Profiles of Beef Cattle Farmers with Different Maintenance Systems in Bima, West Nusa Tenggara

Muh Andika Prasetia, I Gede Suparta Budisatria, Tri Satya Mastuti Widi, Sigit Bintara and Endang Baliarti*

Gadjah Mada University, Division of Animal Production, Departement of Animal Breeding & Reproduction, Faculty of Animal Science, Bulaksumur, Yogyakarta 55281, Yogyakarta, Indonesia

ABSTRACT

This study aims to determine the profile of beef cattle breeders with different maintenance systems in Bima, West Nusa Tenggara. The research was conducted from January 2020 to September 2020, involving a total of 100 breeders / farmers selected using purposive sampling and considering the minimum livestock maintenance and ownership system. Breeder profile data were processed descriptively quantitative and qualitative. The results showed that breeders / farmers in the intensive Bima Regency had an average age of 30 to 50 years with an average education level of No School, Middle School, High School (23.00%), while the age in the extensive system was 40-50 years with an average education level of no school, SD, SMP, SMA (24.00%), and farming experience an average of <9 years at intensive (96.00%) and extensive> 20 years (62.00%) . The maintenance system, the origin of livestock, the purpose of raising and the marriage were not significantly different. It is concluded that the livestock raising system is related to the objectives of beef cattle breeders. Farmers with extensive systems use livestock more as savings and insurance, while those with intensive systems use livestock as their main source of income and produce manure.

Introduction

Bima Regency is one of the Regencys in NTB Province with a population of 195,975 beef cattle. Most of the community raising systems in Kabupaten Bima are still extensive or traditional. Livestock are released in a pasture known as So. So used jointly by breeders and only occasionally controlled livestock. Maintenance with a release system allows livestock to move around from one place to another which is far from the reach of the owner. Increased population and use of extensive land for agricultural purposes make it difficult for livestock to obtain feed. Farmers in Bima Regency apply an extensive and intensive maintenance system in beef cattle cultivation.

The extensive and intensive beef cattle raising system has different objectives, namely breeding and fattening. The extensive system is carried out by releasing cows on grazing land owned by farmers and free land representing land that has not been used by the owner. In addition, the extensive system allows farmers to acquire calves through natural mating. The main objective in intensive systems is fattening. Cattle are fattened in houses or cowsheds and are not released to grazing land. Farmers provide feed and drinking water. The differences in livestock raising systems differ in terms of weight gain and body size (Udo *et al.,* 2011).

Ranchers in Bima Regency have been raising cattle for generations since a long time ago. The aim and motivation of breeders in operating a cattle

farm is economic security (livestock as savings), a source of income. They suggest economic security (Cows as savings) is the most important motivation in cattle farming because when the financial problems are facing them, they will use livestock as a solution. The majority of them raise livestock as their main livelihood, mainly to meet their financial needs. Therefore, this study aims to determine the profile of beef cattle breeders with an extensive and intensive maintenance system in Bima Regency, West Nusa Tenggara. It is hoped that the results of the study can become a source of information for the surrounding community and policy makers in developing agricultural and livestock resources.

Material and Methodology

Time and place of research

The research was conducted from January to August 2020 in Bima Regency, West Nusa Tenggara. The number of research samples as many as 100 farmers with an extensive maintenance system of 50 respondents and an intensive system of 50 respondents in Bima. The data collected consists of primary data which is the result of field observations and interviews with farmers directly.

Data collection

Data were collected using the participatory rural appraisal (PRA) method (Kirsopp, 1994) to explore profiles. Data obtained through discussions, field surveys, and direct interviews with farmers using a questionnaire. The types of questions asked were related to the farmer's profile, including name, age, level of education, occupation, experience with raising cattle, goals and motivation of cattle farming. The aims and motivations of cattle farming are used to analyze the differences between two different rearing systems.

Data analysis

Data Statistical analysis using independent t-test to determine the difference between the two maintenance systems. The analysis results are described quantitatively.

Results and Discussion

Study Area General Information

Bima Regency is one of the Autonomous Regions in West Nusa Tenggara Province, located on the eastern tip of Sumbawa Island next to Bima City (a fraction of Bima City). Geographically, Bima Regency is in the position of 117 ° 4 "-119 ° 10" East Longitude and 70 ° 30 "South Latitude. Topographically, most of Bima Regency (70%) is highland with mountainous texture while the rest (30%) is plains. About 14% of the lowland proportion is rice fields and more than half is dry land. Due to the limited agricultural land, which is related to future population growth, it will cause the carrying capacity of the land to become narrower. The consequence is a transformation and reorientation of the economic base from traditional agriculture to entrepreneurial agriculture and the small industrial sector and trade. Judging from the height from the sea surface, Donggo Regency is the highest area with an altitude of 500 m above sea level, while the lowest area is Sape and Sanggar Regencys which reach an altitude of only 5 m above sea level. The area after the formation of the Bima City Region based on Law Number 13 of 2002 is 437,465 Ha or 4,394.38 Km² (before the expansion 459,690 Ha or 4,596.90 Km²) with a population of 473,890 people with an average density of 96 people / Km². Bima has a tropical climate of the type (Aw) with a relatively short average rainy day. With an average annual rainfall of 58.75 mm, it can be concluded that Bima is a dry area for most of the year which has an impact on the small water supply and the dryness of most rivers. The highest rainfall occurs in December, January, and February with an average recorded ≥ 171 mm with an average rainy day ≥ 15 days and dry season occurs in July, August and September where no rain occurs. Bima Regency generally has inundated and non-flooded drainage. The tidal effect is only 1,085 Ha or 0.02% with the largest location in the coastal area. Meanwhile, the area that was continuously inundated was 194 Ha, namely the Roka Dam, Sumi Dam and Pelaparado Dam, while the area that was never inundated in Bima Regency was 457,989 Ha.

Farmer Profile

The profiles of beef cattle farmers with different maintenance systems in Bima are presented in Table 1.

Table 1 shows the age of the breeders with higher and more intensive care systems which are predominantly young and extensively dominated by older ones. This is in line with Sirajudin's research (2017) which states that smallholder farms with

younger breeders will have the ability to increase the production of raised cattle by looking at the production produced. The age factor greatly influences work productivity, both as a farmer and breeder (Ansar, 2014). Furthermore, young breeders are usually easier to receive information, both from counseling and other activities in rural areas (Nazlah, 2008).

Table 1. Profiles of farmers with intensive and extensive maintenance systems in Bima Regency, West Nusa Tenggara Province.

Parameter	Bima	
	Intensive	Exstensive
Number of breeders	50	50
age (%) :		
<30-39	62,00	0,00
40-49	26,00	56,00
>50	12,00	44,00
Farming experience (%) :		
<9	96,36	2,00
10-19	2,00	36,00
>20-30	2,00	62,00
Level of education (%) :		
No school	22,00	22,00
SD	16,00	30,00
SMP	26,00	28,00
SMA	20,00	16,00
D3/S1/S2	16,00	4,00
Breeder goals*:		
Savings	3,00±0,00	3,00±0,00
fertilizer	1,80±0,40	1,00±0,00
labor	1,00±0,00	1,00±0,00

Note : In order of importance: 3 = very important, 2 = important, 1 = not important.

Experience in farming is an important factor in increasing good maintenance to increase livestock production (Waris *et al.,* 2015). The results of the study on the intensive farming experience in the area of Bima, the percentage produced was higher at <9 years old, in contrast to the higher age extension at the age of 20-30 years above. This means that intensive farming has a lower farming experience of 9 years and extensive farming experience is higher between 10-19 years. Experience in this extensive breeding begins and is gained from previous parents and generally continues with caring for themselves. Sirajudin *et al.* (2017) states that the more experience gained, the more knowledge is achieved, so that skills in running a livestock business can improve.

The education level of breeders in the Bima area with intensive and extensive maintenance is still quite low, most farmers do not go to school and only graduate from elementary school to junior high school, although some breeders also have an educational background of D3 / S1 / S2, as presented in the Table 1. Budisatria *et al.* (2013) reported that small farmers only have a low educational background, more than 75% of farmers only completed primary and secondary school. Agus and Widi (2018) state that small farmers are the most vulnerable stakeholders in the beef cattle production system in Indonesia. Smallholders often have limited access to the inputs, information and services they need to foster a better future. They need to be continuously empowered in terms of technology inputs, financial support, information, and markets. Haq *et al.* (2019) suggest that farmers with a higher level of education will implement innovation more quickly. Conversely, those with low education tend to avoid innovation. The level of education will also have a direct effect on the mindset and behavior in their business and breeders with a low level of education will tend to be accepting so that under these conditions there is a need for continuous guidance (Santosa, 2001).

The main objective of raising livestock in the Bima area is still savings. This is in line with the research of Haq *et al.* (2019) which states that most Jabres cattle breeders use their cattle as savings. The aim of raising livestock as a fertilizer producer also does not show any difference between the two maintenance systems in Bima, although some intensive breeders have several breeders who use it, still from the point of view of interest, raising livestock as a fertilizer producer is not the main motivation. This is in line with the research of Ismanto *et al.* (2018) stated that intensive and extensive public livestock farming is still very low in fecal management because knowledge and motivation in raising livestock is still very low. Meanwhile, the purpose of raising livestock as labor does not show any difference. According to Budisatria and Udo (2011), the purpose of raising livestock is multifunctional, with the economic benefits of raising animals relatively low.

Conclusion

It is concluded that the livestock raising system is related to the objectives of beef cattle breeders. Farmers with extensive systems use livestock more

as savings and insurance, while those with intensive systems use livestock as their main source of income and produce manure.

References

Ansar, 2014. Factors that affect the ease of raising bean goats with the semi-Template system. Regency. Jeneponto. *Essay.* Social intensive department in Economic Village, Faculty of Animal Husbandry, UNHAS.

Badan Pusat Statistik, 2019. *Kabupaten Bima dalam populasi sapi potong 2017.* Bima: Badan Pusat Statistik Kabupaten Bima

Budisatria, I. G. S. and Udo, H. M. J. 2013. Goat-based aid programme in Central Java/: An effective intervention for the poor and vulnerable/? Small Rumin. *Res.* 109 : 76–83

Haq, M.S., I.G.S. Budisatria, Panjono, and Maharani, D. 2019. Measuring the sosial economic benefits of Jabres cattle keeping in Bantarkawung Sub-Regency, Brebes, Central Java, Indonesia. *JITAA.* 44 (2): 220-227.

Ismanto, A., Yetriani, and Lesmana, D. 2018. Tingkat pengetahuan peternak sapi terhadap limbah yang dihasilkan di Desa Sidorejo Kecamatan Penajam Kabupaten Penajam Paser Utara. *Pertanian Terpadu.* 6(2): 50-63.

Kirsopp-Reed K. 1994. A Review of PRA methods for livestock research and development. *RRA Notes.* 20 : 11–36

Nazlah, 2008. Evaluasi pencapaian program pengembangan sapi potong pola gaduhan di Kabupaten Mamuju. Tesis. Sekolah Pasca Sarjana, Fakultas Peternakan Universitas Gadja Mada, Yogyakarta. *J. Ilmu Produksi dan Teknologi Hasil Peternakan.* 07 (01): 29-34.

Santosa, K.A. 2001. Strategi pendidikan petani peternak untuk menghasilkan produk peternakan yang kompetitif. *Seminar Nasional Mengkaji Kualitas Produk Peternakan yang Kompetitif.* Fakultas Peternakan Universitas Gadjah Mada, Yogyakarta.

Sirajuddin, S.N., Nurlaelah, S., Amrawaty, A., Amrulla, T., Rohani, S. and Saleh, I.M. 2017. Relationship between farmers characteristic and income from beef cattle with the traditional profit-sharing. *Sustainable Agriculture.* 11(5): 29-34.

Udo, H. M. J., Aklilu, H. A., Phong, L. T., Bosma, R. H., Budisatria, I. G. S., Patil, B. R., Samdup, T. and Bebe B. O. 2011. Impact of intensification of different types of livestock production in smallholder crop-livestock systems Livest. *Sci.* 139 : 22–9.

Waris, B.N. and Wahyuning, D.A. 2015. Pengaruh tingkat pendidikan, usia dan lama beternak terhadap pengetahuan manajeman reproduksi ternak sapi potong di Desa Kedungpring Kecamatan Balongpanggang Kabupaten Gresik. *J Ternak.* 6 : 3-8.

Widi, T.S.M. 2015. *Mapping the impact of crossbreeding in smallholder cattle systems in Indonesia. Thesis.* Wageningen University.