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REPRODUCTIVE PERFORMANCE OF BUFFALO IN SOUTH SULAWESI
(A PRELIMINARY STUDY)

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ABSTRACT

This was a preliminary study that aimed to describe the reproductive performance of buffalo in South Sulawesi. The study was conducted in three different districts; Tana Toraja (R1), Enrekang (R2), and Wajo (R3). The number of buffalo involved in the present study was 147, 149, and 152 in R1, R2, and R3, respectively. Primary data were collected with the help of a questionnaire in interviewing the farmers and secondary data was obtained from livestock services in each region. The results of this study showed that the age at first buffalo heifers calved was >3.5 years; 91.9%, 71.9%, and 54.2% in R1, R2, and R3, respectively. The remaining buffalo heifers were calving ≤3.5 years of age. Days to first breeding after calving differed significantly (P<0.05) at different districts. In the region of R3 the number of buffalo bred within six months after calving was significantly (P<0.05) higher than in R2 and R1 (67.2% vs 38.0% and 56.6%). Furthermore, the number of buffalo first bred >12 months was significantly (P<0.05) higher in R2 in comparison to R1 and R3 (41.0% vs 20.9% and 19.5%). Moreover, calving interval within 18 months differed significantly (P<0.05) at different districts. In the region of R3, the number of buffalo with calving interval within 18 months was 56.3%; significantly (P<0.05) higher than in R1 and R2; 47.5% and 44.6%, respectively. In conclusion, reproductive performance of buffalo in South Sulawesi based on primary data collected from the farmers showed much better in the region of R3 in comparison to R1 and R2. Therefore, it is necessary to improve the reproductive performance in the two regions.

Keywords: Buffalo, Reproductive performance, South Sulawesi.

INTRODUCTION

Buffalo has been an integral part of livestock agriculture in Asia for over 5000 years producing draft power, milk, meat and hides (Nanda and Nakao, 2003).

It has been stated that buffalo population of the world increased from 88.32 millions in 1961 to 177.25 millions in 2007 with an increase of over 100% (Pasha and Hayat, 2012). Moreover they noticed that maximum growth per annum in buffalo production occurred from 1961 to 1971; 2.31%. This growth was decreased to 1.43% during 1971-1981 and 1.09% during 2001-2007, respectively. Contrary, in Indonesia in the same period, buffalo population was decreased from 2.89 millions in 1961 to 2.09 in 2007. In Indonesia, the causes of this problem were not really understood. Most probably that this problem initiated by
transformation of field rice mechanization from animals including buffalo to machine resulting in decreasing of raising buffalo by the farmers. This may due to that in Indonesia buffalo purpose especially in rural area in the last time are mainly for mechanical power in the field as well as for meat and milk. In recent years onward, the main purpose of buffalo has been change for meat and milk production as a substitute in supporting demand for red meat. Therefore, it is necessary to increase buffalo production in Indonesia.

In order to increase buffalo production, there is a necessity to cover the problems as the causes of limiting growth of buffalo population. These problems should properly describe specifically in order to solve the problems including reproductive performance. To our knowledge, most reports of buffalo in Indonesia described about production and socio-economic, but lacked detailed characterization of reproductive performance especially in South Sulawesi Province that is having different area where the buffalo raised by the farmers. Therefore, the objective of this study was to describe the reproductive performance of buffalo in South Sulawesi.

MATERIALS AND METHODS

Animals and management

A total of 448 buffalo cows from three different districts (Tator; R1, Enrekang; R2, and Wajo; R3) in South Sulawesi were enrolled in the present study. The number of buffalo at different districts was 147, 149, and 152 in R1, R2, and R3, respectively. All buffalo in all districts where housed in the night-time and free in the day-time for grazing. However, the farmers in R1 raised the buffalo slightly more intensive than in R2 and R3 especially in feeding the animals. In R1, feeding system was mostly “cut and carry” in combination to grazing. While in R2 and R3, the buffalo were fully grazing in the field.

Data Collection

Primary data were collected with the help of a questionnaire in interviewing the farmers and secondary data was obtained from livestock services in each region. For primary data, the following data were recorded for each animal: age at first calving, days to first breeding, and calving interval.

Statistical Analysis

All data were presented in percentage. The percentage of buffalo cows that first calved >3.5 y and ≤3.5 y, first bred ≤6 m and >12 m, and calving interval ≤18 m at different districts were compared using Chi-square test. All calculations were performed using the statistical package SPSS16.0 for windows (SPSS Inc., Chicago, IL, USA).
RESULTS AND DISCUSSION

A total of 448 buffalo cows were using in the present study, and they were involved for further analysis. In Figure 1 shows that out of 147 buffalo heifers in R1, it was only 8.1% first calved within 3.5 years old age. The remaining 91.9% buffalo heifers were first calved greater than 3.5 years old age. The percentage of first calving buffalo heifers within 3.5 years old age in R1 shows lower than the percentage of in R2 and R3, whereas the first calving of buffalo heifers in R2 and R3 within 3.5 years old age were 28.1% and 45.8%, respectively. Perera (2011) stated that the factors that influence the buffalo heifers attain puberty are genotype, nutrition, management social environment, climate, year of season of birth and diseases.

Basically, lower number of buffalo heifers first calving in the present study might be affected by reproductive problems. Most probably they were suffering from delayed puberty. Terzano et al. (2012) stated that inherent reproductive problems such as delayed puberty, higher age at first calving, long post partum anestrus period, long inter-calving period, silent heat coupled with poor expression of estrus, seasonality in breeding and low conception rate limit the productivity of buffalo. Furthermore, lack of integration or synchronization or endocrine imbalances at this phase may result in reproductive failure.

![Figure 1](Image)

Figure 1. Percentage of buffalo cows that first calved >3.5 y and ≤3.5 y at different districts

Figure 2 shows the percentage of buffalo cows that first bred within six months and greater than 12 months after calving at different districts. Days to first breeding after calving differed significantly (P<0.05) at different districts. In the region of R3 the number of buffalo bred within six months after calving was significantly (P<0.05) higher than in R2 and R1 (67.2% vs 38.0% and 56.6%). Furthermore, the number of buffalo first bred >12 months was significantly (P<0.05) higher in R2 in comparison to R1 and R3 (41.0% vs 20.9% and 19.5%).
Delayed breeding of buffalo cows after calving prolong conception, pregnancy, calving and subsequently reduce probability of getting many offspring during their lifetime. Perera (2011) stated that buffalo are polyestrous and are capable of breeding throughout the year. Several factors that affecting delayed breeding after calving include grazing system in relation to the season (Perera et al., 1987), climate and nutrition (Kaur and Arora, 1982), and region (Vale et al., 1990). Therefore, in order to improve reproductive performance of buffalo, it is necessary to solve this problem in multiple factors including the region, nutrition, climate, management, etc.

![Figure 2](image-url)  
**Figure 2.** Percentage of buffalo cows that first bred ≤6 m and >12 months after calving at different districts

The percentages of buffalo cows with calving interval within 18 months at different districts are shown in Figure 3. Calving interval within 18 months differed significantly (P<0.05) at different districts. In the region of R3, the number of buffalo with calving interval within 18 months was 56.3%; significantly (P<0.05) higher than in R1 and R2; 47.5% and 44.6%, respectively. The importance of calving interval in buffalo cows determines their reproductive efficiency as well as number of calves produced during their live. Higher number of calves produced by buffalo cows in a time manner is an indicative for their fertility.

Long calving interval in buffalo is affected by several factors. Peters and Ball (1987) stated that the components of calving interval are the calving to conception interval and the gestation period. Moreover they stated that the calving to conception interval is the time from parturition until the establishment of the next pregnancy. This interval is the main determinant of the calving interval, and is thus the parameter that is usually manipulated in
order to try to achieve the target calving interval. Therefore, to achieve target calving interval in this region, it is necessary to manage the buffalo especially in relation to reproductive management during postpartum period. In buffalo, the period of postpartum anestrus or anestrus is usually longer than in cattle under comparative management conditions (Dobson and Kamonpatana, 1986; Jainudeen and Hafez, 1993; Perera, 2011). To solve the problems, Perera (2011) suggested methods that are recommended for overcoming prolonged postpartum anestrus in buffalo include adequate nutrition before and after calving, restricting the suckling by calves, and alleviating heat stress by permitting wallowing or use of water sprinklers (Perera et al., 2005).

Figure 3. Percentage of buffalo cows with calving interval ≤18 months at different districts

CONCLUSIONS

Reproductive performance of buffalo in South Sulawesi based on primary data collected from the farmers showed much better in the region of R3 in comparison to R1 and R2. Therefore, it is necessary to improve the reproductive performance in the two regions.

REFERENCES


