Breed availability analysis of local beef cattle in Seram Utara Timur Seti District Maluku Tengah Regency

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Abstract. This study aim were to analyze the potential availability of breeds for beef cattle development in Seram Utara Timur Seti District. The research method used was a desk study and survey method. Desk studies were conducted by utilizing relevant secondary data from various related agencies, as well as relevant research results. Meanwhile, surveys and direct observations in the field were carried out in the Animal Husbandry Production Center (KSP) areas, namely Wailoping, Kobisonta and Waitila Village. The variables observed included population structure and potential availability of beef cattle. The results showed that the proportion of the beef cattle population for the categories of calves, youth and adults was 23.18; 22.18 and 54.64% respectively. The sex ratio of male to female in all age categories is still below the normal ratio of 1 male to 5. Total breed growth (net increase) was 70 tails per year from the total population of beef cattle in Seram Utara Timur Seti District (13,032 tails). The total growth of beef cattle is still less than 1% (around 130 heads) of the total population, so it is necessary to pay attention for the development of the source area for beef cattle breeding in Seram Utara Timur Seti District.

1. Introduction
The livestock sub-sector in Indonesia has a strategic role in developing the structure of the national economy. Apart from being a producer of animal protein products and the formation of Gross Domestic Product (GDP), the livestock sub-sector also absorbs labour, foreign exchange reserves and people’s income [1]. In the context of the livestock industry policy, development is expected to lead to the formation of a livestock industry while still paying attention to aspects of environmental, ecological sustainability and community welfare. The components involved in the livestock development process consist of three main components, namely the farmer (community) as the subject, livestock as an object and land as a medium for business development [2]. The integration of these components is critical to the success of the development of the livestock industry.

The facts show livestock development is still faced with several of problems. One of them is that the community's need for livestock products increases in line with the rapid increase in population improved welfare and changes in people's lifestyles. Animal husbandry products, especially beef from beef cattle, are unable to meet the community’s needs, so it is predicted that the supply of imported meat will increase and reach 70% by 2020 [3][4]. Therefore, more intensive efforts are needed to increase productivity and livestock population, especially for beef cattle in Indonesia [5]. Given this, the local beef cattle breeding program is considered very strategic [6]. The productivity of local cattle still has the potential to be improved, as is the case with Bali cattle [7].

The problems in the beef cattle business sector include the underdevelopment of the cattle breeding business, which is currently still being carried out by farmers with a small scale of ownership and is...
part-time in nature. So far, many cattle breeding have been carried out by the community, while the private sector has been reluctant to run a breeding business because of the relatively long turnover of business capital. The existence of calves and feeders is very necessary. If this business does not develop, feeder cattle availability for fattening will be hampered [8]. The lack of supply of superior local cattle for breeders results in the quality of existing cows to decrease from the predetermined standard which is due to the lack of availability of superior bulls in the field because generally good cows are sold by breeders to get a higher selling price [5].

Maluku Province is geographically was an archipelago which has several quite large islands including Seram Island. In terms of the availability of natural resources, Seram Island is very potential for the development of agricultural commodities, including the livestock sub-sector, especially large ruminants (cattle). Souhoka et al. (2020) stated that in October 2018 alone, a total of 52.2% of the cattle slaughtered in the Ambon City RPH came from Seram Island, this is because the island is a beef cattle development area in Maluku province due to land potential and availability of animal feed in the form of grass and agricultural waste for adequate animal feed [9].

One of the potential development areas is Seram Utara Seti District, which is known as one of the centres of agricultural and livestock production in Maluku, considering that this area has a rice planting area of 3,151 ha (in 2018), with the population of Bali cattle as local beef cattle in 2018 was 11,433 heads [10]. This research was conducted to study and analyze the potential availability of seeds to develop beef cattle in Seram Utara Timur Seti District.

2. Methods
This study was conducted in the Animal Husbandry Production Center (KSP) area in the Seram Utara Timur Seti District, Central Maluku Regency, Maluku Province. The study has been conducted for four months.

The research method used is a desk study and survey methods. Desk studies are conducted by utilizing relevant secondary data from various related agencies, as well as relevant research results. While the survey was conducted using a list of questions and field observations in several villages in the livestock production centre areas as the focus and locus for development, namely Wailoping Village, Kobisonta Village and Waitila Village.

The research variables observed included (1) population structure in livestock, including male and female broodstock, male and female calves, and (2) potential availability of beef cattle. Descriptive analysis of the data needed to answer the objectives to be achieved in this study, there was to analyze the potential availability of seeds.

3. Results and Discussion
3.1 Beef Cattle Population Structure
The potential availability of beef cattle is very much determined by the population structure in an area at a certain time period. The population structure in livestock includes male and female broodstock, as well as male and female calves [11]. The structure of the beef cattle population in Seram Utara Timur Seti District, as presented in Table 1.

| Category of Beef Cattle | The Rate | Composition (%) | Sex Ratio (Male:Female) |
|-------------------------|----------|-----------------|------------------------|
| Calves (< 1 year of age): |          |                 |                        |
| - Male                  | 1,424    | 47.14           | 1:1.12                 |
| - Female                | 1,597    | 52.86           |                        |
| - Total                 | 3,021    | 23.18           |                        |
| Veal (1 - 2 year of age): |          |                 |                        |
| - Male                  | 1,208    | 41.80           | 1:1.39                 |
| - Female                | 1,682    | 58.20           |                        |
| - Total                 | 2,890    | 22.18           |                        |
Adult Cows (> 2 years of age):
- Male: 4,025 (56.52) 1 : 0.77
- Female: 3,096 (43.48)
- Total: 7,121 (54.64)

Overall:
- Male: 4,791 (36.76) 1 : 1.72
- Female: 8,241 (63.24)
- Total: 13,032 (100.00)

Based on the distribution of the number of beef cattle by age category (Table 1), there was a difference in the number between the category of children (23.18%) with the category of young adults (22.18%) and the category of adults (54.64%). The categories of children and young people tend to be the same, but the percentage is lower (about 50%) than the adult category. It is suspected that this is due to the relatively low birth rate and the relatively high mortality rate. The birth rate depends on the number of females who can mate, get pregnant and give birth normally. If the mating season occurs during the dry season, the tendency for marriage rates to be low, and an impact on the birth rate is also low [12].

Based on the calculation of male and female sex ratios, it can be seen that in all age categories the sex ratio is still below the normal ratio of 1 male to 5 females for natural mating in extensive maintenance. Based on the minister of agriculture’s regulation on guidelines for good beef cattle breeding, for a breeding business with natural mating, the ratio of male/female in the population is 1 male to 8-10 female. Male/female sex ratio is influenced by (1) the ratio of male / female at the beginning of birth that occurs in the population, (2) the number of slaughter, sale and death of livestock at young and adult ages [13], and (3) livestock entry and expenditure in various categories of age in livestock population [14]. The sex ratio of male and female beef cattle in Seram Utara Timur Seti District is more determined by the start of birth in the population. For the development of the cattle breeding area in the future, it is necessary to control the sex ratio at the beginning of birth through controlling marriage both naturally and by artificial insemination.

### 3.2. Availability of Beef Cattle Seeds

The potential availability of beef cattle in Seram Utara Timur Seti District, Central Maluku Regency, was presented in Table 2 below.

**Table 2. Potential Availability of Beef Cattle Seeds in Seram Utara Timur Seti District**

| No. | Parameter Item                        | Parameter Value | Percentage (%) |
|-----|--------------------------------------|-----------------|----------------|
| A.  | Beef cattle population               | 13,032 tails    | -              |
| B.  | cows (from a population)            | 8,241 tails     | 63.24          |
| C.  | Productive cows (from cows)         | 5,666 tails     | 43.48          |
| D.  | Productive cows slaughtered          | 1,033 tails     | 18.23          |
| E.  | Productive cows insertion            | -               | -              |
| F.  | Total of productive cows             | 4,633 tails     | 81.77          |
| G.  | AI mating (from the total of productive cows) | - | - |
| H.  | AI Natality                          | -               | -              |
| I.  | Natural Mating (from the total of productive cows) | 4,633 tails | 100.00 |
| J.  | Natural Mating Natality             | 4,633 tails     | 100.00         |
| K.  | The total of Natality               | 4,633 tails     | 35.55          |
| L.  | Mortality (from a population)        | 652 tails       | 5.00           |
| M.  | natural increase                     | 3,981 tails     | 30.55          |
| N.  | Cows population increased            | 1,592 tails     | 40.00          |
| O.  | Bull population increased            | 2,387 tails     | 60.00          |
From the results of the research, it was found that the percentage of mortality was 5% so that the natural increase was 30.55% which was obtained from the percentage of total births (35.55%) minus the percentage of deaths. Of these, there is a 40% increase in the female population and 60% increase in the male population, in contrast to the increase in female seedlings an increase of 80% and an increase in male seedlings by 20%. This indicates that female beef cattle are retained for seed while males are mostly slaughtered (sold, consumed, donated and customary dowry). For female seed growth (net increase) is 4.27% obtained from the ratio of female seed increase and female seed replacement divided by population. The growth of male seedlings (net increase) was 3.39%. These results illustrate that the growth of female seedlings is 0.88% greater than the growth of male seedlings which are expected to support the availability or sustainability of beef cattle breeds in Seram Utara Timur Seti District. From the existing beef cattle population, it is estimated that it is 12.5% and 3% to replace old and advanced cattle, respectively. The final result shows that the total seed growth (net increase) of 70 head per year from the total population of beef cattle in Seram Utara Timur Seti District (13,032 heads). The total growth of beef cattle is still less than 1% (around 130 heads) of the total population, so it is necessary to pay attention to the development of the source area for beef cattle in Seram Utara Timur Seti District.

4. Conclusion
Based on the results of the study, it can be concluded that the proportion of beef cattle population for the categories of children, young and adults is 23.18; 22.18% and 54.64%. The sex ratio of male to female in all age categories is still below the normal ratio of 1 male to 5. Total seed growth (net increase) of 70 head per year from the total population of beef cattle in Seram Utara Timur Seti District (13,032 heads). The total growth of beef cattle is still less than 1% (around 130 heads) of the total population, so it is necessary to pay attention to the development of the source area for beef cattle in Seram Utara Timur Seti District.

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