

PRODUCTIVITY OF BALI CATTLE ON PEATLAND IN CENTRAL KALIMANTAN

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ABSTRACT

This study aims to compare the productivity of Bali cattle bred on wet peatland and on dry peatland. This research was conducted in Pulang Pisau Regency, Central Kalimantan Province on September-November 2019. The research method used were a survey, observation and measurement of calf directly in the field. The samples of the area used were four districts using purposive sampling based on the largest population of Bali cattle on dry peatland and wet peatland. The total number of Bali calves were 186 tails. The observations consist of birth weight, weaning weight, and weight gain. The data were processed using the t-test (Independent t-test) with SPSS 2.2. The results obtained that productivity of male calf and female calf were higher productivity in dry peatland than wet peatland.

Keywords: *Bali cattle, productivity, wet peatland, dry peatland.*

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INTRODUCTION

Indonesia still relies on food from other countries, these conditions can be seen in food imports that continue to occur and are increasing from year to year. The development of Bali cattle has the potential to be developed on peatland in Indonesia, especially in the Province of Central Kalimantan. Peatland is a landscape composed of imperfect decomposition of vegetation from waterlogged trees so that the condition is anaerobic.

The organic material continues to accumulate for a long time so that it forms layers with a thickness of more than 50 cm. Central Kalimantan is a province that has a quite extensive peatland among other islands in Indonesia. Rintung *et.al.*, (2012) stated that Central Kalimantan has 2.659.234 Ha of peatland or 55,66% of the total area of Kalimantan peat. The condition of peatland if without processing can only be overgrown by endemic forage plants. Potential utilization of peatland can be divided into two namely wet peatland and dry peatland, which are widely used for agricultural, livestock, settlement and plantation development.

Peatland distribution is covered by topsoil but has endemic forage that is potentially a fodder and is available in sufficient quantities. Peatland conditions can affect livestock productivity. Livestock productivity needs to be reviewed for the development of Bali cattle on peat to get proper maintenance.

MATERIALS AND METHODS

Location and Time of Research

The research was conducted in Province of Central Kalimantan Pulang Pisau Regency. This area has the largest population of Bali cattle raised in peatland. The location selection was determined according to the district that had the highest population of Bali cattle, consisting of 4 districts including Pandih Batu District, Maliku District, Jabiren Raya District, and Sebangau District. The study was conducted from September to November 2019.

Research Material

The research material were 186 tails of Bali calves, consisting of 82 males and 104 females. The criteria used in this study were farmers who had a minimum of five years' experience as respondents. The location of the study was determined by purposive sampling.

Research Methods

This research used survey using weighing and measuring directly. Observation on aspects of Bali cattle production on peatland illustrated that the conditions of development and growth of livestock, consist of:

- Birth weights were known by weighing calves after birth a maximum of 48 hours after birth and from the records of breeders and field workers.
- Weaning weight was obtained by weighing the calf's weight starting to be separated from its parent aged \pm 3-4 months. The formula used for the weaning correction factor was based on (Hardjosubroto, 1994), namely:

$$BS_{105} = (BL + \frac{BB - BL}{\text{"Age when weighed"}} \times 105) \times FKUI$$

this formula was a modification of the 205 days weaning weight formula

$$BS_{205} = BL + \frac{BB - BL}{\text{Age}} \times 205 + BL$$

Description; BS_{205} : Corrected weaning weight in the age of 205 days (kg); BB: Body weight when weaning (kg) ; BL: Birth weight (kg); Age: Age at weaning (days); FKUI: Mother Age Correction Factor.

- Daily calves' body weight gain from birth to weaning is calculated based on calves' weight by using the formula (Sudrana and Martojo, 1994) as follows:

$$P = \frac{CW - BL}{\text{Cattle age}}$$

Description; P: Weight gain (kg/day), BL: Birth Weight (kg), CW: Calf Weight (kg).

Data Analysis

The data were calculated descriptively and used t-test (Independent t-test) with the SPSS version 22 program to compare the breeding location of Bali cattle on wet and dry peatlands.

RESULTS AND DISCUSSION

Birth Weight of Bali Cattle on Peatland

The result of observation of birth weight corrected for Bali cattle under two different conditions in Pulang Pisau Regency is shown in Table 1. The results of stactistic analysis in Table 1. Showed that the average of birth weight of male and female calves in wet petland were lower than in the dry petland. The measurement of

the birth weight average of male calves were heavier (1,19 kg) than the birth weight of female calves. The wet and dry petland showed the significant effect (P <0,05) on birth weight of male and female calves. Purwantho (2012), the genetic potential of male Bali cattle was superrior than female Bali cattle based on its birth weight. The heavier of birth weight would effect on increasing of endurance and survival for breed (Putra *et.al.*, 2014). The results of the research were lower than the birth weight of Bali calves average in BPTU, Bali (17,8 ±1,08 kg) (Kaswati *et.al.*, 2013). Ashari (1991), the birth weight of calf was affected by sex of calf, age of female cattle and lenght of pregnancy.

Table 1. Average of birth weight corrected for Bali cattle (kg)

	Location	Birth weight (kg)	
		Males	Females
Wet peatland	Jabiren Raya Sub-district	12,37 ± 1,60 ^a	11,49 ± 1,53 ^a
	Sebangau Sub-district	14,37 ± 0,85 ^a	13,67 ± 1,43 ^a
Dry peatland	Maliku Sub-district	14,79 ± 1,48 ^b	12,75 ± 1,32 ^b
	Pandih Batu Sub-district	13,94 ± 1,62 ^b	12,79 ± 1,50 ^b

Note: ^{a,b}Superscripts in different columns shows a real difference (P <0.05).

Table 2. Average of weight corrected for Bali cattle (kg)

	Location	Weaning Weight (kg)	
		Male	Female
Wet peatland	Jabiren Raya Sub-district	74,53 ± 10,24 ^a	63,06 ± 4,21 ^a
	Sebangau Sub-district	72,87 ± 6,73 ^a	65,08 ± 5,86 ^a
Dry peatland	Maliku Sub-district	78,28 ± 9,67 ^b	66,40 ± 7,04 ^b
	Pandih Batu Sub-district	79,47 ± 8,43 ^b	68,91 ± 6,83 ^b

Note: ^{a,b}Superscripts in different columns shows a real difference (P <0.05).

Corrected Weaning Weight of Bali Cattle on Peatland

The result of observations of corrected weaning weight under two different conditions in Pulang Pisau Regency is shown in Table 2.

The result of the research showed that the weaning weight average of the male calves in dry petland was higher than the male calves weaning weight in the wet petland. The weaning weight average of the male calves was higher (10.42 kg) than the weaning weight of female calves. The

different petland (wet and dry petland) showed the significant effect (P<0.05) on weaning weight of the male and female calves. Suranjaya *et.al.*, (2010), the weaning weight of the male Bali calf was higher than the weaning of the female Bali calf, it was because the male Bali calf had a big ability to suckle and milk production stimulate so that increasing of the weaning weight. Kurniasari *et.al.*, (2012), the weaning weight average of the male Bali calf of semi-intensif maintain in Bali was 88.51±18,27 kg and the weaning weight of female calf

was $87,00 \pm 16.07$ kg, while in extensively maintain of the male calf was 98.82 ± 14.76 Kg and the female weaning weight was 90.48 ± 14.68 kg.

The different condition showed that the environmental most important the availability of forage for feeding was affected on weaning weight of Bali Calf in the different peatland. The weaning weight average was lower in the wet peatlands, it was because the calves were weaning in 3-4 months old. It could be indicated that the weaning time was effected on weaning weight. The calves was weaned early would

have the percentage of low weaning weight than the calves was weaned on ready-weaning age. The young calves consumed the feed was still low so the nutrition requirement had not sufficient. The most common of weaning weight was 205 days old that meaning the calves was assumed to be weighed at the same age (Hardjosubroto, 1994).

Increasing the Body Weight Daily of Calf

The observation of daily calf weight gain born to weaning under two different conditions in Pulang Pisau Regency is shown in Table 3.

Table 3. Average daily calf weight gain (kg)

	Location	Weight gain (kg/day)	
		Male	Female
Wet peatland	Jabiren Raya Sub-district	$0,45 \pm 0,08^a$	$0,35 \pm 0,06^a$
	Sebangau Sub-district	$0,45 \pm 0,05^a$	$0,39 \pm 0,06^a$
Dry peatland	Maliku Sub-district	$0,46 \pm 0,07^b$	$0,41 \pm 0,06^b$
	Pandih Batu Sub-district	$0,40 \pm 0,05^b$	$0,42 \pm 6,83^b$

Note: ^{a,b}Superscripts in different columns shows a real difference ($P < 0.05$).

The results of the statistical analysis in Table 3. showed that the average daily weight gain of the male and female calves from birth to weaning in the wet peatland was lower than in the dry peatland. The different condition of environment, raising management, feeding management effected to daily weight gain. The daily weight gain of calves in the wet peatland was lower, it because the calves in the wet peatland was given endemic forage (it grew without any fertilizer to increase the nutrition), while the calves in the dry peatland was given forage that it added the fertilizer to grow. The average daily weight gain of Bali calves in the Kalimantan peatland was higher than the calves that the raising in the land with the higher rainfall 1000-2500 mm/year in Bali. The daily weight gain of the calves after weaning was 0.22 kg/day (Dahlanuddin *et.al.*, 2012).

The productivity of cattle would increase when the cattle was kept in the environmental that all of its requirement was sufficient. Fallo *et.al.*, (2019), the effect

factors of the cattle growth depend on using management, nutrition of feed, health and climate in the maintenance. Aditia *et.al.*, (2013), the performance of cattle was depend on feed consumption. When the cattle was lack of feed lead to lack of energy, decrease of growth or even weight loss (LaWangi *et.al.*, 2017).

CONCLUSION

The productivity of Bali Calf based on birth weight, weaning weight, and weight gain was affected by condition of raising in the different peatlands. The raising of calf in the dry peatlands was better than in the wet peatlands. Based on the sex of calf, between male and female calf had same good productivity when it raising in the dry peatland, but the male calf productivity was higher than the female calf productivity.

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