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Messages

Note	From
Dear Dr. Tri Astuti, Apologize for inconvenient and too late reply, However, we are recieve your manuscript ID-2501 and take to next step. Thank you very much for your contribution. Sincerely yours, Miss Kanchana Anuphan, Information Specialist, International Buffalo Information Center, Main Library, Kasetsart University. Thailand. Phone number: +66 2942 8616 ext. 344 Facebook fanpage: www.facebook.com/International-Buffalo-Information-Center-188662994509008	libkna Apr 22
Dear Miss Kanchana Anuphan Thank you for your reply. I need you to process my manuskrip, and I wish you will help me to publish o the bulletin buffalo. I need this publication as a report my research. Thank Best Regard Tri Astuti	triastuti Apr 29

THE EVALUATE EFFECTIVENESS OF FORAGE AND CONCENTRATE ON THE NUTRITIONAL VALUE AND PERFORMANCE OF BUFFALOES

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ABSTRACT-
Objective: This study aimed to evaluate the effectiveness of balance between forage and concentrate feed on dry matter content, organic matter, crude protein, crude fiber, crude fat, dry matter digestibility, and digestibility of organic matter, the digestible nutrient, feed consumption, an average of daily gain and feed efficiency of ruminants
Methodology: This study used a completely randomized design with 4 replicates. The diet treatments were: (R1), 100% native grass, (R2), 70% native grass + 30% concentrate. (R3), 60% native grass + 40% concentrate (R4) 50% native grass + 50 % concentrate. **Results:** The experimental results showed that the treatments feeding have a significantly affected ($p>0.05$) on the content of dry matter, organic matter, and crude fiber, and effect ($p<0.05$) on the content of crude protein, crude fats, and digestibility of dry matter, organic matter. **Conclusion**: Based on the data from the research results it could be concluded that the additional of concentrated rations to buffaloes provides better productivity than just getting field grass. The best treatment on the R2
Keywords: the buffaloes, nutritional value, performance

INTRODUCTION

Buffalo is one of the national assets in the field of animal husbandry which is also the largest ruminant meat producer after cattle, as donating human food animal protein in Indonesia. The development of buffalo populations tends to decrease, this is influenced by many factors including the management of feed and the provision of inadequate feed which greatly influences business development and productivity of buffaloes. Community habits in maintaining buffalo livestock are still extensification, where buffaloes are released on the edge of forests, fields and fields, regardless of the nutritional needs of the buffalo. Buffaloes only eat field grass around the

farmers' farms without any additional feed in the form of concentrates, and Buffalo is only considered a savings that will only be sold when needed. So that farmers who have buffaloes only feel that as a keeper is not a breeder in the sense of a producer or breeder.

In fact, Buffaloes that do not get a nutritional intake can still breed are good enough. The Buffaloes can produce more optimally when they are kept commercially by providing professional maintenance and feed management. Buffalo cattle have the potential to be developed in Indonesia due to geographical, ecological and fertility conditions in some parts of Indonesia that have characteristics that are suitable for the development of buffalo.

there are some regions that prefer buffalo meat such as in Banten, Nanggroe Aceh Darussalam, North Sumatra, West Sumatra, West Nusa Tenggara, South Kalimantan, and South Sulawesi. In addition, buffalo livestock can be developed on farmers farms in the countryside with limited facilities and infrastructure. However, there are still some limitations in the business of buffaloes, among others, the limited demand for buffalo meat products, the limited supply of buffalo and the dominance of buffalo livestock trading by a small group of entrepreneurs, Romjali (2012), Besides that, buffaloes are also slow to breed because of their low reproductive appearance, Diwyanto and Handiwirawan (2006). Buffalo cattle are actually very responsive to improvements in maintenance management and feeding management, (suhubdy, 2002; 2006a; suhubdy et al., 2004; 2005). Opportunities for farmers are large enough to get higher profits when the buffalo livestock business is preferred and not as a side business which at any time can be sold, but is focused on one direction of commercially folded livestock farming. However, this condition did not yet spur farmers to maintain more intensive buffalo livestock (Wirdahayati And Bamualim, 2006).

When the buffaloes compared with cows, they have extraordinary and specific abilities in terms of utilizing less quality feed (low protein forages and lots of crude fiber content). This is possible because of the relatively large physiological characteristics of digestion and the stomach capacity of buffaloes. Research on feed management in other ruminants has been carried out, but feed management research for buffaloes is still very limited. Research by Astuti, (2017) about utilization palm oil fronds as a source of forage with the addition of concentrates to goats-, maximally could improve the body weight gain of 53.57 gr/day/head. The research by Irawati et al. (2011) on the appearance of male buffalo production with the frequency of giving concentrations 3 and 6 times a day was relatively the same.

METHOD

This research was carried out experimentally by evaluating the quality of rations provided to increase the productivity of buffalo livestock that is maintained intensively**.** The ration is given consists of forage and concentrate. Forage consists of field grass, setaria and some kind of leguminous that grow around the farming. While concentrates were formulated from sources of feed ingredients that are easy to obtain. The combination of comparison between forage and concentrate as a treatment and be analyzed in vitro method.

The nutritional components were analyzed using the AOAC method[15]. The analyzing of digestibility done by the in-vitro method using the buffalo rumen content. The Forage using the native grass, and the concentrated base of local resources. Table 1 present about, the formulation of concentrate and Table 2 about the formulation of ration treatments with a comparison of forage and concentrate.

1.1. *Experimental design*:

The experimental design used was completely randomized design 4 treatment with 4 replication each treatment. The diets treatments were:

R1= 100% native grass,

R2 = 70% native grass + 30% concentrate,

R3 = 60% native grass + 40% concentrate

R4 = 50% native grass + 50 % concentrate

The observed variables included the content of dry matter, organic matter, crude protein, crude fiber, digestibility of dry matter, and organic matter of ration treatments...

To test performance, growth phase of 16 buffaloes (body weights ranging from 308 -441.5 kg) were used and distributed into four treatments groups with 4 replicates each. They were given the diets. A completely randomized block design was used in this study. All the buffaloes were given a diet at a level of 3% body weight, on a dry matter basis.

Statistical analysis: All data were subjected to an analysis of variance[15] and significant differences were further tested by Duncan's multiple range test.

Table 1. The Formulation of Concentrate treatments (% BK)

Feeds	%
Tofu waste	28
Sago	15
Rice bran	14
Palm Oil Cake	14
Concentrate	28
Minerals/premixes	1
	100

RESULT AND DISCUSS

Nutritional contents and digestibility of diet Treatments

The nutrient contents and digestibility of the diet treatments are presented in Table 2. The statistic analyses of this experimental results show that the

Table 2 about the formulation of ration treatments (% Dry matter)

Variables (%)	Ration treatments				SE
	R1	R2	R3	R4	
Dry matter	94.90 [b]	95.55[a]	95.51 [a]	94.81[b]	0.14
Organic matter	91.24[a]	89.78[b]	89.30 [b]	88.99 [b]	0.33
Crude fiber	27.42 [a]	25.03 [b]	22.60 [c]	21.64[c]	0.63
Crude lipid	1.63	2.56	2.65	3.91	0.25
Crude Protein	18.58	17.08	17.34	17.99	0.34
Digestibility of dry matter	46.17	46.33	47.67	53.67	6.26
Digestibility of Organic matter	60.17	56.33	55.67	68.00	7.63

Note: R1: 100% native grass +0% concentrate, R2: 70% native grass + 30% concentrate, R3: 60% native grass + 40% concentrate, R4: 50% native grass+50% concentrate. (a - c) Significant differences between the rows ($p<0.05$)

The statistical analysis results shown that the combination of forage and concentrates shown a significant effect ($p <0.05$) on the content of dry matter, organic matter, crude fiber. But there was no effect ($p>0.05$) on the content of crude fat, crude protein, and digestibility of dry matter and organic matter. Duncan's further test results show that dry matter content of R1, which consists of only 100% native grass, was a significantly different effect from the diets R2 and R3 treatments that have used concentrates, but no different effect with the R4 diet. The high of dry matter content indicates that in the ration was less water content, and there were sufficient nutrients that be needed by the livestock. The results of this study showed that the research ration on the R1 treatment was significantly higher compared to R2, R3 and R4.

The highest dry matter content in this study was found in treatment R2 (95.55). This was due because of R1 were 100% native grass with mixed by setaria grass, legume vines and other

forages which were thought to have good nutritional content. This could be seen by the high crude protein content at R1 ration (18.58%) than concentrates treatment. The Organic matter is the largest part of the nutrients needed by livestock. The high of organic matter content in this treatment indicates that there had nutrients in the ration. Tilman (1991) states that the proximate components included in nutrients were carbohydrates, protein, fats, and low vitamins.

The crude fiber content in R1 shown significantly higher than R2, R3, and R4 Treatment, too. This was because of the higher crude fiber forage than concentrates in this study. The no effect of dry matter digestibility was being influenced by the feed nutrient composition which is almost the same in each treatment. Table 2 show that the crude protein content of rations that were no effect ($p<0.05$). This was in accordance with the opinion of Anggorodi (1994) that the factors that influence the digestibility value of BK rations were the proportion of feed ingredients in the ration, chemical composition, and level of protein. The higher the digestibility of dry matter, it will be higher the chance of nutrients that livestock could use for their growth (Afriyanti, 2008). The digestibility of ration dry matter in this study more lower than Suardin et al (2014) who obtained the digestibility of mulato grass with the addition of several legumes about 84.20 - 85.35%. And the percentage of digestibility of organic matter ranging from 55.67% - 68.00%. This showed that all treatment rations used in this study have almost the same nutritional quality. However, the organic matter digestibility lower than, Suardin et al (2014) The low digestibility of dry matter and organic matter was thought to be due to forage sources originating from native grass and wild leguminous which have anti-nutrient content which causes low digestibility coefficient of feed ingredients.

Table 3. Average body weight gain, consumption, and efficiency of the Treatment Ration

Variables	Treatments				SE
	R1	R2	R3	R4	
Daily gain(kg/head/day)	0.33	1.07	0.70	0.89	0.22
consumption (kg/head/day)	6.43	6.48	5.76	5.62	0.43
Efficiency (%)	7.10	16.57	12.17	12.65	4.77

Note: R1: 100% native grass +0% concentrate, R2: 70% native grass + 30% concentrate, R3: 60% native Grass + 40% concentrate, R4: 50% native grass+50% concentrate. 40% concentrate, R4: 50% Native grass+50% concentrate

The statistical analysis showed that the combination of concentrates and forages had no effect ($p <0.05$) on consumption, body weight gain and ration efficiency. The effect of giving the ration concentrate to this study was due to the nutritional value of the ration. This research was no

being affected by ration treatment. In addition, the quality of the dry matter eaten by livestock depends not only on the quality of the food eaten but also on the size of the animals that eat the food. Feed consumption was influenced by the rate of digestion of feed and depends on animal body weight and feed quality. Although this research showed no effect but based on Table 3, the best treatment was seen in R2 treatment, where the consumption, daily gain, and ration efficiency were higher than R1, R3, and R4.

CONCLUSION

Based on the data from the research results it could be concluded that the addition of concentrated rations to buffaloes provides better productivity than just getting field grass.

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