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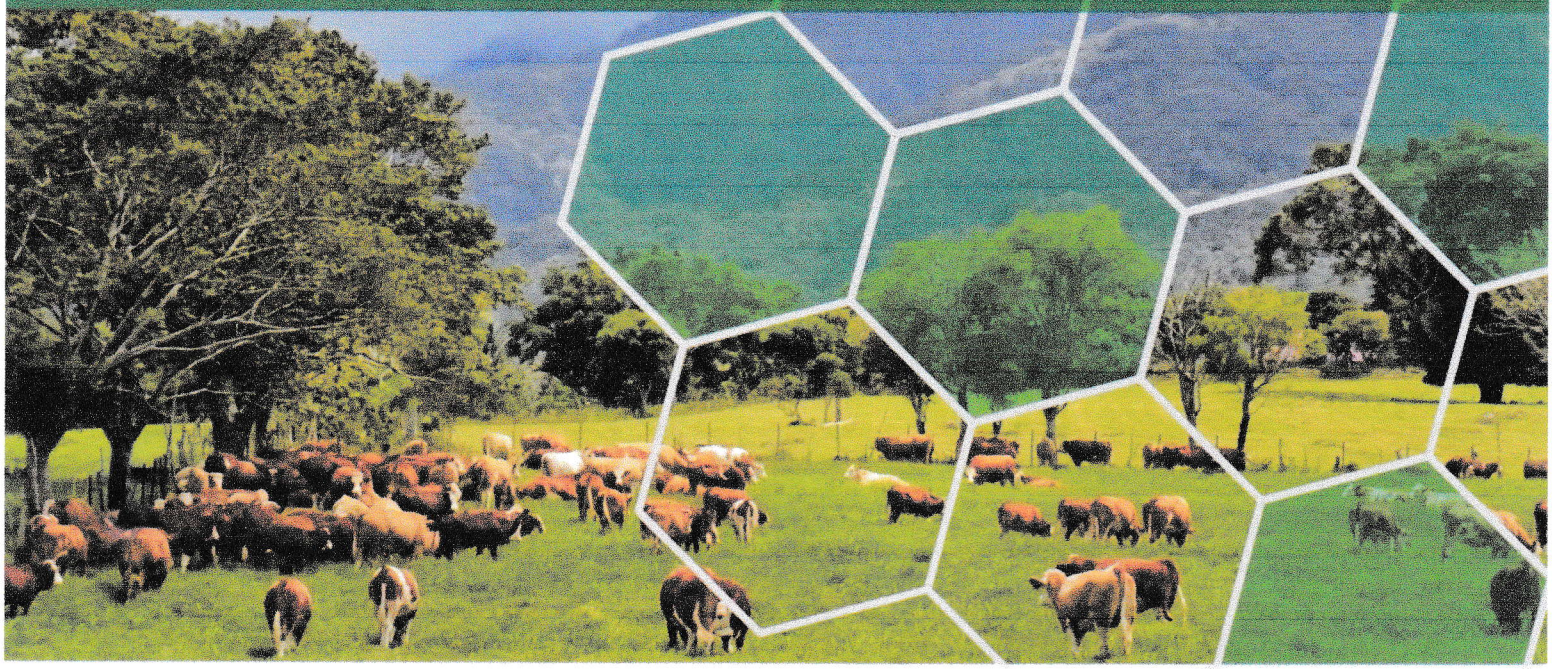
INTERNATIONAL CONFERENCE
6th SAADC 2017

Conference on Sustainable Animal Agriculture for Developing Countries

"WISDOM OF USING LOCAL RESOURCES FOR DEVELOPMENT OF SUSTAINABLE ANIMAL PRODUCTION IN DEVELOPING COUNTRIES"



The Singhasari Resort, Batu City, Indonesia, October 16-19, 2017

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Jointly organized by

Faculty of Animal Husbandry
Brawijaya University Indonesia

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PREFACE

It is my privilege to thanks to all of authors for your enthusiasm in participating and contributing papers at this 6th International Conference on Sustainable Animal Agriculture for Developing Countries (The 6th SAADC-2017) that had been successfully held on 16-19 October 2017 in The Singhasari Resort, Batu City, Indonesia with the theme of *"Wisdom of Using Local Resources for Development of Sustainable Animal Production in Developing Countries"*

The primary objective of the 6th SAADC-2017 was to provide a scientific forum for animal scientists and producers, and administrators of livestock related agencies, particularly from the developing countries, to share their experiences, discuss issues and suggest recommendations to develop further a more sustainable livestock production.

This proceeding contains selected papers that were presented in the conference based on the quality and relevancy to the confencence. The papers are reflecting responsiveness of animal scientist from various countries in promoting sustainability of animal agriculture for the prosperity of the never ending generations. These proceeding hopefully will certainly enrich the body of knowledge and understanding about various aspects related to sustainable animal agriculture.

Our special thanks are also for the SAADC President for his confidence to our Universitas Brawijaya to organize this prestigious conference. Also, congratulation that SAADC is now listed in the International Congress and Conference Association (ICCA) based on its quality and consistent activities.

We also wish to thank all partners and sponsors for their support to the success of the conference. To colleague members of the organizing committee, please accept my deep appreciation for your hard working in ensuring the success of the conference.

Yours Sincerely,

Prof. Ifar Subagiyo
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TABLE OF CONTENTS

KEYNOTE ADDRESS AND INVITED SPEAKER

ORAL PRESENTATION

Animal Production

Animal Nutrition and Feed Technology

The biologycal quality of adding fermented cabbage waste as probiotic to pellet calf starter diet on calf performance

Mukodiningsih S.[1], J. Achmadi[1], F. Wahyono[1], E. Pangestu[1] and S.J. Ohh[2]

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Abstract

Newborn calf has an undeveloped rumen which tends to easily diarrhea caused by E. coli infection from the environment resulting in death. Feeding calf starter (CS) diet after birth can promote rumen development. Although giving antibiotic can suppress E coli infection but it has negative effect. Lactobacillus sp is a probiotic bacterium (lactic acid bacteria) that can replace antibiotics. Waste cabbage naturally content lactobacillus sp. but fermentation process can further increase the number of lactobacillus sp in the waste cabbage. The aim of this research was to examine the effect of addition fermented waste cabbage (FWC) in calf starter diet on calf performance. Completely randomized design with 3 treatments (CS-L1: CS + 2% FWC, CS-L2: CS +4% FWC, CS-L3: CS +6% FWC) and 5 replications was employed for this study. The materials of CS were corn, soybean meal, rice bran, molasses, mineral mix and materials in FWC were cabbage waste, sugar and salt, 15 FH calf (2-6 weeks old). Feeding calf starter + FWC twice per day after giving milk. Water was given ad libitum. The parameters measured were calf starter intake and daily gain. The data were analyzed with ANOVA and Duncan's test. The result indicated that feeding of FWC had no effect on calf starter intake, but significantly improved ($P<0.05$) average daily gain with addition of 6% fermented waste cabbage been the best.

Keywords: calf starter, fermented waste cabbage, calf starter intake, body weight gain

Introduction

Optimal physical and metabolical development of reticulo-rumen can be achieved at 2-6 weeks after birth depending on feeding practices (Cunningham, 1992). Feeding calf starter combined with corn fodder and 5% molasses to one week old Friesian Holstein (FH) calves can promote rumen development (Mukodiningsih et al., 2010; 2016). However, proper management of calves after birth until weaning is critical as newly born calves are subjected to diarrhea related diseases resulting in high mortalit of up to 39% (Wudu et al., 2008). Diarrhea is generally caused by *Escherichia coli* from the environment and feeding feed containing antibiotic has been reported to reduce the population E. coli, but the above practice can resulted in drug residues in milk or meet product. Probiotic bacteria are beneficial bacteria that can suppress harmful bacteria in the digestive tract. It can be used as alternatively to antibiotics because probiotics are capable of maintaining the balance of intestinal micro flora in the digestive tract (Shitandi et al., 2007), and an increase serum and antibody IgA, IgM and IgG (Panda et al., 2008). The use of probiotic in large quantities does not have a negative effect, because probiotics are friendly and safe materials. Lactobacillus sp is a probiotic bacterium (lactic acid bacteria) that can suppress populations of E. coli. Cabbage waste is by product of cabbage's outer shells that naturally contains lactic acid bacteria and fermentation process can further increase its number. Inclusion of fermented

cabbage waste in pelleted calf starter as much as 6% produced the best quality of chemical, physical, microbiological pellet compared with 2 and 4% (Mukodiningsih et al, 2017). The aim of this study was to examine the effect of addition of fermented cabbage waste (FCW) in calf starter on calf performance.

Methodology

The treatments of this study were (i) calf starter (CS) pellet plus 2% fermented cabbage waste (FCW), CS-L1; (ii) calf starter pellet plus 4% FCW), CS-L2 and (iii) calf starter pellet plus 6% FCW, CS-L3. The CS was formulated with yellow corn ground, rice bran, soybean meal, mineral mix and molasses (Mukodiningsih et al., 2010) to meet the nutrient requirement of calves with 18% protein and 75% TDN (NRC, 2001). Proximate and starch content were analyzed (AOAC, 1990), and NDF according to Van Soest (1994). The fermented cabbage waste consisted of cabbage leave blended and mixed with 6% salt and 6.4% sucrose (w/w) and fermented for 6 days. The above treatment diets were pelleted with steam conditioned at 75-80°C for about 15 seconds. The diameter of pellet was ~ 6mm, and then dried until final moisture content ~ 13%. The biology quality of the different diet-pellet was parameters observed, it used Frisian Holstein calves with aged 7-14 days and ± 35 kg-initial body weight. The experiment was done 6 weeks consist preliminary (1 week) and observation (5 weeks) using completely randomize design with 3 treatments and 5 replication. Calves feeding were 40% CS-L and 60% milk (NRC. 2001) given twice a day at 7:00 AM and 3:00 PM. The starter feed (CS-L) was given 30 min after giving milk (Morisse et al., 2000). Clean drinking water was provided ad libitum. Dry matter calf starter intake and body weight gain were determined. All data were analysed using the analysis of variant, and differences were compared using Duncan test (Still and Torrie, 1981).

Results and discussion

Adding FWC in pellet of calf starter gave no significant effect on dry matter intake (DMI), but significant effect on average daily gain (ADG) (Table 1).

Table 1. Feed intake and average daily gain (ADG) of FH Calves

Treatments	Parameters	
	Dry matter intake (g/day)	ADG (kg/day)
CS-L1	103.82	0.71[a]
CS-L2	117.79	0.60[a]
CS-L3	109.21	1.03[b]

*superscript on the same column indicate significant different (P<0.05)

Although not significantly different, the dry matter intakes of calves in the CS-L1, CS-L2 and CS-L3 were within the range daily intake of solid feed for calves from 50 g at 3 weeks to 300 g at 17 weeks (Morisse at al., 2000; NRC, 2001). There was significant difference (P<0.05) in ADG with T3 treatment recorded the highest ADG. It was assumed that, increasingly FWC (6%) in calf starter also increases intake of lactic acid bacteria resulting in healthier calves in T3 compared to those in T1 and T2. The above suggestion was also reflected by the low population of E coli in feces from T3 calves (6.3 x 10^6 cfu / g) which is below the suggested value of 10^9 cfu / g standard by Boyd and Marr (1980).

Conclusion

The formula calf starter added fermented waste cabbage 6% is the best.

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Thank for Diponegoro University and BBPTU-Baturraden Purwokerto that have supported this research.

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CERTIFICATE

This certified

Sri Mukodiningsih

as

Oral Presenter

in the Sixth International Conference on Sustainable Animal Agriculture for Developing Countries (SAADC 2017)
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