



Socialization Of Making Fermented Goat Urine Liquid Organic Fertilizer

M. Wasito¹, Najla Lubis², Sulardi³, Muhammad Ibnu Al Alif⁴

^{1,2} Universitas Pembangunan Panca Budi, Indonesia

Email Corresponding: muhammad.wasito@dosen.pancabudi.ac.id

Abstract. Goat urine is liquid waste from goat feces. Goat urine is able to provide macro and micro nutrients and contains growth regulators (ZPT) that plants need. Goat urine contains 1.5% nitrogen, 0.13% phosphorus, and 1.8% potassium. Goat urine contains natural hormones of IAA, gibberellin, and cytokinin higher than other livestock urine. Goat urine processing can be done by fermentation. Fermentation is a process of chemical changes in an organic substrate through enzyme activity produced by microorganisms. The results of fermentation of organic materials such as sugar, alcohol, amino acids, proteins, carbohydrates, vitamins and other organic compounds are easily absorbed directly by plant roots. The use of effective microorganisms in the manufacture of goat urine fermented liquid organic fertilizer aims to accelerate the fermentation process. Effective microorganisms or also known as probiotics are mixed cultures of various types of beneficial microorganisms such as photosynthetic bacteria, lactic acid bacteria, actinomycetes yeasts, fermentation fungi that can improve soil microbes. The use of solid waste of goat manure is commonly done by farmers, but the use of liquid waste (urine) of fermented goats has not been widely known. Therefore, it is important to optimize the use of fermented goat urine as liquid organic fertilizer.

Keywords Goat Urine, Waste, Fermentation, Liquid Organic Fertilizer

INTRODUCTION

Organic fertilizers can overcome the negative effects of continuous use of high doses of inorganic fertilizers. There are two kinds of organic fertilizers derived from animal waste, namely solid organic fertilizer and liquid organic fertilizer. Livestock waste is waste that is obtained in large quantities and can be used as organic fertilizer. Livestock waste can be in the form of solid waste (feces) and liquid waste (urine). Livestock waste generally includes all waste generated from a livestock business activity, both in the form of solid waste and liquid gas, or residual feed (Sajar.dan, Setiawan. 2023).

Urine is one of the liquid wastes that can be found in animal husbandry. Urine is formed in the kidney area after being eliminated from the body through the urinary tract (urinary) and comes from nitrogen metabolism in the body (urea, uric acid, and keratin) and 90% of urine consists of water. Urine produced by livestock is influenced by diet, livestock activity, external temperature, water consumption, season and so on. The amount of feces and urine produced is 10% of the weight of the livestock. From that small amount, it turns out that every 2.5 liters of goat urine contains approximately 1.13% Nitrogen (N), Phosphor (P) as much as 0.05%, Potassium (K) 7.90% and pH of 8.71. An adult goat is able to produce urine as much as approximately 0.6-2.5 liters / day so that for the livestock industry, urine is a very potential commodity to produce high economic value. The ratio of feces and urine produced by livestock is pigs 1.2 :1 (55% feces, 45% urine), beef cattle 2.4 :1 (71% feces, 29% urine), goats 1:1 (50% feces, 50% urine), and dairy cows 2.2 :1 (69% feces, 31% urine) (Ardiansyah et.all. 2021).

Liquid fertilizer from fermented goat urine can be sold as an organic product in the market. With the training provided, farmers will not only produce fertilizer for their own needs, but can also sell it for additional income. In addition to the manufacturing training,

this socialization could include marketing insights for farmers who want to sell their liquid fertilizer. Information on packaging, pricing, and local sales can be included so that they can make this liquid fertilizer an additional source of income. (Prasetya, and Sari, 2020).

Table 1. Chemical content of Cow, Rabbit and Goat urine

Analysis Type	Cow Urine	Rabbit Urine	Goat Urine
pH	8,25	8,21	8,71
N-Total (%)	0,23	0,10	1,13
P2O5 (%)	0,07	0,04	0,05
K2O (%)	1,07	2,11	7,90

METHODS

This research is a descriptive qualitative research with a literature study research method through literature studies sourced from journals of previous research results (Kurniawan, 2014) related to the title, also through access to data obtained from the website as an information publication. Qualitative descriptive research can be interpreted that the researcher is the key instrument where data collection techniques are carried out by combining and analyzing data inductively (Sugiyono, 2012) so as to produce and process descriptive data such as narrating the results of interviews and or observations.

RESULTS

The socialization of making fermented goat urine liquid organic fertilizer will later be carried out to make liquid organic fertilizer and its application, where it will be taught how to make fermented liquid organic fertilizer in the form of hands-on training using goat urine material. Also about the use and utilization of liquid organic fertilizer for plants.

To address the problems faced by farmers related to fertilizer use, as well as to support sustainability and the local economy, the following solutions can be provided through the socialization of making liquid organic fertilizer from fermented goat urine. Each of these solutions targets a specific problem that has been identified.

Provide training on the benefits and effectiveness of liquid organic fertilizer from fermented goat urine, which has complete nutrients and is suitable for plant needs. Through this socialization, farmers can understand that liquid organic fertilizer can be a safe and sustainable alternative to chemical fertilizers. This education can be done through presentations, group discussions, and field demonstrations, so that farmers understand how to make and use it directly. (Sari, and Kurniasih, 2022).

Encourage the use of easily available materials, namely goat urine, which can be accessed for free or at very low cost. Farmers can use this livestock waste as a source of fertilizer without having to rely on expensive chemical fertilizers. In this socialization, we can show practical steps on how to collect, store and process goat urine into liquid fertilizer, so that farmers can produce it independently at minimal cost.

Provide detailed and easy-to-understand training materials, so that farmers understand how to make, the advantages, and the application steps of liquid organic fertilizer from goat urine. With this understanding, they not only know the benefits, but also have the skills to make and use it. This socialization can be accompanied by simple power point materials containing information about organic fertilizers, including how the fermentation process works, what nutrients they contain, and how to apply them effectively in the field.

Develop guidelines and techniques for storing and processing goat urine, so that the available raw materials are not wasted. In addition, with these guidelines, livestock waste can be used as the main raw material in making liquid organic fertilizer. Through field practice activities, farmers can learn how to hygienically collect livestock urine and store it under proper conditions before fermentation. This fermentation process involves bacteria that are activated to increase the nutrient content in the urine, making it a quality liquid fertilizer.

Liquid organic fertilizer from goat urine has a more environmentally friendly impact than chemical fertilizers. In socialization, it is important to explain how this organic fertilizer can improve soil quality without polluting the environment. During demonstrations, it can be shown that the organic fertilizer does not damage the soil structure, nor does it run off polluting water sources around the farm. This information can help educate farmers about the importance of protecting the environment while still getting optimal agricultural yields. (Sulardi, et.al, 2022).

Liquid organic fertilizer from fermented goat urine contains microbes that help improve soil structure, restore natural organic matter, and increase the soil's ability to retain water and nutrients. Thus, soil fertility can be improved and maintained in the long term. Socialization can be complemented with data or real examples (e.g. case studies in other places) that show the results of using liquid organic fertilizer in improving soil. Direct application practices in the field can also provide real evidence to farmers. (Prasetya, and Sari, 2020).

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DISCUSSION

Reduction of chemical fertilizer use and environmental impact. One example of socializing organic liquid fertilizer production could involve the community coming together to collect fermented goat urine, mixing it with other organic materials, and distributing the liquid fertilizer to local farmers. This process not only promotes sustainability and self-reliance within the community, but also provides valuable learning opportunities for members to gain knowledge and skills in organic farming practices. Ultimately, by utilizing organic liquid fertilizer, farmers are able to improve soil health, increase crop yields, and reduce their dependence on harmful chemical fertilizers, leading to a healthier ecosystem and a more sustainable farming system.

These collaborative efforts also encourage a sense of unity and cooperation among community members, as they work together towards the common goal of promoting ecological balance and supporting local agriculture. By sharing resources and knowledge, communities can create a more resilient and prosperous agricultural environment that benefits both the environment and the people who depend on it. In addition, by reducing the use of chemical fertilizers, the community also helps to protect local water sources from contamination and maintain the health of wildlife in the area. This holistic approach to agriculture not only benefits the current generation but also ensures a healthier environment for future generations. Through their collective actions, this community is

setting a positive example for sustainable agricultural practices that can be implemented in other areas, further promoting environmental stewardship and food security globally.

One cost-effective alternative for farmers looking to adopt more sustainable practices is the use of cover crops. Cover crops, such as legumes and grasses, can help improve soil health, reduce erosion and suppress weeds without the need to use expensive chemical inputs. By planting cover crops during fallow periods or between cash crops, farmers can also increase biodiversity in their fields and provide habitat for beneficial insects and pollinators. In addition, cover crops can help sequester carbon in the soil, reducing the impact of climate change. Overall, incorporating cover crops into farming practices can not only save farmers money in the long run but also contribute to a more resilient and sustainable farming system.

CONCLUSION

The research results of the socialization of making liquid organic fertilizer from fermented goat urine showed that this training succeeded in increasing the knowledge and skills of the community in producing liquid organic fertilizer from goat urine. Participants showed a significant increase in understanding of the benefits and how to make liquid organic fertilizer, as well as how the fermentation process of goat urine can improve the quality of the fertilizer produced. A lot of knowledge was gained in making liquid organic fertilizer on the farm. This shows that the use of fermented goat urine as an alternative fertilizer can be well received by farmers as an environmentally friendly and cost-effective solution.

The resulting fermented goat urine liquid organic fertilizer proved effective in improving soil fertility and supporting plant growth. Several field trials showed an increase in crop yields, especially in vegetables and fruits. The socialization did not only focus on making fertilizer, but also taught the importance of environmental care, as well as the benefits of liquid organic fertilizer in reducing dependence on chemical fertilizers.

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