Reproduction Diversity of female local buffalo on the condition of smallholder farms in the eastern Seunagan sub-district of Nagan Raya district

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Abstract. The purpose of this study was to identify the female buffalo reproductive characteristics in eastern Seunagan sub-district of Nagan Raya district. This research used survey method in five villages within eastern Seunagan sub-district, namely: Lhok Pange, Sawang Manee, Tuwi Meuleusong and Blang Gedong. Fourty respondents of buffalo breeders were selected based on purposive sampling methods, with the minimum requirement of the breeders having experience more than one year and keeping two productive buffalos which had given birth twice. Data collection was done by interview and discussion techniques. The parameters observed were: (a) the age of the first mated; (b) the age of having the first calf; (c) calving interval and (d) the weaning period. The data obtained were processed and the average was calculated and then descended and described descriptively. The results showed that the reproduction characteristics of female buffalo in the eastern Seunagan sub-district of Nagan Raya district were good enough. The age of the first mated was at 39 months, while the age of having the first calf was at 53.4 months with calving interval 20.47 months and the weaning periods was 14.67 months. Extensive livestock raising systems were 90%, with only 10% of farmers raising semi-intensive livestock.

1. Introduction
Buffalo has more features than cattle in utilizing crude fiber, its adaptability to areas with poor conditions, and relatively large body weight, red meat, rougher meat fiber and has lower fat content, so it is very likely to develop it as a livestock for producing animal good meat [1]. This is due to the buffalo which have the potential to be developed in rural areas, especially in swampy areas. Although its reproductive biology is basically similar to the cattle, there are important differences and unique characteristics that need to be considered in order to apply modern reproductive technologies to improve its productivity. The major reproductive problems affecting buffaloes are mainly as late maturity, long postpartum anoestru intervals, poor expression of oestrus, poor conception rates (CR) and long calving intervals. According to [2], the main cause of poor reproductive performance in buffalo is the weak signs of lust and decreased buffalo libido in the summer. The buffalo has been traditionally regarded as a poor breeder due to having poor fertility in the majority of conditions under which they are raised [3]. According to [4], to increase buffalo population, buffalo reproduction must be optimal as it is known that must have good reproductive performance to get maximum production results. Reproductive performance is a very important concern in buffalo business. Reproduction data of local buffalo in Nagan Raya district is not yet available and is not
well documented, even though the data is very necessary as an attempt to purify and develop local buffalo in eastern Seunagan sub district. Therefore, this research was conducted as an effort to preserve the existence of local buffalo in eastern Seunagan sub district of Nagan Raya district.

2. Materials and Methods
The research method used was survey method through direct interview with buffalo owner based on questionnaire. The selection of the location of this study was done purposively (purposive sampling) with consideration of the districts that have the largest buffalo population in Nagan Raya district. The parameters observed were: (a) the age of the first mated; (b) the age of having the first calf; (c) calving interval and (d) the weaning period. The data collected were analyzed by using frequency table and percentage. The data obtained were processed and the average was calculated and then descended and described descriptively.

3. Results and Discussion
3.1 The age of the first mated
The first mated age of local buffalo was 35.5 months (Table 1), while the first mated age of Simeulue buffalo was 33.0 months [5]. These results indicated that Gayo buffalo were still young to be mated. [6] recommended that female buffaloes should be mated at the age of 3.76 years to get a healthy offspring.

| No. | Village            | Buffalo | The age of the first mated (months) |
|-----|--------------------|---------|-----------------------------------|
| 1   | Lhok Pange         | 86      | 36                                |
| 2   | Sawang Manee       | 69      | 33                                |
| 3   | Tuwi Meuleusong    | 82      | 39                                |
| 4   | Blang Gedong       | 58      | 34                                |
|     | Total              | 296     | 142                               |
|     | Average            |         | 35.5                              |

According to [5-7], the age of the first mated of swamp buffalo in Muntai sub district of Kutai Kartanegara district was 2.8 years.

3.2 The buffalo age of having the first calf
Table 2 shows the age of local buffalo in eastern Seunagan having the first calf. The average age of the local buffalo having a first calf in eastern Seunagan is 53.4 months with the lowest age in the village of Lhok Pange that is 50.4 months. According to [8], the age of buffalo having the first calf in Philippines is 3.6 years.

| No. | Village          | Buffalo | The age of having the first calf (months) |
|-----|------------------|---------|-----------------------------------------|
| 1   | Lhok Pange       | 86      | 50.4                                    |
| 2   | Sawang Manee     | 69      | 51.6                                    |
| 3   | Tuwi Meuleusong  | 82      | 57.6                                    |
| 4   | Blang Gedong     | 58      | 54.0                                    |
|     | Total            | 296     | 213.6                                   |
|     | Average          |         | 53.4                                    |
The age of Simeulue buffaloes have the first calf in Alafan district ranged from 44.4 months to 46.8 months. This result is greater than in Malang and Kampar regency (3.5 or 42 months) [9].

3.3 Calving Interval
Calving interval is the distance between the birth of a child and the next birth. The first lust after giving birth and the conception period in buffalo is the thing that determines the calving interval.

Calving interval of local buffalo in eastern Seunagan sub district is shown in Table 3. Local buffaloes in Seunagan sub district have calving interval of 20.47 months with range of 19.5 months - 21.2 months.

| No. | Village       | Buffalo | Calving interval (months) |
|-----|---------------|---------|---------------------------|
| 1   | Lhok Pange    | 86      | 20.4                      |
| 2   | Sawang Manee  | 69      | 20.8                      |
| 3   | Tuwi Meuleusong | 82   | 19.5                      |
| 4   | Blang Gedong  | 58      | 21.2                      |
|     | Total         | 296     | 20.47                     |

[10] and [11] stated that calving interval of swamp buffaloes are 18-24 month. Whereas [12] reported that calving interval in swamp buffalo ranged from 21.3 months

3.4 The weaning period
The weaning is the process of separating mother and calf or buffalo with the aim to limit or stop the process of breastfeeding. The time of weaning is crucial for the reproductive capacity of the parent. However, children's readiness to be weaned is an important factor that must also be considered, related to the ability of a calf to be able to live without breastfeeding and to consume fiber-based feed. Table 4 shows the weaning period of local buffalo in Seunagan sub district.

| No. | Village         | Buffalo | Weaning periods (months) |
|-----|-----------------|---------|--------------------------|
| 1   | Lhok Pange      | 86      | 13.4                     |
| 2   | Sawang Manee    | 69      | 14.8                     |
| 3   | Tuwi Meuleusong | 82      | 15.0                     |
| 4   | Blang Gedong    | 58      | 15.5                     |
|     | Total           | 296     | 58.7                     |
|     | Average         |         | 14.67                    |

Weaning or separation from the parent is an important one and needs to be considered by every breeder. It is because the weaning period will affect buffalo productivity. The results of buffalo cattle research in eastern Seunagan sub district, Nagan Raya District, showed that the length of weaning time for buffaloes varied 13-16 months with an average of 14.67 months (Table 4).

4. Conclusions
The reproduction characteristics of local buffalo in eastern Seunagan sub district, Nagan Raya district is good. The age of the first mated of local buffalo is 35.5 months, and the age of buffalo have the first child at the age of 53.4 months, with calving interval 20.47 months, while the weaning period is
14.67 months. To improve the knowledge of breeders about the reproduction of buffaloes in eastern Seunagan sub district of Nagan Raya district, the government should provide counselling for the buffalo breeders and provide superior buffalo to improve the genetic quality of buffalo in Nagan Raya district.

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