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Research Article

The Effect of Cassava Dregs Addition to Javanese Thin Tailed Sheep Performance

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Abstract - *This study aims to determine the effect of cassava dregs addition in the ration on the performance of Javanese thin-tailed sheep. This study was conducted for 2 months at the Berkah Cempe farm, Baturetno District, Wonogiri Regency, Central Java Province, Indonesia. A total of 12 Javanese thin-tailed sheep were used in this study with a completely randomized design of one-way pattern consisting of 3 treatments and 4 replications. Treatment P1=60% king grass + 40% concentrate + 0% cassava dregs, P2=60% king grass + 40% concentrate + 10% cassava dregs, P3=60% king grass + 40% concentrate + 20% cassava dregs. The ration of feed intake was prepared by determining 12% crude protein for the fattening program based on dry matter. The observation variables were feed intake, average daily gain, and feed conversion. The results showed the highest average of feed intake at P3 = 1613.29 ± 0.30 g / head / day, the highest average daily gain at P3=121.41 ± 0.12 g / head / day and the lowest average feed conversion at P3=7.51 ± 0.76. The conclusion of this study was that the cassava dregs addition up to 20% in Javanese thin-tailed sheep feed has a significant effect on feed intake, average daily gain, and feed conversion.*

Keywords - *Thin-Tailed Sheep, Feed Consumption, Feed Conversion, PBBH, Cassava Dregs.*

I. INTRODUCTION

Sheep are popular animals in Indonesia and are usually raised for meat production. However, sheep farming is often constrained by the limited supply of green fodder because green land is decreasing. To overcome this, concentrate can be used as an efficient alternative feed. Feed is very important for sheep growth. The selection of concentrate as an alternative feed can increase feed efficiency and sheep growth. One of the alternative feeds studied is cassava, a cheap and easily obtained tapioca waste. Although cassava has low protein and high fiber, the addition of cassava to sheep feed can increase sheep consumption and productivity.The main feed for ruminant livestock is green fodder, which is around 60-70%, however, because the availability of green fodder is very limited, livestock development can be integrated with agricultural efforts as a strategy in providing animal feed through optimizing the use of agricultural waste and agricultural agro-industrial waste [1]. Many efforts can be made to maximize the availability of animal feed. One effort that can be made is to use fermented products.

The search for alternative feed ingredients must be attempted so as not to depend on green feed ingredients, for example by utilizing agro-industrial waste such as soybean dregs and cassava pulp which are very abundant and cheap. Fermentation technology must be applied to overcome the weaknesses of this waste which has low nutritional value. In addition to being able to increase the nutritional value of waste, fermentation can also change feed ingredients that are difficult to digest into easy to digest, produce a distinctive aroma and flavor, and can eliminate toxins from waste materials. In carrying out the fermentation process, the activity of microorganisms is influenced by pH, temperature, composition of nutrients and the presence of inhibitors [2].Cassava pulp or tapioca pulp is a by-product of tapioca production. This cassava pulp can be used as one of the concentrates for cattle, goats, or poultry feed. Because the protein content is low, less than 5%, this waste is rarely used by farmers, but with fermentation techniques the protein content in cassava pulp can be increased, so that fermented cassava pulp can be used as an alternative feed for livestock.

This study aims to determine the impact of cassava pulp on the performance of thin-tailed sheep. It is expected that this research can provide information on the use of cassava pulp as sheep feed, increase the productivity of sheep farming, and offer a sustainable feed alternative, namely the use of cassava pulp as sheep feed is indeed very relevant in the context of managing increasingly limited livestock feed resources. Cassava pulp, as tapioca waste, offers the potential as an affordable and sustainable feed alternative.

II. MATERIALS AND METHODS

The tools used in this study were individual cage with plank floors. Each plot measures 60 cm x 100 cm which is occupied by one sheep equipped with a place to feed and drink. Plastic bags (HDPE Anchor), Sacks, wire (for drying feces), chopper machines, plastic clips for sample places, digital scales (camry 0-5000 g), digital hanging scales (DLE Haging Scale 200 kg x 50 g 3A Scale). The materials used in this study were 12 Javanese Thin-Tailed sheep. The feed ingredients used were king grass greens, concentrates and cassava dregs. The ration feed was prepared by determining 12% crude protein for the fattening program based on dry matter listed in Table 1.

Table 1. Feed Compotition of the Research (g asfed)

	Feed Compotition (g *asfed*)		
Feed	60% king grass + 40% concentrate + 0% cassava dregs	60% king grass + 40% concentrate + 10% cassava dregs	60% king grass + 40% concentrate + 20% cassava dregs
King grass	1287,32	1287,32	1287,32
Concentrat	185,27	185,27	185,27
Dregs	0,00	70,35	140,70
	1472,59	1542,94	1613,29

The research design used a completely randomized design (CRD) with a one-way pattern with three treatments and four replications. The treatment of cassava feed for Thin-tailed sheep feed was as follows:

- P1 = 60% king grass + 40% concentrate + 0% cassava dregs
- P2 = 60% king grass + 40% concentrate + 10% cassava dregs
- P3 = 60% king grass + 40% concentrate + 20% cassava dregs

The observation variables in this study were feed consumption, daily weight gain, and feed conversion. The analysis of data obtained due to the treatment was tested using Analysis of Variance (ANOVA) with a one-way pattern research design, if there were differences in variables due to the treatment, it was continued with a further Duncan's multiple range test (DMRT) to determine the differences between treatments [3].

III. RESULTS AND DISCUSSION

The average of feed intake, average daily gain and feed conversion listed in Table 2.

Table 2. Average of Feed Intake, Average Daily Gain and Feed Conversion

Variable	**Feed**		
	P1	P2	P3
Feed intake (g/head/day)	1472,59±0,18^{a}	1542,94±0,34^{b}	1613,29±0,30^{c}
Average daily gain (g/head/day)	110,22±0,18^{a}	112,42±0,35^{a}	121,41±0,12^{b}
Feed conversion	9,11±0,10^{a}	9,27±0,59^{a}	7,51±0,76^{b}

^{a,b,c}Different superscript in the same row indicate differences (P<0.05)

- P1= 60% king grass + 40% concentrate + 0% cassava dregs
- P2= 60% king grass + 40% concentrate + 10% cassava dregs
- P3= 60% king grass + 40% concentrat + 20% cassava dregs

A. Feed Intake

The results of statistical analysis of feed intake during the study were P1 = 1142.59 ± 0.18 g / head / day, P2 = 1542.94 ± 0.34 g / head / day and P3 = 1613.29 ± 0.30 g / head / day showed a significant difference (P <0.05). The addition of cassava dregs to all treatments had a significant effect. The highest feed intake was at P3 = 1613.29 ± 0.30 g / head / day. The addition of cassava dregs to the ration by 20% has proven that dry cassava dregs does increase feed intake for Javanese thin-tailed sheep.

This could be due to the composition and nutrients contained in the different treatment rations, resulting in significant differences in results. Easily digestible feed generally has a short retention time so that the feed can be absorbed or digested. This causes the rumen to empty quickly so that the sheep will consume more feed.

According to [4], differences in palatability and nutrient content of rations can be caused by the type of feed ingredients used to make rations, which then affect the amount of rations consumed. Feed affects the high and low consumption. Agree with [5] who stated that the form of feed, aroma, appearance, texture, taste, temperature, and environmental humidity have a significant influence on livestock consumption. Feed intake is the amount of feed that can be consumed by livestock in a certain period of time. The amount of feed consumption is the most important determining factor that determines the amount of nutrients obtained by livestock and subsequently affects the level of livestock production.

B. Average Daily Gain

The results of statistical analysis of average daily gain during the study were P1 = 110.22 ± 0.18 g / head / day, P2 = 112.42 ± 0.35 g / head / day, and P3 = 121.41 ± 0.12 g / head / day showed a significant difference (P <0.05). The addition of cassava dregs in treatments P1 and P2 did not show a significant effect. This happened because even though 10% cassava dregs was given, it did not show a difference with P1. The highest average daily gain was P3 = 121.41 ± 0.12 g / head / day.

Average daily gain is a reflection of the quality of the feed given. Average daily gain of sheep is influenced by feed as well as genetic factors. Growth is a physiological activity that can be expressed by the average weight gain per unit time.

Growth is influenced by factors such as feed, gender, hormones, age, and the environment such as disease and climate [6]. Feed intake is the amount of feed eaten by livestock that will be used to meet basic living needs and reproduction. The addition of 20% of cassava feed has been shown to have an effect on daily weight gain. [7] stated that livestock growth is controlled by nutrient consumption, especially energy consumption. [8] stated that the rise and fall of ADG (average daily gain) is greatly influenced by the high and low levels of feed intake.

C. Feed Conversion

The results of statistical analysis of feed conversion during the study were P1 = 9.11 ± 0.10; P2 = 9.27 ± 0.59; and P3 = 7.51 ± 0.76 showed a significant difference (P <0.05). The addition of cassava dregs in treatments P1 and P2 did not show a significant effect, but P3 showed the lowest feed conversion rate, namely 7.51 ± 0.76. The feed conversion produced in all treatments was quite good. The smaller the feed conversion value according to [9] means that the livestock is more efficient in utilizing feed.

Feed conversion is used to determine production efficiency. Feed conversion is obtained from consumption divided by weight gain. The lower the feed conversion value, the higher the efficiency of feed use. Feed conversion is influenced by the level of feed intake and average daily gain. The feed conversion rate depends on the quality of the feed given, the better the digestibility value, the better the feed conversion produced. This is in line with the opinion of [10] who stated that the smaller the feed conversion rate, the more profitable it is because less feed is consumed to achieve optimal meat products within a certain period of time.

IV. CONCLUSION

The conclusion obtained from this study is that the addition of cassava pulp to the thin-tailed sheep feed ration up to 20% has a significant impact on feed consumption, daily weight gain and feed conversion.

V. REFERENCES

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