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THE ECONOMIC EFFICIENCY OF PROBIO_FM TECHNOLOGY: A CASE STUDY OF BALI CATTLE BUSINESS IN CV. DUA AGRI MANDIRI

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ABSTRACT

The potential business the cattle in Bangka Belitung Islands are continuously developing. The need for beef depends upon the external supply from other provinces. The endeavor on the competency of the livestock farmers in feed management has been applied by utilizing the technology of Probio_FM. The objective of the study is to analyze the economic efficiency of the use of Probio_FM technology on feed. The case study was implemented on the business development of the Bali cattle in CV. Dua Agri Mandiri (DAM). Microsoft Excel was used to process the data. Input-output ratio analysis was employed to compare the cost of feed use and the value of produced product using the indicator of body weight gain of livestock times with the livestock price. The study discovered that the use of input on Probio_FM on the feed was economically efficient with 0.55 on average, 0.85 as the highest, and 0.22 as the lowest. The use feed of CV. Dua Agri Mandiri was considered optimal, and the provided feed has fulfilled the quality and quantity.

KEY WORDS

Probiotics Probio_FM, economic efficiency, feed, Bali cattle.

In Indonesia, the agricultural sector has an important contribution to economic development. Animal husbandry, as part of the agricultural sector, comprises various animals i.e. cattle. It is raised to produce beef. It contains protein with high economic value. It then becomes the source of income, investment platform, social function, source of fertilizer, and utilization of agricultural waste (Tumewu et al., 2014). Thus, the development of animal husbandry is both to maintain health through optimal protein intake and to create job opportunities in the informal sector so that agriculture could provide a strategic role in Indonesia's economic development.

In Bangka Belitung Islands, cattle have the potential to be developed in the business aspect. One of the local government's programs is to develop cattle which was supported by the availability of natural resources. However, the development faces the difficulties such as high feed costs and low implementation of agricultural technology. It requires an alternative way to provide feed for the cattle using the low cost of feed formulation. It can hypothetically reduce the feed cost and maintain the quality of the feed. Bambang, et al. (2010), suggests that the use of alternative feed formulation offers more efficient and better nutrition than commercial feed.

The farmers' skills in feed processing have been continuously improving. Using the technology of Probio_FM as the probiotics are part of the effort. Yetti et al (2022) mention that the source of local feed materials could be utilized by optimizing the implementation of the technology Probio_FM sustainably. The fermentation of the feed materials could determine the productivity of the cattle by ensuring a better quality of feed (Manin et al. 2014). It could apply Probio_FM by adding one percent of probiotics to the feed materials offering the best results on the growth of the cattle (Manin et al., 2010).



The issue of cost efficiency of feed by using the local feed materials needs to be taken into account as the characteristics of the province consist of hundred of islands. Kalangi (2014) states that the productivity of cattle could be improved by ensuring the business and its process are sustainably efficient. Hence, the study is vital on the impact of the implementation of the Probio_FM in feed processing and whether it could affect the productivity of the cattle as well as it could provide efficient feed cost. The study is expected to provide related information on fermented feed which is part of the factors of production.

METHODS OF RESEARCH

The study was conducted in CV. DAM Desa Petaling Kecamatan Mendo Barat Kabupaten Bangka. CV DAM was chosen as the location of the study by considering that they have used this probiotic. The study was conducted for five months from August to December 2021. The case study was applied as the method of the study. Nazir (2011), explained that the case study is part of descriptive research. The method was used to describe the detailed information on background and special characteristics. It was employed to describe the practice of the implementation of probiotics. The data was obtained from the questionnaire with face-to-face interviews about identity, type of cattle, type of forages, type of concentrate feed materials, and type of tools in producing the complete feed in CV DAM. The obtained information was then processed using Microsoft Excel and analyzed using the input-output ratio. The analysis compared the score of the marginal product. It used the body weight gain time's price or Pbb Score with marginal cost value or known as ration cost. It was formulated as follows (Nasution, 2011):

$$EEUF = \frac{\text{Raions Cost (Rp)}}{\text{Pbb Score (Rp)}}$$

Where: EEUF = Economic Efficiency on the Use of Feed; Rations Cost = The total of consumed rations x price (Rp); Pbb Score = body weight gain x price (Rp).

A business was efficient when the economic efficient score was below one (Soekartawi, 2003). It meant that the spent ration's cost was low along with the body weight gain. While the economic efficiency was greater than or equal to one, it indicated that the production factor was inefficient. It was due to the spent ration's cost was higher than the body weight gain. Hence, the study would discover whether the feed cost is more efficient using the technology of Probio_FM as the supplemental feed.

RESULTS AND DISCUSSION

In general, the type of feed consisted of forage and concentrate feed. Both were used in complete feed production by the fermented technique using probiotics. It was to increase the absorbed feed score and eased the feed management as fermented feed could be saved over a long period of time. Astuti and Yulia (2019) argued that the Probio_FM-based feed was more efficient and eased feed management.

The materials used in producing the complete feed were 60% of corn stalk, 25% of tapioca waste, and 15% of palm kernel oil. The other materials were two percent of molasses, one percent of probiotics Probio_FM, and water. The complete feed cost was Rp 1.349 /kg with the hig hest contribution of price on molasses Rp 12.000/Kg, palm kernel oil 4000/Kg, probiotics Probio_FM RP 20.000 /L, corn stalk 1.100/Kg, and tapioca waste Rp200/kg.

One ton of complete feed was produced once a week. The feed was fermented within seven days. The feed was applied twice a day, morning and evening. The total feed was 10% of the cattle's body weight. On average, the daily total feed was 8.3 kg for each. Figure 1 illustrated that the total consumed feed for five cattle was different with the highest at 8.6 kg and the lowest at 8.1 kg for daily intake.

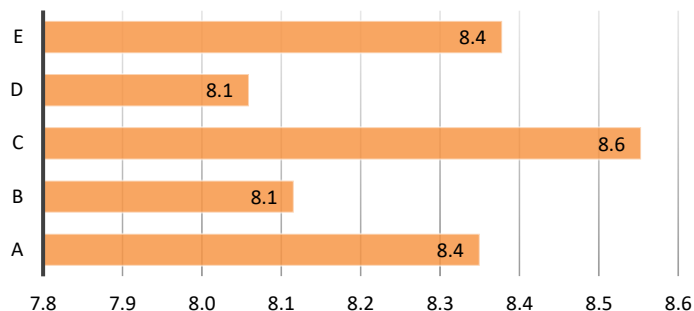


Figure 1 – Total of Consumed Feed

The use of probiotics Probio_FM in complete feed was able to increase the body weight of cattle. On average, the body weight gain was 0.4 kg for each. Figure 2 illustrated the body weight gain on five cattle differently with 0.8 kg as the highest and 0.2 kg as the lowest.

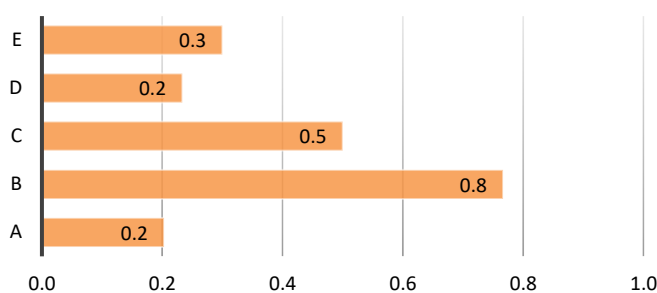


Figure 2 – The Change on Body Weight Gain

The increase in the value of feed costs per month for the five samples was less than Rp. 500,000, the average increase in the value of feed costs was Rp. 357,812. The value of the feed cost in the five samples is relatively uniform, the difference in the value of the feed cost is determined by the difference in the amount of feed, while the feed price per kg is the same, Rp. 1,349 / kg. The value of feed costs is relatively the same, along with the amount of feed consumption is also relatively the same. The increase in the value of changes in body weight gain for the five samples varied. The highest increase in body weight gain was in samples C and D, the lowest was in samples A and D. The increase in body weight gain was an average of Rp. 833,300/month, the highest increase was Rp. 1,594,667/month, the lowest increase was Rp. 422,500/month. The increase in the value of changes in body weight gain was not uniform, directly proportional to the body weight gain of each sample, while the selling price of the carcass was the same, namely Rp. 65,000/kg/live weight.

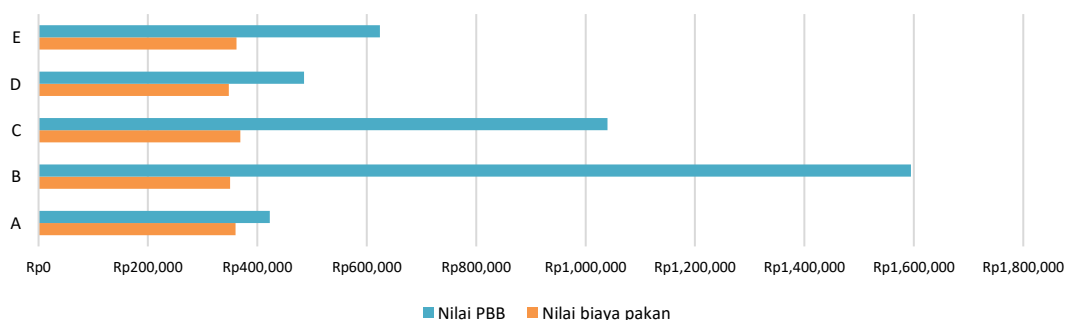


Figure 3 – Comparison of the cost of feed and the score of PBB per month



The study discovered that the input-output analysis showed that the complete feed was considered efficient. The economic efficiency score was 0.54 on average with 0.85 as the highest and 0.22 as the lowest (Table 1). It indicated that the use of probiotics Probio_FM in feed was lucrative. It described that the feed fulfilled the quality standard. Enough quality and quantity of feed determined cattle productivity (Sidauruk et al., 2010; Stevy et al., 2017). It also determined the business was able to reach the highest added value of production (Hanafie, 2010). The added value of production was also influenced by various feed costs.

Table 1 – The Economic Efficiency on the Use of Probio_FM-based Feed

Score	EEUF
Average	0.54
Maximum	0.85
Minimum	0.22

Stevy et al., (2017) argued that 79,56 % of the production score of cattle in Bolaang Regency was influenced by various forages cost while 20.44 % was influenced by other variables such as environment, socio-economic, and technology. The use of Probio_FM-based based was able to improve the appetite of the cattle (Astuti and Yulia, 2019). Such conditions indicate that the use of feed is more efficient in producing livestock production value, as measured by the indicator of the increase in the value of body weight gain of livestock. The economic efficiency value of feed usage still has the potential to increase with the length of observation time and sample uniformity, according to Stevy et al. (2017) differences in livestock conditions determine differences in the value of livestock production.

CONCLUSION

The use of technology Probio_FM-based feed in CV. Dua Agri Mandiri was considered economically efficient. The farmer was able to utilize the combination of forages and concentrate feed formulated in complete feed. The economic efficiency in feed cost could be improved through the adjustment of consumed feed by considering both body weight and animal well-being.

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