Performance of Male Bali Cattle in Village System of Lombok

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The performance of male Bali cattle (Bos javanicus d’Alton) receiving native pasture under a cut and carry system was monitored between January 2010 and May 2012 on North Lombok, Indonesia. The average birthweight of male calves irrespective of season was 14 ± 2.9 kg. The growth rate of calves from suckling to yearling was $y = 0.271x + 15.08; R^2 = 0.86$, with weight gains averaging 256 ± 71.5 g/d with an increase to 324 ± 13.5 g/d during the wet season and an average of 213 ± 58.0 g/d during the dry season. The growth rate of bulls from suckling to adult was $y = 0.243x + 22.68; R^2 = 0.93$. The mean growth rate of Bali bulls was 270 ± 113.1 g/d; 340±39.6 g/d in the wet season and 130 ± 57.9 g/d in the dry season. The low growth rate of male Bali cattle receiving native grass under cut and carry systems at these sites indicated inadequate feed supply and quality. This prolongs the time required to reach sale weight (300 kg) to a mean age of 3.1 years. This study exhibited the possibility of increasing beef supply locally by enhancing feed supply and quality to improve growth rates, and hence shortening the time to reach sale weight.

Key Words: Bali cattle, Male, Growth rates, Cut and carry village system, Sale weight

INTRODUCTION

Bali cattle (Bos javanicus d’Alton) are native to Indonesia and are the predominant cattle breed in eastern Indonesia, Lombok Island in particular. Bali cattle appear tolerant of diseases, parasites, nutrition, and environmental conditions and have an ability to recover rapidly following exposure to periods of inadequate nutrient supply or heavy draught loads (Toelihere, 2003). Bali bulls under high concentrate diet are capable to grow 850g/d (Mastika, 2003). However, low performance of Bali bulls under a village management system has been reported by various Indonesian agencies, typically characterised by irregular, slow turn-off and poor carcass quality. Performances vary largely resulting from environment and poor nutrition of cattle fattened under traditional smallholder feeding systems. Knowing the performance of male Bali cattle in village systems of Lombok will provide a benchmark and allow potential improvements to reach optimum meat production to be measured.

MATERIALS AND METHODS

The growth of male Bali cattle was monitored at two hamlets of Genggelang village in north Lombok. Average annual rainfall is approximately 1400 mm, with 90% of annual rainfall falling between November and May. Irrigation water was available during wet season from January to June. Animals were kept in their stalls full time, group penned, guarded at night and fed under a cut-and carry system
with forage sourced from rice banks, creek banks, road sides and any common land in nearby villages. Monitoring of 300 male Bali cattle occurred during April 2010 and May 2012, under normal farmer management and trading practices and therefore numbers of male cattle altered constantly. Monitoring accomplished from suckling to yearling and during growth to adulthood allowed growth patterns to be characterised. Parameters measured included birth date and weight (within 12 hours), diet composition and monthly weight gains. Diet composition was monitored during three consecutive days monthly and cattle weighed monthly with no feed and a water curfew over night. Summary statistics were produced for each of these parameters.

**RESULTS AND DISCUSSION**

**Birthweight and birth distribution**

Monitoring indicated that calving is distributed throughout the year, the highest calving frequency of 71%, from the total male calves born, occurred from May to August, the next 19% occurred from September to December and the lowest calving frequency of 10% from February to April. It is commonly accepted that there is no breeding season for Bali cattle with a number of studies indicating that Bali cattle produce offspring year around. However, a high percentage of cows give birth in the mid to late dry season, likely affecting the growth rate of their offspring due to poor nutrition received during late pregnancy and early lactation. Good nutrition received by the dam during late pregnancy and lactation will help produce offspring that reach sale weight at a younger age. The mean birthweight of male calves irrespective of season was 14±2.9kg. The highest and the lowest birthweight were 18 and 8 Kg. Many previous studies recognise the significant influence of the season on birthweight. However, this study indicated that low birth weight is closely associated with the age of the dam, since the breeding herd were predominantly first calf heifers, therefore young dams, low birthweights occurred even at favourable calving times.

**Growth rate from suckling to yearling**

The growth rate of calves from suckling to yearling was of the equation y= 0.271x + 15.08; \( R^2=0.86 \), with weight gains averaging 256 ±71.5 g/d with an increase to 324±13.5 g/d during the wet season and an average of 213 ± 58.0 g/d during the dry season, figure 1.

The growth rate of male Bali cattle from suckling to yearling observed during this monitoring period is in agreement with a previous study conducted in the islands of Lombok, Sumbawa, Sumba and Timor by Wirdahayati (1994) who reported mean growth rates of 223±88 g/d and 263±87 g/d for male Bali cattle aged 1.5-5.0 and 5.0-9.5 months respectively. The fluctuation in weight gains recorded here is associated with the wet and dry seasons. However, the lowest weight gain occurred in July, coinciding with the second crop harvesting time, while high growth rates occurred during the wet season months of January and February.
Growth rate from suckling to adult

Monitoring revealed that male Bali cattle from suckling to adult grew at a rate defined by $y = 0.243x + 22.68; R^2=0.93$, figure 1. It is apparent from both equations that the growth rate of male Bali cattle from suckling to yearling is greater than from suckling to adult, as expected. This agrees with Wirdahayati (1994) who reviewed the effects of approaching maturity on the growth of tropical cattle breeds. Further, Devendra et al. (1973) (quoted by Wirdahayati 1994) reported growth rates of 0.3-0.37 kg/d in 0-1 year old Bali calves and 0.18-0.22 kg/d in 1-2 year old Bali cattle in Malaysia.

The equation indicated that male Bali cattle under village management systems in Lombok reach sale weight of 300 kg within 1140 days or 3.1 years. This growth rate appears to be expected for male Bali cattle under village management system where cattle are fed forbs, weeds and native grasses from unused land nearby.

Data extracted for Bali bulls between 2-4 years old under traditional fattening systems revealed mean bodyweight gains of 270±113.1 g/d; 340±39.6 g/d in the wet season and 130 ± 57.9 g/d in the dry season. Higher body weight gains in the wet season reflected the effect of seasonal feed supply and quality, where a high proportion of forbs and weeds are present in the diet opposed to the dry season where feed is predominantly composed of dead grasses and rice straw. The mean weight gain reported here is higher than the results of Wirdahayati (1994) who reported a mean growth rate of 199±117 g/d for males at 21.5 to 31.5 months old and a growth rate of 143±88 g/d for males above 30 months old. It is likely the difference in management that affected the growth rate in this study, as bulls were constantly kept in a stall, and hand feed. However, Mastika (2002) reported that handfed stall housed Bali bulls receieving30-40% forage tree legumes in the diet gained at 400 – 500 g/d. This indicates that under a good feeding system male Bali cattle could reach a slaughter condition of 300 kg within 1.5 years of age.

Figure 1. Growth rate of male Bali cattle from suckling to yearling between 2010 and 2012 in North Lombok
IMPLICATIONS

This monitoring study characterised the growth of male Bali cattle fed in the village systems of Lombok. Low growth rates appear to occur due to poor nutrition in these traditional fattening systems. There are however simple strategies to improve bull growth rates in Lombok village systems, such as the inclusion of forage tree legumes in their diet.

REFERENCES

