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Rearing Lactating Horse for Farmers' Additional Income: A Case Study in Saneo Village, Dompu, West Nusa Tenggara, Indonesia

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ABSTRACT

Sumbawa wild horses' milk is famous in Indonesia because of its use for good recovery. The study was aimed at to describe the management of lactating horses for milk production and the income analyses of farmers raising horse for milk production in Saneo village Woja-Dompu, Sumbawa Island, West Nusa Tenggara, Indonesia. A survey was conducted on 30 respondents determined by simple random sampling over 143 farmers raising horse for milk production. Primary data were obtained by conducting the observations and interview based on the questionnaires, and the secondary data were gathered from government institutions. Data related to horse management and horse productivity were analyzed using descriptive method, and the level of farmers' income were analyzed using output-input method. The dairy horse farming in Saneo village was an extensive traditional system and a secondary job for farmers. The lactating horses and their foals were leaved grazing in a common grazing field during the day and kept in the pen near farmers' house during the night and separated with their foals. In the pen, all the horses were only fed about 10 – 20 kg mixture of grass and other roughages without considering the number of the lactating horses and about 1 kg rice bran was given to each lactating horse. Because of the lack of farmers' knowledge in dairy horse management, the mares were only milked at night and in the morning before grazing. The foals were leaved with the mare during the day and weaned naturally, result in the milk production was relatively low. However, the average farmers' monthly income was IDR1.839.486 ±359.869in which 43% of it was derived from milk selling. This additional income was higher than the minimum monthly salary. The results suggest that raising management of lactating mare should be further improved through increasing government role in extension of dairy horse management.

Key Words: Milking mare, Farmer income, Management system, Milk production

INTRODUCTION

Most of human milk consumption are supplied by cows milk. However, in some areas like Sumbawa island, milk is mostly supplied by horse and buffalo milk, and surplus production is sold as an additional income. The composition of horse milk is comparable with human milk, particularly in its' protein, lactose and ash content (Lametti et al. 2001). Furthermore, the casein content and the proportion of casein and whey protein contents of mare's milk is relative low, so it does not clot when acidified, therefore, it is good for infants' food.

Hermawati et al. (2004) reported that milk of Sumbawa mares contains strong antimicrobial activity of nine species bacteria. Rijatmoko (2003) also reported that the Sumbawa horse milk contains antimicrobial agents against *tuberculosis* Mycobacterium. That might cause an outstanding and popular "mare milk" promoted as acure for pneumonia, tuberculosis and typhoid, making its demand and price increases, and may create promising business.

Sumbawa horse milk is partly come from Saneo village and it is sold in the region of Dompu, Mataram, even to other regions such as in Java, including Jakarta and East Kalimantan. This activity is expected to develop as a promising agribusiness to increase framers' income. To support this expectation, it is necessary to provide a base line information for developing the

mare's milk production. Therefore, as an initial stage,this study was conducted to describe the management and productivities of the dairy horses, especially in Saneo village.

MATERIALS AND METHODS

This study was conducted in the Saneo village, Woja, Dompu District, West Nusa Tenggara Province, with consideration that this village has a potency to produce horse milk, both geographically and the quality horse. A survey was conducted on 30 respondents' of total 143 horse farmers by using a systematic random sampling technique (De Vaus 1991).Primary data related to horses' farm performances (identification of farmers and their horses' population); management of dairy horses (breeding and breeding stock selection, feeding system, housing, health, milking and milk marketing); horse productivity (age of puberty, heat period and estrus cycles, age of first mating, gestation period, litter size, foaling interval, age of first milking, daily milk production and milk production/lactation) and farmers' income were obtained by a way of observations and interview based on the questionnaires. While the secondary data such as the horses' population as well as number of farm animals and the size of the region were gathered from government institutions. The average of data related to horses' farm performances, management of dairy horses, and livestock production were analyzes using descriptive method; while farmers' incomes were analyzed using output-input method.

RESULTS AND DISCUSSION

Horses farm in Saneo Village

Saneo Village is one of villages in the Dompu District with an area of 49,000 km2 located in the plateau area which is about 9 km from the government center of Dompu. Most villagers in Saneo live from agricultural activities and conducted on dry land. Horse farming and other animal husbandry are their secondary jobs. The horse reared in this village is a pony type horses. Each farmer had 4 ± 2 horses with the population structure consists of 60% of mature female, 11% of mature males and 29% foals. The main goal of this horse farm is to produce milk.

Dairy horses' management

Horse breeding stock. Most respondents (90%) did not consider the quality of the horse in selecting their breeding stock. They only considered the age of the horse. They thought that a good breeding stocks of horses were those being capable in reaching mature body size when their ages of one and a half to two years old. Ninety-five percent of farmers did not know the characteristics of a good horse for breeding stock. Therefore, the development of horse population was going very slow. Consequently, they did not pay particular attention to their horse breeding problem. All these reproductive traits run naturally, where the existing stud at the grazing location mated female at any time, so that productivity of the horses at overall horse farms were relatively lower than the theory proposed by Jacoeb (1994).

The characteristics of female reproductive parameters were 24.77 ± 1.55 months;28.13 ± 1.66 hours;21.00 ± 0.74 days;26.00 ± 1.2 months;10.83 ± 0.51 months and 36.43 ± 0.9 months successively for age of puberty, estrus period, estrus cycle, age of the first mating, gestation period and age of first getting birth respectively. The litter size was only one colt which was weaned naturally with the foaling interval of 13 ± 0.83 months. While the characteristics of males reproductive parameters for both the age at puberty were 24.60 ± 1.35 months and the age at the first mating were 25.56 ± 1.2 month. Therefore, it need extensions from related institution, to increase their knowledge of good characteristics and reproduction management of dairy horses.

Feeding system. The horses' feeding system in Saneo village is quite unique. The horses were left roaming freely on pasture at 08.00 am to 05.00 pm. That is why there is a term 'wild horse', then their milk produced is well-known in term of "wild horse' milk". In the late afternoon the horses were escorted back to the pen near the farmers' houses and fed about 15-20 kg of grass/head. Especially for lactating horses one kg of rice bran per head was given before night milking at 07.00 pm. In this study, it was identified the types of feed often given by the farmers when the horses in the stables such *as Sesbaniagrandi flora, Gliciridia, Leucaenachepala* and mostly field grass. Hermawati (2005) identified 32 types of forage eaten by horses in pasture in island of Sumbawa including in Saneo village indicated that horses consumed many types of plants in the paddocks. However, body condition of the lactating horses in this study was relatively thin. This indicated that their nutrient in takes was not enough to fulfill their nutrient requirement. Additional nutrient intakes from grazing time of only 15-20kg forages and 1 kg of rice bran supplied insufficient nutrients for lactating horses. Therefore, the farmers need to learn about feed and feeding the lactating mare.

Pens. The horse pens are generally built in the yard of farmers' houses and not yet fit the prerequisite of dairy animal. Generally, the condition of stables have bad environment. The cages are built by using second materials and local-available material, with an average of economic age was only one year. The cages have an average wide of 4.2 ± 0.84 m and an average length of 4.4 ±0.91 m, especially only for lactating horses.

Health maintenance. Farmers generally have a high awareness in the prevention and treatment of the sick horses. They vaccinate their horse against anthrax every year. Vaccination is partially subsidized by the local government, while the sick horses treatment were cashed by themselves by calling the paramedics or veterinary who live around farm.

Milking management. The lactating mares were milked at night when they arrived back in the cage from grazing land and in the morning before the horse leaved the cages to the pasture. The milk production was very low and only 1.5 ± 0.1 liter per day when they were milked since the first week to three months of lactation and 1.1 ± 0. 2liter/day when they were milked for three to six months periods. Low milk production was associated with the type the horse. The horse in Saneo is not a good horse for dairy type. In addition, it is because the colts were left roaming freely on pasture and suckling to their dam during the day. The farmers were not wean the colts to keep the dam producing milk, so it can be used commercially. They did not know the animals would remain lactating despite the colts was weaned, provided that the dam was continuously milked. Theoretically, although the young off spring are early weaned, the mothers continue producing milk as long as they are given more amounts of feeds. On the other hand, the farmers realized the importance of producing milk hygienically. Before milking, they cleaned every thing related to prevent milk contamination, and in milking time, the foals were tied up away from thei rmother.

Farmers' income

The average of farmers' net income was IDR 1.839.486 ±359.869 monthly which about 43% derived from milk selling (Table 1) with the price of IDR 25.000 per liter.This net income reached above the monthly minimum salary of IDR 1.100.000in 2013. This meansmare in the Saneo village gainedthe farmers' incomesignificantly. It is important to improve the management of lactating mare in this village by educatingthem and supportingtheir financial.

Table1. Net farm income of farmers rearing lactating horses (2013)

Item	Total cost (IDR)	Minimum monthly salary in 2013 (local government) (IDR)
Fixed cost	612.563± 212.255	
Variable cost	331.552±95.527	
Total cost	944.115± 238.455	
Gross income		
Value of horse sold (+)	8.312.694± 2.364.261	
Horsevalue end of the accounting year (+)	14.275.000± 5.912.734	
Horsevalue at stating year (-)	10.004.662 ± 4.814.047	
Value of horse milksold (+)	9.491.750± 2.202.886	
Total revenue	22.074.782±4.359.249	
Annual net farm income	22.073.838±318.438	
Monthly net farm income	1. 839.486 ±359.869	1.100.000

IMPLICATIONS

Raising horse for milk production increases farmers income. Their income may be further increased by improvingthe management of the lactating mares.

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