



SCAN ME

*Research Paper*

**CORRELATION BETWEEN BODY CONDITION SCORE AND FEED MANAGEMENT OF MADURA CATTLE STUDY CASE AT LARANGAN SUB-DISTRICT, PAMEKASAN REGENCY**

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**Abstract**

Indonesia smallholder beef cattle farmers were faced in-balance forages during the dry season. The research purposes were to determine the nutritional status of beef cattle in Larangan sub-district, Pamekasan, Madura. Total 20 random sampling for correspondence were conducted for questioner and enumeration. While, the body condition score was conducted to determining the correlation between feed quality and result. The data analysis was analyzed descriptively and compared with the related theory. In our study, cows with a BCS of 5 or greater at pregnancy examination. In our studies the herd had 4 heads with BCS of 5 in that had 80% or higher pregnancy rate. The results showed that the source of the feed in studies were divided into forages and agro-industrial by-product. The forages were elephant, Buffel grass, and Bermuda grass. To sum up, the body condition score had a positive correlation with nutritional management status of Madura cattle.

Key words: Beef cattle, body condition score, correlation, Madura cattle, rice straw.

**INTRODUCTION**

Beef cattle were source of animal protein in Indonesia. [2] stated the number population of beef cattle in Indonesia reached 17,526,204 heads with East Java reached 4,750,321 heads. The East Java give 5.8% for total population of beef cattle in Indonesia. Furthermore, the small-scale-household system ratio reached until 107 households [2].

The Madura Island were one of the centers of beef cattle. [3] showed Pamekasan Regency reached 190,635 heads, while Sumenep Regency reached until 357,422 head of beef cattle. Apparently, the feedlot system of beef cattle is not supported by the balance of quality and availability feed on dry season and rainy season.

In further, the number of beef cattle population decrease during the dry season. The rainy season forage availability in the large quantities while the dry season is limited availability. The fore, the fattening beef cattle became slow down because used rice straw for feeding [1]. Normally, rice straw given during dry season to beef cattle. Livestock population growth slowdown during dry season caused by the availability of feed and forages, quality of feed and limited land. Nutritional needs fulfilled to beef cattle on the feedlot ruminant. Quality improvement of feed can be improved by creating formulas of feed from waste industry or agricultural industry byproduct. Rice straw has low nutrient content and digestibility make rumen microbial population decreasing. Technologies in the animal feed is using the alternative as a feed supplement in ruminant can increased feed quality.

Mostly the traditional farmers Indonesia are in the small-scale-household system. The maintenance system used is simple and traditional. The location of the barn is usually not far from the owner's house, in the form of a traditionally with an intensive care model or being kept in captivity all day long [1]. Feeding is largely dependent on agricultural waste and by-products such as bran and rice straw. The indicator commonly used by breeders in measuring the nutritional adequacy of livestock is the amount of feed given with the assumption that if the amount of feed given is large, the cows are full and their needs are met. The quality of feed ingredients is a factor that is often underestimated due to several reasons, such as limited costs of purchasing additional feed and land ownership for growing animal feed crops.

Feed supplement effect are increase body weight gain and increasing the population microbes in the rumen. Feed supplement stimulate cattle for an increase of feed consumption. Supplementation avoids vitamin, mineral deficiencies and malnutrition. Supplementation has many technics using the rice straw, multi-nutrient blocks, molasses, crop residues, microbial fermentation, and locally available agro-industrial by-product. [5] stated ruminant nutrition synchronization nutrient refers to providing protein and energy into the rumen. The nutrients provided simultaneously proportion required by rumen microbes. Synchronization through supplementation of

feed materials and energy sources protein. The synchronization nutrient in ruminant can be used low-quality forage feed. Microbial protein synthesis is increasing protein in ruminant. The supplementation in ruminant act as complementary nutrients requirement. There were two form of feed for beef cattle namely; forages and concentrate. The quality of the feed must be evaluated because it determines the performance and productivity of the livestock being kept. Evaluation can be done by analyzing feed in the laboratory including its chemical composition and digestibility value. The results of the feed evaluation are expected to be input for breeders in order to improve the performance of the beef cattle business and answer the problems that arise regarding livestock productivity [1].

## **MATERIALS AND METHODS**

The research was conducted from March to August 2020 at Larangan Village, Pamekasan District Madura, East Java Province. The analysis proximate was conducted August 2020 at Nutrition and Feed Animal Laboratory, Faculty of Animal Science, University of Brawijaya Malang East Java, Province. Larangan Village was chosen for research location due to as one of center for beef cattle fattening, in Madura Regency. The research continued with interview and farm observation to collect the secondary data. Total 20 random sampling for correspondence were conducted for questioner and enumeration. While, the body condition score was conducted to determining the correlation between feed quality and result.

### Data Analyses

The data analysis was analyzed descriptively and compared with the related theory [4]. The scoring system used mathematical method from [8]

## **RESULTS**

### **3.1. Body Condition Score**

Generally, the focus on the site of research were for breeding and fattening of beef cattle. The parameters used to determine optimize were on the body condition score (BCS). The range were at 1-9 point. Furthermore, the 1 were at poor thin and 9 were too fat. The result will stable at the 5-6 point. The body condition score showed that the majority of the cattle were had BCS 4, which is borderline. In other hand, the bull was good enough at the 5 point with (45.83%) of physiological status. The score

gave at 5 due to un-visually of transverse processus bone but it will occur if we touched it. The body condition score of the Madura cattle during pregnancy examination were useful method to describing the rate of the pregnancy, and for assessing inadequate nutritional status during gestation and breeding season. In our study, cows with a BCS of 5 or greater at pregnancy examination. In our studies the herd had 4 head with BCS of 5 in that had 80% or higher pregnancy rate.

Tabel 1. Body Condition Score of Madura Cattle in Research Site

Physiological status	Population (%)				
	BCS 3	BCS 4	BCS 5	BCS 6	BCS 7
Cow (n = 11)	9.09	54.54	36.36	0	0
Bull (n = 24)	4.16	12.50	45.83	20.83	16.67
Heifer (n = 5)	0	0	80.00	20.00	0

### 3.2. Total Intake and Feed Quality

Table 2. Nutrient Content of Available Feed in Research Site

No.	Ingredients	DM (%)	CP*(%)	CF*(%)
1.	Rice straw ( <i>Oryza sativa</i> )	43.18	3.05	34.11
2.	Elephant grass ( <i>Pennisetum purpureum</i> )	17.1	12.06	38.41
3.	Bermuda grass ( <i>Cynodon dactylon</i> ), Buffel grass ( <i>Cenchrus ciliaris</i> )	18.20	7.87	39.20
4.	Maize bran ( <i>Zea Mays</i> )	88.85	10.57	12.13
5.	Rice bran ( <i>Oryza sativa</i> )	89.28	10.53	13.70
6.	Corn cob ( <i>Zea Mays</i> )	80.55	2.98	43.67

\*Based on 100% Dry Matter

In these studies, the forages (elephant, Buffel grass, and Bermuda grass) act as source of energy and fibre at 38.41 and 39.20%. The table showed that the source of the feed in studies were divided into forages and agro-industrial by-product. The forages were elephant, Buffel grass, and Bermuda grass. In other hand, rice straw, maize bran, rice bran, and corn cob act as industrial by-product. Continually, the dry matter of the maize bran, rice bran, and corn cob were at good value. The forages in these studies were used as primary feed from October to April (Rainy season). The rice straw used as secondary feed on dry season (May to September). The maize bran and rice bran act as supplementation feed since it were had high fibrous content. The inconsistency protein source were continued began during the dry season. Finally, the combination of the feed on the small-scale-household system from the correspondences were showed at the table 3.

Table 3. The variety and combination of the feed in the research site

Group	Primary Feed	Secondary feed	DM (%)	CP (%)
1	Rice straw and Corn cob	Rice bran, maize bran	53.578	4.771
2.	Elephant grass	Rice bran	38.754	4.274
3.	Elephant grass, Bermuda grass, buffel grass	Maize bran	42,267	4,536

From studies showed that Madrasin cattle (Madura x Limousin) were low palatability on the rice straw rather than Madura cattle. In case, the availability were at low condition, the farmer will only give the conventionally leaves ie. Accasia leaf, mangoes leaf, jackfruit, and banana leaf. In future, the key factors to be successes of the fattening were at good management feeding.

Table 3. Average of Feed Intake

Location	Average Body Weight (kg) n = 24	DM intake (kg/head/day)	%DM intake of BW (%)	CP intake (g/head/day)
Larangan	324.4 ± 16.811	8.35 ± 0.95	2.708	128.3

Noted: DM; Dry matter; CP; crude protein; BW: body weight

The table 3 show that the dry matter percentage were at 2.7% from the total body weight, this result were lower from the dry matter requirement at 3% of the body weight. Continually, result of the total crude protein were only at the 128.3 (g/head/day).

## DISCUSSION

Thus, the cows had lower BCS would need to improved nutritional management status. Compared with [2] a pregnancy rate below 90% other factors such as, disease, bull infertility, or genetic factors may contribute to limiting the pregnancy rate. In herd 4, the pregnancy rate was 66%, and cows with a BCS of 5 had a rate of 79%. In this instance, however factors other than nutrition probably lowered the pregnancy rate. Heifers which calve at 24 months of age have a high demand placed on their body reserves for postpartum involution, for continued growth and for lactation. Parturition frequently occurs during the dry season when forage growth is at a minimum and its nutrient content is low [6]. The nutritional balancing is needed for produce and rearing fetus (DM, CP, CF, and fibre) with premix.

Generally, Madura cattle were doesn't had the maximum body condition score as long like other native cattle. The key to rearing Madura cattle were optimizing the genetic parameters. [9] stated the production of Bali cattle can be seen from the various indicators of the properties of production such as birth weight, weaning weight, the rate of weight gain, characteristics of the carcass (carcass percentage and carcass quality) of Madura cattle. The reproductive traits can be seen as sexual maturity, the age of puberty, calving interval, the percentage of pregnancy of Madura cattle. The production could have seen from the breed, choosing good breed is one of the important aspects of production Madura cattle. The selection has an important role in the production aspect e.g. a genetic trait, health and body size of Bali cattle [9].

The nature of production and reproduction is influenced by several factors such as the breed cattle, soil conditions, the condition of pastures, disease, and management of Madura cattle [10]. In linearly compared with [10] adult male cattle gained higher values for body weight and body measurements than adult female cattle. This may correspond to the fact that bulls are typically used as superior bulls (*Pemacek*) and thus, fed with high-quality feed. Bulls are commonly fed with field grass, elephant grass, cassava peels, eggs (free-range chickens), and a mixture of boiled water, rice bran, banana flower, salt and molasses [10].

Feed is one of the keys to success in maintaining and breeding beef cattle. Feed on calf is used for growth and in cattle feed used as a source of energy. Nutrient content in animal feed is very important so animals can grow and produce [10]. Forage is the main feedstuffs for beef cattle in the form of grass consisting of superior grass and some type of legume. Forage derived from plants include: elephant grass (*Pennisetum purpureum*), Benggala grass. In linearly with [1] the both elephant grass and Bermuda grass provide low methane gas but high source of fibre, which is good enough for cattle. According to [12] one of the factors which determine the success of cattle development is the availability of forage quantity and quality considerable and sustainable. Forage important in the maintenance of cattle. The content of nutrients in forage is needed cattle. Forage has the disadvantage that the price is influenced by the season and requires a wide area. According to [13] requirements substitution feeding is done by feeding forage requirement of 10% of their body weight.

Concentrate feed is a mixture of food stuffs which mixed in such a way that it becomes a feedstuff that functions to complement the nutritional deficiencies of other

feedstuffs (forage). Concentrate feed has a low crude fiber content and easy to digest. Giving concentrates on cattle per cow per day  $\pm$  1% of body weight. According to [13] states that the protein supply and energy balance in cows fattened cannot be fulfilled only from Forage, but very important role concentrate feed. Concentrate feed is a feed source of protein and energy, while the forage is a source of fibrous feed, feed for cattle should consist of feed rough / forage and feed concentrates, the aim is to complement the lack of nutrients each other of feed stuffs so that the appearance of cattle can be optimized. Giving a high concentrate is an effort to accelerate the process of growth, carcass and meat production with high quality and improve its economic value.

In contrast, the the small-scale-household farmers doesn't explore yet the protein availability in the research site. The protein concentrate was in adequacy to obtained, so the solution were high-protein forages e.g. moringa oleifera, coffee waste, and Leguminosae. The optionally solution offered were purchased the raw material outside from Pamekasan Regency, for example were Surabaya, Malang, Pasuruan, and Probolinggo. The raw material can be purchased individually or in group to reduce the total cost. Compared with [11] the minimum requirement of the crude protein in the beef cattle were at 614-650 gr/head/day.

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