02) | 6.61a (0.10) |
| Calves | | |
| Av. birth weight (kg) | 12.01a (1.97) | 17.00b (2.18) |
| Male birth weight (kg) | 13.83a (1.89) | 18.75b (0.65) |
| Female birth weight (kg) | 11.17a (1.24) | 13.00b (1.92) |
| Av. pre-weaning wt. gain (kg/ day) | 0.31a (0.22) | 0.42b (0.14) |
| Calf wt. at 18 weeks of age (kg) | 52.00a (4.80) | 72.75b (9.80) |

Values in parenthesis are standard deviations

Values within a line followed by different subscripts differ significantly (P<0.05)

CONCLUSIONS

The use of concentrate as feed supplement improved performance of Bali heifers (except service per conception and their gestation length were not significantly affected) and their calves prior to weaning. Therefore, the short term of nutritional manipulation become an important role in improving performance of Bali cattle, but in long term, genetic potential of this cattle breed

must be considered since issues of their genetic degradation are recently developed in some areas.

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