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OUT PUT ESTIMATION OF BEEF CATTLE AT GUNUNGKIDUL REGENCY

Sumadi and Mukija[1]

ABSTRACT

The study was conducted to investigate the out-put of beef cattle every year at Gunungkidul Regency. Gunungkidul Regency was divided into three groups of high, medium and low populations. Each group consisted of six villages and each village was divided into three groups of high, medium and low populations, respectively. The farmers as a respondent were taken from each village. The observation data were analyzed by using a mean and standard deviation. The results indicated that population percentages were 20.32% (calf), 30.65% (yearlings) and 49.02% (adults). Natural Increase was 25.23% and Natural Replacement Rate was 168.73%. Out put estimation of beef cattle from Gunungkidul Regency was 23.93% from population, or 23.803 heads per year, consisted of 13.458 heads (rejected yearling) and 10.345 heads (rejected adults).

Key words: Estimation, Out-put, Beef cattle

INTRODUCTION

The Gunungkidul Regency contributed 53% of cattle population in Yogyakarta Special District and Yogyakarta was also beef source for Jakarta and West Java. Besides that the beef cattle at Gunungkidul had several functions, namely for the draugh-animal, saving and manure production (Anonymus, 1994), so, the beef cattle at Gunungkidul region have to be increased and improved based on environmental condition.

The beef cattle population was expressed as survival cattle in the region for certain time period. Number of beef cattle population was affected by several factors, namely numbers of animal slaughtered or exported, mortality, and natural increase (Hardjosubroto, 1990). Regional out put of beef cattle was expressed by number of out put of beef cattle to be distributed or slaughtered in the region without disturbancing of population (Markyadji, 1992); while the cattle out put was affected by animal composition based on ages, sex, birth rates, mortality, and keeping duration in the breeding system. The breeding system would affect animal composition for slaughtered animal, because the rejected animal in the breeding system is a part of out put, whereas, the young animal was in equal number with residual natural increase after subtracted by needed cattle as a substitution for rejected cattle.

Based on requirement for animal replacement in the breeding system, it was expected no depleted population due to over out put. Therefore the natural increase determined the number of animal out put, while the breeding system indicated the composition of animal out put (Hardjosubroto, 1990).

MATERIALS AND METHODS

The study was conducted at Gunungkidul Regency. The experimental materials used in this study consisted of beef cattle and farmers, and the methods used were survey and questions. The Gunungkidul Regency consisted of 13 sub-districts that were stratified into three strata, namely high, medium and low strata, respectively for group I, II and III. Each group was taken into two sub-districts with highest population, and each sub-district was taken into 3 villages

[1] Faculty of Animal Husbandry, Gadjah Mada University, Yogyakarta, Indonesia

Table 1. Identification of farmers at Gunungkidul Regency

Number	Items	Average
1	Ages of farmer (year)	50.09 ± 2.40
2	Working experience of farmer (year)	18.30 ± 2.79
3	Education (%)	
	None	29.36 ± 6.67
	Elementary	47.62 ± 4.12
	Secondary	14.29 ± 7.15
	High School	6.35 ± 1.37
	University	2.38 ± 2.38

with high, medium and low population. Seven (7) respondents randomly represented each village.

The collected primer data were farmer identification, beef cattle coefficiency; while the secondary data were taken from Livestock Office, namely animal population, slaughtered animal, input and output cattle. Mean and standard deviation analyzed the collected data, and the technical coefficient obtained was used to compute the Natural Increase (NI), Net Replacement Rate and cattle out put.

RESULTS AND DISCUSSION

The average of farmers age was 50.09 years, the farmers experience length was 18.30 years and the education of elementary school was 47.62% (Table 1).

Based on the farmers age was old relatively, and high working experience, the population improvement was determined by the farmers themselves. So the extension plan must be conducted systematically, communicatively, and concrete reality.

Table 2 showed that the motivation for saving was highest (40.47%) and the animal could be sold for family was necessary. For fattening purpose, offspring obtained, manure and draught animal were 19.64, 19.05, 12.96 and 7.67%, respectively.

The beef cattle composition based on animal ages consisted of calves less than 1 year old (20.23%), young 1 – 2.5 years (30.56%), and over than 2.5 years (49.02%) (Table 3). According to sex was 41.46% (male) and 58.54% (female). For age categories consisted of 62.89% (male calves), and 37.11% (female calves); 76.12% (male young), 23.88% (female young); and 10.91% (male adult), 89.09% (female adult), respectively.

The average of beef cattle owned by the farmer per year was 1.22 ± 0.24 AU (animal unit) or 1.67 ± 0.25 heads. It means that the average of animal property was 2 heads (1 adult and 1 calf), because selling one followed every giving birth one. Based on

Table 2. The purposes of beef cattle keeping at Gunungkidul Regency

Number	Items	Average (%)
1	Offspring obtained	19.05 ± 4.83
2	Draught animal	7.67 ± 0.92
3	Saving	40.47 ± 3.64
4	Fattening	19.64 ± 9.15
5	Manure	12.96 ± 4.65

Table 3. The composition of beef cattle property at Gunungkidul Regency

Number	Item	Average (%)
1	Calves	
	a. male	12.78 ± 4.67
	b. female	7.54 ± 3.45
2	Young	
	a. male	23.33 ± 6.66
	b. female	7.23 ± 3.02
3	Adult	
	a. male	5.35 ± 3.51
	b. female	43.67 ± 6.21

Table 4. Reproduction management of beef cattle at Gunungkidul Regency

Number	Item	Average (%)
1	The year of heat indications (%)	
	a. less	35.71 ± 19.89
	b. medium	39.12 ± 3.59
	c. known	29.36 ± 17.92
	d. visible	2.16 ± 1.97
	e. unknown	3.65 ± 2.26
2	Service conception (%)	
	a. natural conception	47.56 ± 6.09
	b. Artificial insemination	33.63 ± 9.54
	c. natural and artificial inseminations	18.80 ± 3.70
3	Animal ages at first conception (year)	
	a. male	1.94 ± 0.06
	b. female	2.57 ± 0.39
4	Weaning ages (month)	8.94 ± 0.95

Table 5. Performance of beef cattle reproduction at Gunungkidul Regency

Number	Item	Average (%)
1	Dame ages at first calving (year)	3.53 ± 0.36
2	First conception post calving (month)	6.13 ± 0.73
3	Service per conception (S/C)	1.68 ± 0.19
4	Calving period (month)	16.55 ± 0.74
5	Ages of cattle kept (year)	
	a. female	9.46 ± 0.65
	b. male	3.70 ± 0.79
6	Female cattle ages at observation done (year	6.32 ± 0.82
	Female cattle ages was taken out of breeding (year)	7.31 ± 2.05

Table 6. Natural Increase of beef cattle at Gunungkidul Regency

Number	Item	Average (%)
1	Birth-rates (%)	
	a. to dam relatively	59.14 ± 4.10
	b. to samples relatively	26.07 ±2.94
2	Calve mortality per birth rate (%)	3.64 ± 2.07
3	Mortality of young and adult cattle per samples (%)	0.47 ± 0.22
4	Weaning calve (%)	
	a. to dam relatively	56.99 ± 3.96
	b. to samples relatively	25.60 ± 2.83
5	Natural Increase (%)	25.13 ± 1.03

that case, therefore productivity improvement could only be conducted by technical coefficient increase.

In table 4 showed, that the average of cattle to be concepted for heifer was 2.57 ± 0.39 years old with natural conception (47.38 ± 6.09%). The average of weaning ages was 6.94 ± 0.95 months and the ages of first service and weaned calf affected the duration of breeding system and calving-crop, so increased population indirectly.

According to table 5 above, showed that whole reproduction performance was still in good position, but it needed to improve reproduction efficiency for out put increases.

The natural increase (NI) was 25.13 ± 2.03% (Table 6), it was caused by the high birth rates and the low mortality relatively. The average of NI in this study was higher than the Indonesia Natural Increase (16.94%) and at Yogyakarta Special District in 1982 was 23.13% (Anonym., 1981 and 1982). It

Table 7. Beef cattle distribution at Gunungkidul Regency

Number	Item	Average (%)
1	Cattle out put (%)	
	a. Calve : male	5.02 ± 1.63
	female	2.64 ± 1.41
	b. Young : male	6.03 ± 2.20
	female	3.77 ± 1.99
	c. Adult : male	3.74 ± 1.63
	female	7.88 ± 4.56
	Total	29.08 ± 1.16
2	Cattle Input (%)	
	a. Calve : male	11.89 ± 5.68
	female	2.59 ± 2.58
	b. Young : male	2.88 ± 1.23
	female	1.72 ± 0.54
	c. Adult : male	0
	female	3.73 ± 2.23
	Total	22.81 ± 4.36

Table 8. Non Return Rate (NRR) calculation of beef cattle at Gunungkidul Regency

Number	Items	Average
1	Female adult cattle (%)	43.67 ± 6.21
2	a. Calving rate to adult female relatively (%)	59.14 ± 4.10
	b. Calving rate to population relatively (%)	26.07 ± 2.94
3	Natural Increase (%)	25.13 ± 2.03
4	Mortality (%)	0.47 ± 0.22
5	a. Cattle survival estimation at 3 years old (%)	24.19 ± 0.64
	b. Female calves survival estimation at 3 years old (%)	12.79 ± 0.33[1]
6	a. Female mature cattle out put from breeding/yr (%)	7.36 ± 1.46[2]
	b. Female cattle replacement (3 yrs old)/year (%)	7.58 ± 4.50[3]
7	Non Return Rates (NRR)	168.73 ± 26.39[4]

Notes:
[1] Male-female ratio (49.09 : 50.91)
[2] Percentage female mature divided by breeding female utility (5.93 years)
[3] Plus mortality risk (0.47%/yr) from 7.58% in 5.93 years
[4] Calculated from female (5b/6b x 100%)

was a evidence for beef cattle improvement at Gunungkidul Regency.

In table 7 showed that out put cattle was 29.08% and input cattle was 22.81%. The adult cattle input was first freshen female adult cattle as a substitution for the old female cattle. While the calves and young cattle for saving or replacement.

According to Table 8 showed that NRR was 168.73%. It means that at Gunungkidul had surplus of 68.73% where they could be distributed to other regions.

Table 9. Calculation of out put composition of beef cattle from Gunungkidul

Number	Items	Male	Female	Total
1	Natural increase at 3 years old (%)	11.87	12.32	24.19[1]
	Replacement of Cattle requirement (%)	3.08	7.58	10.66[2]
	Remaining young cattle	8.79	4.74	13.53
2	Out put composition of beef cattle (%)			
	a. Young cattle	8.79	4.74	13.53[3]
	b. Rejected adult cattle from breeding	3.04	7.36	10.40[4]
	Total	11.83	12.10	23.93

Notes:
[1] Calculation for NI = 24.19% with mortality (0.47%/yr) and male-female ratio was 49.09: 51.91
[2] Calculation for point 2b (rejected animals with mortality risk of (0.47%/yr) in 1.76 years for male, and 5.93 years for female
[3] Calculation for breeding pattern which male kept at (1.94 – 3.70 years) of ages and for female (3.53 to 9.46 years) of ages with population rates of 5.35% for male and 43.67% for female
[4] According to living animal input, this percentage could be added by percentage of input above.

Based on breed ready female per year and a number of replacements per year, it could be estimated number of female and male calves surplus.

Based on Table 9 indicated that Gunungkidul contributed 23,803 heads of cattle to be sold or 23.93% of total population, It consisted of young cattle (13,458 heads) old rejected cattle was 10.345 heads.

CONCLUSION

The cattle out put of Gunungkidul Regency every year was 23.93% of total population or 23,803 heads consisted of remaining young cattle (13,458 heads) and old cattle (10,345 heads), respectively.

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