

Daily Body Weight Gain of Bali Cattle Fed with *Leucaena Leucocephala* as the Main Ration in West Timor, East Nusa Tenggara, Indonesia

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ABSTRACT: *Leucaena leucocephala* has long been used in Amarasi sub-district of Kupang in East Nusa Tenggara as the main high quality fodder for intensive cattle feeding in pens. However, the spread of the technology to the adjacent areas in the island is slow. Two villages were selected for the study of leucaena based feeding in the existing and non-existing (Ponain and Oebola Dalam) to observe on the daily weight gain of Timor Bali cattle and the uptake of the technology by new farmers. Oebola-Dalam has just started planting psyllid tolerance leucaena in 2012 and initiated an intensive cattle feeding in 2014. The experiment consisted of comparing the daily weight gain of cattle on leucaena based feeding at the sites. About 18 feeder cattle in Ponain and 30 feeder cattle in Oebola Dalam with average initial body weight of 200 kg were included in the study during the months of January to November 2014. In general cattle were fed ad-lib mainly with the leaf of leucaena. Monthly cattle weighing was conducted accordingly. The results indicated that average daily cattle weight gain in Ponain (0,5 kg/hd/day) was higher than at Oebola Dalam village (< 0,5 kg/hd/day). The best daily weight gain in both sites may reach up to 1 kg/hd/day, while the worst animals lost weight during the study. The study has demonstrated that the provision of sufficient leucaena plants as sources of high quality feed and good knowledge of farmers in cattle feeding resulted in better cattle weight gain and thus encourage the uptake of the technology.

Key words: *Leucaena leucocephala*, pen feeding, East Nusa Tenggara, Ponain, Oebola Dalam, Timor Bali Cattle.

INTRODUCTION

Leucaena leucocephala is a high quality fodder which has long been valued in East Nusa Tenggara Province, Indonesia, following its excellent ability to produce year round fodder at the proper managements such as regular pruning (with interval of 3 to 4 months for each harvest).

The Amarasi sub-district in the regency of Kupang has long been known for the intensive use of *leucaena leaf* as the main ration for fattening of Bali Cattle (domesticated of wild Banteng, *Bos javanicus javanicus*), though the uptake of the technology even to the next door sub-districts (such as in West Kupang and Fattuleu sub-districts in the regency of Kupang) was slow and minimal. To study how the change occurs from free grazing practices into intensive cut and carry pen feeding practices by the farmers in East Nusa Tenggara, an experiment was established to study on the changing process from free grazing on native pastures to intensive feeding based on *L.leucocephala* focusing on the daily weight gain in one year data collection (January to November 2014).

MATERIALS AND METHODS

Two locations, one in Amarasi sub-district and one in Fatuleu sub-district in Kupang district have been selected to conduct the studies. Ponain village in Amarasi sub-district in this case as an existing area, at which *L.leucocaphala* has been intensively fed to cattle and Oebola Dalam in

Fatuleu sub-district as a non-existing area, where *L.leucocephala* had not been intensively used, with mostly free grazing animals. The two locations have been described before (Kana Hau, 2013). As an existing area where *L.leucocephala* has long been used, farmers in Ponain has cultivated a vast areas and thus leucaena is easily obtained abundantly at any time of the year round, though a bit suffer from *Heteropsylla cubana* insect damage especially during the wet season. Oebola-Dalam as a non-existing area, has just started to grow the legume, thus availability is a bit of a problem, especially during the dry period.

In Ponain Village 16-18 heads of Bali bulls with an initial weight of 200 kg and 5 to 35 of Bali bulls at Oebola Dalam with similar initial body weight were recorded on their live weight by doing a regular monthly weighing at the sites. In Oebola Dalam as a new area, observations were also conducted on yearlings intensively fed *L.leucocephala* by farmers having different levels of the forage availability (low, medium and high). Low level = contained + 1,000 to 1,500 leucaena plants; Medium = 2,000 to 3,500 leucaena plants, and High level = contained 4,000 to > 5,000 leucaena plants, available for harvest.

As the study was conducted on farm (difficult to have a controlled experiment) only simple measurements, observations, and thus simple analysis were conducted on the collected data (such as total, and average values were calculated) then graphs were draw to see the trend of different between sites and farmers on the cattle body weight change performances.

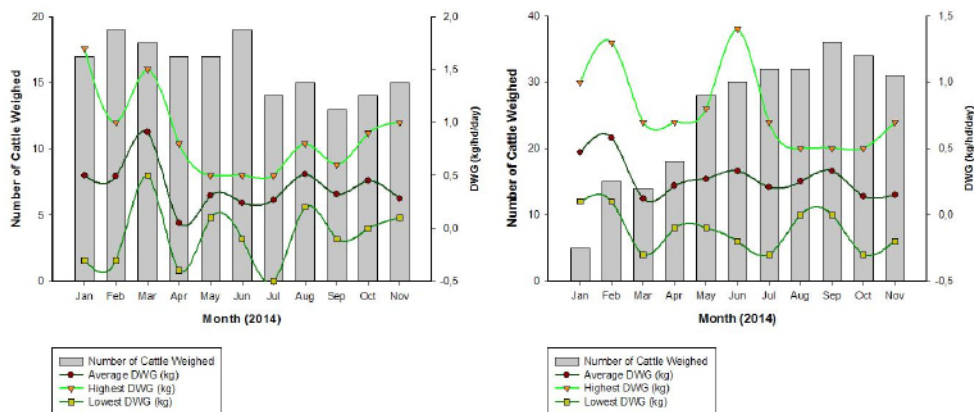
RESULTS AND DISCUSSION

In general it was noticed that intensive feeding of leucaena leaf gave higher body weight gain compared with that of free grazing animal even during the wet season where main forage available was from the native grassland (Nulik *et al.*, 2013). The grazing animals, especially during the dry season experienced body weight lost, while gain in the wet season was only between 1-5 kg monthly, indicating an urgent need to improve forage availability by establishing more drought resistant fodder plants such as *Leucaena leucocephala*, particularly from the psyllid tolerance cultivar i.e. Tarramba.

The results of the studies indicated that the average daily weight gain of Bali Cattle Bulls was of 0,5 kg/head/day in the existing Ponain Village site, while at Oebola Dalam as the non-existing site the average daily weight gain obtained for most of the cattle in the group was still < 0,5 kg/head/day, identified as the impact of less availability of *Leucaena leucocaphala* fodder, especially during the dry season when soil moisture was limiting (following its new development in the village, stared in 2012). The Ponain Village as the existing site has quite abundant sources of leucaena fodder as its introduction has been pronounced since 1974 and thus provided sufficient fodder throughout the year, even in the dry season. Data also indicated that some farmers with sufficient supply of leucaena fodder in both sites were able to obtain cattle daily weight gain of more than 0.5 kg/head/day even reach up to 1 kg/head/day when cattle were given sufficient feed according to the requirements. While in contrast some farmers even obtained less than 0.5 kg/head/day cattle daily weight gain as cattle were given insufficient feed according to the requirements, even in some cases cattle lost weight.

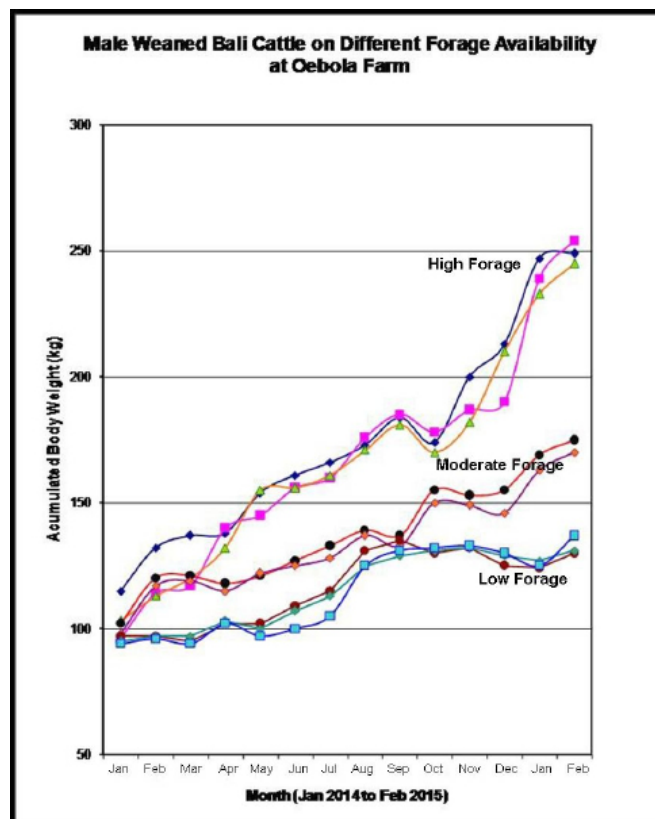
A feeding experiment for 4 months at the modern slaughter house conducted on 8 heads of Bali Cattle bulls with initial weight of 250 kg before entering slaughtering process indicated similar results, that when Timor Bali cattle were properly fed with ad-lib leucaena fodder (no empty feed through) an average daily weight gain of > 0.5 kg was achieved (Syafрил Bustaman, Pers.Com).

The average weight daily gain may be improved if energy feed, such as grounded maize or cassava tuber, be supplemented (Nulik, 2014).



Graph 1. DWG Respons of Bali Cattle to *Leucaena leucocephala* Fodder Based Feeding Practices in West Timor.

A series of data from farmers at Oebola Dalam Village has demonstrated that yearlings (started at initial body weights of about 100 kg) fed intensively *L. leucocephala* had the highest body weight gains at the farmer with high forage availability, while moderate forage availability farmer obtained moderate cattle weight gain, and the lowest forage availability farmer obtained the lowest cattle weight gain (Graph 2). This has also explained that the availability of forage in sufficient amount is crucial for farmers in West Timor who wanted to raise cattle in pens and fed intensively with *L. leucocephala*.



Graph 2. Differences of body weight gain at different *Leucaena leucocephala* forage availability and offering in West Timor.

CONCLUSION

The current study has demonstrated that *Leucaena leucocephala* has a great potency to be further widely developed in East Nusa Tenggara to boost cattle production in the region dominated by dry land and climate which might be impossible to achieve from other means of developing other cattle forages for cattle feeding.

The more the availability of leucaena forage and thus the higher offering forage the higher the daily cattle weight gain will be achieved as farmers may possible to offer more forage to meet the daily requirements of the animals in the intensive feeding practices. A daily weight gain of > 0.5 kg for Timor Bali cattle will easily be achieved when feeding with sufficient *L.leucocephala* fodder.

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