

Eco-Enzyme Applications for Biosecurity and Sanitation on Goat Farm in Namorambe District, Deli Serdang Regency

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Abstract. Deli Serdang is a district that has the highest population of sheep and goats. The maintenance system is in the semi-intensive category so it can be categorized as an animal husbandry livelihood. An independent livestock business namely Al-Hafidz sheep and goat farming is located in Sidirejo Village, Namorambe District, Deli Serdang Regency. Problems in the Al-Hafidz farmer group are the decline in livestock health and poor sanitation of the cage. This problem can affect the health of livestock, especially skin diseases and can be transmitted to the breeder. The purpose of this community service activity is to improve biosecurity and cage sanitation using eco enzymes. Activities are carried out by making natural disinfectants that are easy and do not require expensive costs, such as eco-enzymes. Kitchen waste can be used as an ingredient to make Eco-Enzymes. Eco Enzyme is very useful as an insect repellent, house cleaning flies and equipment, insecticide, an antiseptic or natural antibacterial. The methods used are training, counseling, and assistance to farmer groups. The results achieved are increased knowledge of farmers regarding the manufacture of eco-enzymes as cage biosecurity by utilizing fruit peel waste, reducing household waste pollution, and reducing the cost of purchasing disinfectants.

Keyword: Eco-Enzyme, Goat Farm, Biosecurity, Sanitation, Waste

Abstrak. Deli serdang merupakan Kabupaten yang memiliki pulasi terbanyak ternak domba dan kambing. Sistem pemeliharanya dalam kategori semi intensif sehingga dapat dikategorikan sebagai mata pencaharian beternak. Usaha peternakan domba dan kambing Al-Hafidz berlokasi di Kelurahan Sidirejo Kecamatan Namorambe Kabupaten Deli Serdang. Permasalahan pada kelompok tani Al-Hafidz yaitu menurunnya kesehatan ternak dan sanitasi kandang yang kurang baik. Permasalahan tersebut dapat mempengaruhi kesehatan ternak khususnya penyakit kulit dan dapat menular pada peternaknya. Solusi untuk menyelesaikan permasalahan mitra adalah dengan pembuatan disinfektan alami yang ramah lingkungan, mudah, dan tidak memerlukan biaya yang mahal. Sampah dapur yang biasanya dibuang berupa kulit buah dan sayur dapat dimanfaatkan sebagai bahan dalam pembuatan Eco-Enzyme. Eco Enzyme sangat bermanfaat sebagai penolak serangga, alat pembersih kandang dan peralatannya, insektisida, antiseptik atau antibakteri alami. Metode yang dilakukan adalah pelatihan, penyuluhan dan pendampingan kelompok tani. Hasil yang dicapai adalah meningkatnya pengetahuan peternak terkait pembuatan eco-enzyme sebagai biosecurity perkandangan dengan pemanfaatan limbah kulit buah mengurangi pencemaran limbah rumah tangga dan mengurangi biaya pembelian disinfektan.

Kata Kunci : Eco-Enzyme, Kandang Domba, Biosekurity, Sanitasi, Sampah

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1. Introduction

Deli Serdang is a district that has the highest population of sheep and goats. The total population of goats and sheep in 2017 was recorded at 144,669 heads and 121,662 sheep. The maintenance system is in the semi-intensive category so it can be categorized as an animal husbandry livelihood. The population of goats in Namorambe District in 2017 was recorded at 3,052 and 2,564 sheep [1]. Al-Hafidz Farm is located in Sidorejo Village, Namorambe District, Deli Serdang Regency. 40 goats and sheep which are usually kept on an incentive basis. The cage is in the form of a stage where the bottom of the cage serves as a collection of feces. Al Hafidz Farm has problems in the field of environmental and livestock health, which are related to sanitation and cage biosecurity. The various problems faced livestock health, especially in the sanitation of the cage. This problem is very important because it can affect the health of livestock and their farmers. Dirt or feces under the floor of the cage that accumulates make the spread of flies, especially in the rainy season, this causes the development of several types of diseases because flies are vectors of several types of diseases. The disease has a zoonotic type that can be transmitted to humans such as scabies and other diseases that require further treatment.

Sanitation is management in livestock that aims to prevent the transfer of various types of germs that attack livestock. One example is by using spraying and fumigation. According to [2] that environmental factors greatly affect the degree of human health in the form of the physical and biological environment. Manure waste is an agent of disease and flies as vectors, one way to reduce health complaints is to maintain the sanitary conditions of the cage. Spraying using disinfectant is usually done on the cage before it is filled or every month. The use of disinfectants which are chemical liquids if used for too long and excessively can cause health problems for both livestock and breeders. Eco enzymes can act as natural disinfectants that can kill bacteria, fungi, and flies so that they can be used as cleaners and natural pesticides in the process of spraying cages. Eco enzymes can also be used as natural disinfectants [3], [4], [5]. Eco enzyme is also an environmentally friendly cleaning fluid so that it can be applied to livestock cages.

Processing of fruit peels and vegetable waste into Eco enzymes involves a fermentation process. Fermentation itself is a process in which chemical changes occur in organic substrates due to the action of biochemical catalysts, namely enzymes produced by certain microbes, namely organic acids, single-celled proteins, antibiotics, and biopolymers. Eco enzymes can be used as a cage disinfectant, cleaning cage equipment during the cage cleaning process. Fermented organic waste has the potential to become biopesticides [6], [7]. Eco-Enzyme can also be applied to livestock skin diseases, so it is hoped that the training and assistance for this service activity can

be adopted by partners and applied because it has various benefits and advantages compared to using chemicals. The objectives of this program include 1) helping to reduce wet organic waste so that it is zero waste; 2) Improving community science and technology through training on the importance of using natural disinfectants for the environment; 3) Providing skills in processing fruit and vegetable waste into Eco Enzymes which are useful for cage biosecurity; 4) Reducing the cost of purchasing chemical pesticides which are quite expensive; 5) Increasing public awareness in the use of natural disinfectants.

2. Method

The method used is training and practice with farmer groups as the target. The activities were carried out starting with counseling on the application of Eco-Enzyme to improve biosecurity and cage sanitation. The ingredients used in making eco enzymes are 1800 grams of pineapple and orange peel, 600 grams of molasses, and 6000 mL of water. The method of making eco enzymes is mixing water and molasses and then adding pineapple and orange peels. Storage of eco-enzyme ingredients for 3 months in a tightly closed container. Every 5 days the eco-enzyme container is opened to release the gas. After 3 months the eco-enzymes can be filtered out. The use of eco-enzymes should be 15 mL of eco-enzymes mixed with 500 mL of water. This activity is based on a target group of 10 farmers. This activity is carried out by using groups as a medium of learning and mentoring. Planning and evaluation are carried out regularly. This activity also uses technology that is easily applied by farmers to improve biosecurity and cage sanitation.

3. Results and Discussion

3.1 Number of farmers practicing and applying eco-enzymes

The waste of fruit and vegetable peels at Al Hafidz's farm, which is usually not used in the first week after training, has begun to be collected and used for the manufacture of eco-enzymes. The use of fruit peels as biosecurity for goat cages is expected to reduce the cost of purchasing disinfectants. The training that has been carried out with material on eco-enzyme as biosecurity and cage sanitation has had a pretty good impact. This can be seen by looking at the data from 12 people who participated in the training as many as 10 people had made eco-enzymes and applied eco-enzyme samples given during training and counseling. During the training practice, all farmers were active in practicing the stages of making eco-enzymes. The application of eco-enzymes is done by spraying eco-enzymes into the cattle pens using a sprayer. The community service team also provided samples of eco-enzymes made from fruit peels with the addition of lemongrass extract to prevent the breeding of mosquitoes and flies. Eco-enzymes made by farmers can only be harvested after 3 months of manufacture. Figure 1 shows the data on farmers who have implemented and made eco-enzymes for sanitation and cage biosecurity.

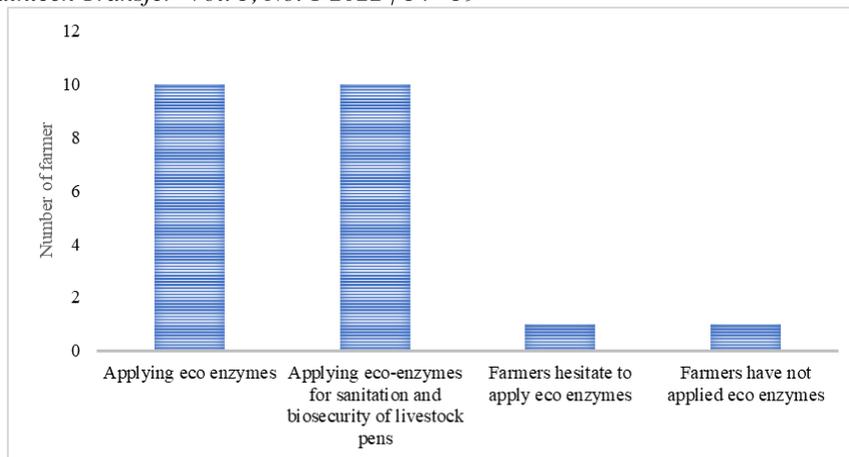


Figure 1. Number of Farmers Practicing and Applying Eco-enzymes

The results of observations on the data, the number of farmers who practice and apply eco enzymes is the same as many as 10 people, while 1 farmer is still unsure and 1 farmer has not implemented it. Breeders who still have doubts. The adoption of knowledge and skills in the community service process can take place quickly or slowly [8], [9], [10]. Skills and knowledge transfer can be accelerated through mentoring and approaches to identify farmer constraints and find appropriate solutions

3.2 Increased knowledge and skills of farmers

Based on the service questionnaire, almost all service participants understand the service material and practice it appropriately according to the material provided by the community service team (Figure 2). Even some breeders make eco-enzymes by adding ingredients such as lime leaves, lemongrass, and other spices to add a more fragrant aroma. This means that the process of adoption and innovation has occurred in breeders or service participants [11]. From observations for 3 months of service, farmers have made eco-enzymes by utilizing waste from fruit and vegetable peels that are no longer used. The manufacture is carried out after collecting fruit and vegetable waste for 3 days which is collected in a dry place.

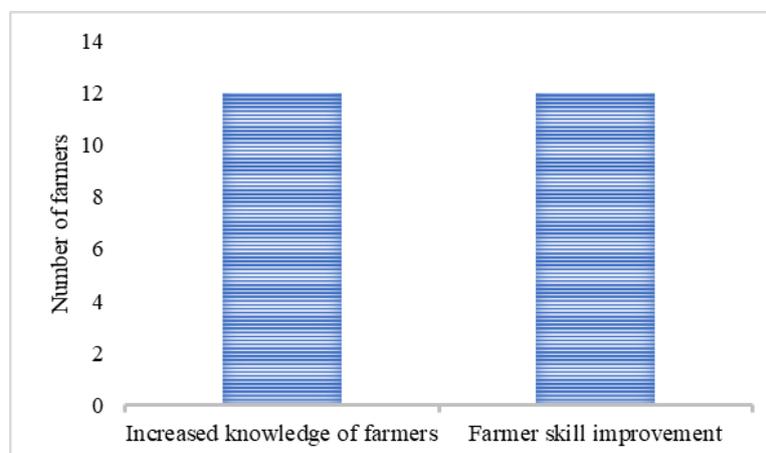


Figure 2. Improved knowledge and skills of farmers

The use of materials such as sugar can be replaced with molasses or molasses which are cheaper. Farmers have confidence that if the application of eco-enzyme is implemented it can have an impact on reducing costs, especially related to the purchase of disinfectants such as cleaning fluids and spraying cages.

3.3 Livestock health improvement

After the training activities, farmers apply and apply eco enzymes, especially for spraying cages. The cages that were sprayed using eco enzymes were significantly better, which was marked by the reduction of flies, mosquitoes, and insects (Figure 3). According to the questionnaire that was filled out by the farmers, after the use of eco-enzyme in 7 cages there was a decrease in the number of flies, mosquitoes, and ticks. The decrease in the number of flies, mosquitoes, and ticks can be caused because the content of eco-enzyme is anti-microbial and the aroma of spices used in the manufacture of eco-enzyme is less favored by insects. In livestock that has wounds due to skin diseases such as scabies, scabies, and wounds due to insect bites, farmers also use eco-enzymes as external medicine and are effective in curing these diseases.



Figure 3. A clean cage for our goats and sheep

Sick sheep were separated from healthy sheep to be treated by spraying eco-enzyme on skin exposed to scabies, scabies, or insect bite wounds. According to the farmer's information, within 1 week the wound dries up. This means that the benefits of service activities have been felt by farmers, namely the cleanliness of the cage and the health of livestock. The service team also gave understanding to farmers that eco-enzymes can be used to treat skin diseases in humans/breeders if infected by goats or sheep. From this community service activity, eco-enzyme is very effective in sanitation and cage biosecurity.

4. Conclusion

The community service program increases the knowledge of farmers regarding the manufacture of eco-enzymes as biosecurity cages by utilizing fruit peel waste. Implementation of coaching and mentoring that has been carried out can increase knowledge, housing sanitation, livestock health and save on the purchase of disinfectants

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