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UTILIZATION OF MARKET ORGANIC WASTE INTO ANIMAL FEED PELLETS

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Abstract

Background: Rubbish is still often treated as something that is of no use. Rubbish can provide benefits to humans. Several types of vegetable waste from the market can be used as animal feed. This study aims to get a solution to overcome the buildup of organic waste in market by creating into a pellet and find out if the animal likes the organic waste pellets.

Methods: This type of research is experimental, which is a research method that uses a quantitative approach, doing three controlling activities, manipulating activities, and observation. In this study, researchers took the three types of organic waste most widely produced in the market, namely mustard, bean sprouts and spinach, were treated as pellets and were examined for their nutrient content and moisture content and were tested on experimental animals.

Result: From the observations it can be seen that the pellets favored by the test animals are pellets from bean sprouts with the most pellets being eaten every day. Moreover, the most disliked by the test animals are pellets from mustard greens, this is possible because the bean sprouts pellets smell of caramel and hollow texture, while mustard pellets smell like salted fish.

Conclusion: Organic waste should be collected and made into pellets so that it can be of economic value. In making mustard pellets, it should not be in a pure state but made into a mixture so that it is preferred by animals.

Keyword: Organic waste, pellet, animal food

Introduction:

Waste from large cities like Jakarta can never be transported entirely to the landfill. This phenomenon is because there are many obstacles in the transport such as congestion traffic when trucks heading to Bantar Gebang- the site to dumb the rubbish, queues to the landfill, not to mention the refusal of citizens around the vicinity so that often there is a buildup of rubbish that can interfere with health.

Commonly rubbish is still often treated as something that is of no use where actually rubbish can provide benefits to humans [1]. On the other hand farmers are faced with increasingly narrow pasture land in urban areas because many are converted to housing, so it needs an alternative to grass substitutes. An easy and inexpensive alternative is to use vegetable waste available in the markets. Some types of vegetable waste from the market can be used as ruminant livestock feed including kale, bean sprouts, cabbage, cassava leaves, spinach, skin and corncobs.

High fiber content, palatability and low protein in corn cobs can be overcome by adding protein feed ingredients into complete feed pellets. This study aims to determine the consumption of dry matter and organic matter of corn cobs based on complete feed with different protein sources in male goats [2].

Any sophisticated technology will not be sufficient to solve the problem of garbage in big cities, amounting to 55.38 percent of the composition of waste produced by the community or is organic waste, the percentage makes organic waste as the most waste generated [3].

The old Kebayoran Market with an area of 8,755 square meters with 632 kiosks and 249 stalls, with 24-hour operating hours, because at night the vegetable traders operate, there will be a lot of organic waste generation. Cleaning staff numbered 27 people, 20 people work day and the rest at night. They are outsourced, while there is 8 market staff dealing with waste, including supervisors. This is the background for making research on the utilization of organic

waste into animal feed pellets in Kebayoran Lama, South Jakarta, Indonesia.

METHODS

This research is an experiment which is a research method that uses a quantitative approach, doing three activities to control, manipulate activities, and observation. In this study, researchers took the 3 kinds of organic waste most extensively produced in the markets, particularly mustard, bean sprouts and spinach converted into pellets and were examined for their nutrient and moisture content material and have been examined on experimental animals.

RESULTS

Organic waste produced from spinach vegetable traders as much as 93 kg / day, mustard as much as 102 kg / day and bean sprouts 48.5 kg / day in the Kebayoran Lama market that trades in the afternoon until the afternoon-evening. The organic waste is disposed of with the trash every day except the bean sprouts that every day is taken by goat farmers.

Organic waste obtained from the Kebayoran Lama market is dried by making pellets of bean sprouts, mustard greens, spinach and a combination of bean sprouts, bean sprouts, spinach and mustard greens are obtained as follows:

Table 1: Distribution of Organic Waste Weight

No.	Organic Waste type	Wasteweight			
		Before Drying(Kg)	After Drying (Kg)	Wastewater content (%)	Pellets obtained
1	Spinach	93	10.7322	88.49	11.5371
2	Mustard	102	6.9156	93.22	7 , 4343
3	Bean sprouts	48.5	20.4573	57.82	21.9916

Weight of dry organic waste from spinach was 6.9156 kg with a moisture content of 92.56%; green mustard was 10.7322 kg with a moisture content of 89.48%, and bean sprouts were 20.4573 with a moisture content of 57.82%. The pellets obtained from organic waste are proportional to the weight of dry organic waste so that per day from the organic waste of the Kebayoran Lama market, the average for spinach is 11.5371 kg / day, mustard 7.4343 kg / day and bean sprouts 21.9916 kg / day.

If organic waste is made of pellets, it can reduce the amount of organic waste by 243.5 kg / day and the pellets obtained weighing 40.96 kg / day, which can be stored for up to 6 months. If this is done it can reduce the expense of transporting waste.

Physical quality of organic waste pellets obtained as follows:

Table 2: Physical quality of organic waste pellets

No	Type of Pellets	Physical Quality		
		Color	Odor	Shape
1	Spinach Brownish	green	Smell the leaves	rather rough fibrous
2	Mustard	Green brown Brownish	Like the smell of salted fish	finely dense
3	Sprouts Brownish	green	Like caramel	rather rude hollow
4	Spinach-Mustard	Green brownish	like the smell of fish lightly salted	delicate fibrous
5	Spinach Sprouts	Green-brown	caramel	coarse fibrous
6	Mustard-Sprouts	Green brownish	like anchovies	bit delicate hollow
7	Spinach-Mustard-Sprouts	Green	brownish-smelling leaves	fine fibrous

Quality of solid pellets found that the color of the pellet was entirely brownish-green because all pellets come from plants. The smell of pellets varies for bean sprouts waste that smells like caramel; mustard smells like salted fish and spinach smells of leaves. The shape of the pellet for bean sprouts is hollow because it comes from bean sprouts while spinach and mustard are more fibrous.

Nutritional content in pellets is essential to identify whether the nutritional content of pellets is sufficient for animal life. As a reference material used is nutrition on elephant grass.

Table 3: Distribution of nutrient content of organic waste pellets

No	Type of Pellets	Water Content (%)	Ash Content (%)	Fiber Content (%)	Protein Content (%)
1	Spinach	14.11	19.60	22.75	15.37
2	Mustard	13.07	17.41	21.39	23.42
3	Sprouts	9.01	4.28	40.33	9.61
4	Spinach-Mustard	12.95	17.88	21.47	17.92
5	Spinach- Sprouts,	11.02	12.14	2909	12.85
6	Sprout-Bean Sprouts	11,51	10.18	28.50	16.20
7	Spinach-Mustard-Bean Sprouts	12.81	12.53	30.07	15.39
8	Nutrition in Elephant Grass	10.1	2.7	31	9.99

Nutrient content in pellets obtained water content meets the requirements <15%, ash content is higher than that contained in elephant grass, and protein content is higher than content protein in elephant grass and essential things in animal feed are fiber content still meets the requirements. This proves that pellets from organic waste are still useful as animal feed. Testing experiments on animals were carried out for 5 days to determine which is most preferred by the test animals. In testing the test animals, made adjustments are to the conditions of the test chamber. Test animals are fed as usual until the morning before testing. On the first day of testing the test animals were fed 10 grams of pellets for each pellet, then 6 hours were observed. After 6 hours all pellets are taken to be weighed again. The test animals are fed until the next day. This is done until the 5th day. From the observations it is found that the preferred pellet is pellets from bean sprouts with the most views of pellets eaten every day. The most disliked by the test animals are pellets from mustard greens, this is possible because the bean sprouts pellets smell of caramel and hollow texture, while mustard pellets smell like salted fish.

DISCUSSION

Animal productivity is strongly influenced by the availability of feed, both in quality and quantity. Grasslands in urban areas have been converted to housing, so it is necessary to look for alternatives to forage, one of these alternatives is vegetable waste that is very much available in the market. Complete livestock feed contains forages and concentrates in a balanced ratio. Complete feed pellets are one method that can be used to increase the utilization of agricultural waste and market waste by mixing organic waste with additional feed (concentrate) by considering the nutritional needs of livestock and other food substances [4].

Vegetable waste will be of use-value if it is used as feed through processing. This is because the use of vegetable waste as feed ingredients in rations must be free of anti-nutritional effects, especially toxic which can inhibit the growth of the animals concerned. Vegetable waste contains anti-nutrition in the form of alkaloids and susceptible to spoilage so it needs to be processed into other forms so that it can be used optimally in the composition of livestock rations and can be stored for a long time as a reserve of animal feed when conditions are challenging to get forage feed[5].

The physical quality of pellets is that the color of the pellet is entirely brownish-green because all pellets come from plants. The smell of pellets varies for bean sprouts waste that smells like caramel; mustard smells like salted fish and spinach smells of leaves. The shape of the pellet for bean sprouts is hollow because it comes from bean sprouts, spinach is more fibrous and mustard. Pellet generally elliptical containing complete foodstuffs because it consists of several food ingredients, both fibrous and concentrated feeds and contains balanced nutritional levels to meet the needs of livestock. The use of pellets as animal feed makes it easy to feed, transport and store [6].

The most critical substances in feed are protein, carbohydrates, fats, vitamins and water [5]. Fats function for: energy sources (energy), Carriers of fat-soluble vitamins such as vitamins A, D, E, and K. Fats from food can be converted into starches and sugars, which can be used as a source of energy. Protein functions to repair and replace damaged body cells, for example in elderly cows. Growth or formation of body cells, for example in calves. The need to produce, for example for adult cows. Carbohydrates function for energy sources, the formation of fat in the body. Once ingested, the carbohydrate is absorbed by the blood in the form of glucose and is immediately oxidized to produce energy or to store

body fat. Minerals function for the formation of bone and vein tissue, the need for production, replacing lost minerals in the body, and maintaining health. Minerals are not found in the bones. However, the minerals in the body's tissues are only a few, essential for the vitality of animals. Because minerals will facilitate the process of digestion and absorption of food substances. Water functions to:regulate body temperature, help the digestive process, remove materials that are no longer useful in the body in the form of sweat, urine and dirt (80% water),lubricating joints and helping the eye to see. Water is the central part of substances in the body. More than 50% of animal body composition consists of water, and most of the body tissue contains 70-90% water [7].

From the observations, it can be seen that the pellets favored by the test animals are pellets from bean sprouts with the most number of pellets eaten every day. Furthermore, the most disliked by the test animals are pellets from mustard greens, this is possible because the bean sprouts pellets smell of caramel and hollow texture. While mustard pellets smell like salted fish. In the manufacture of pellets given a mixture of molasses to give aroma and can increase appetite in cattle. That's why many farmers mix molasses in animal feed and drinks. This fact has been widely known by farmers after comparing the appetite of livestock before and after mixing molasses in food or drink. Cow's stomach consists of 4 parts, namely rumen, reticulum, omasum, and abomasum. In the stomach section called the rumen there are many microorganisms that help digest the cow. Molasses can be broken down by microorganisms in the rumen easily, so that microbial activity becomes higher and cattle digestion becomes smoother [8].

CONCLUSION

Organic waste pellets made pellets can reduce the amount of organic waste that can be stored for up to 6 months. If this is done, it can reduce the expense of transporting waste. Nutrient content in pellets is fulfilled. This proves that pellets from organic waste are still useful as animal feed. From the observations it can be seen that the pellets favored by the test animals are pellets from bean sprouts with the most number of pellets being eaten every day. Moreover, the least preferred by the test animals is pellets from mustard greens, this is possible because the bean sprouts pellets smell.

DECLARATION

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