

Empowerment of Farmer Groups through Vegetable Viticulture and Manufacture of Liquid Organic Fertilizer

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Abstract

Urban farmer groups have limited yards. Vegetable cultivation can be conducted using a viticulture system because it can utilize limited land in urban areas. 10% of yards in urban areas have been planted, but 90% of the land is still not planted. The existence of farmer groups can provide an example in managing home yards, and the products produced can increase income. Meanwhile, the skills and knowledge of farmer group members regarding viticulture and organic fertilizer production are still low. One of the ways to improve skills and knowledge is through training. This study aims to improve the skills and knowledge of farmers in the cultivation of vegetable viticulture and the manufacture of liquid organic fertilizers. The method used is the descriptive method, which is to perform descriptive analysis to describe the concept of increasing skills and knowledge of farmers. The results of the training are organic vegetable products and liquid organic fertilizers. This research will provide a conceptual framework for farmer groups in applying viticulture technology and making liquid organic fertilizers on limited land.

Keywords: farmer group, training, viticulture, liquid organic fertilizer



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I. INTRODUCTION

A farmer group is a farmer who has activities in the agricultural sector that grow in the sense of utilizing agricultural resources to increase the productivity of the farming business and the welfare of its members. The farmer group is in a rural or urban area. The activities carried out are focused on providing solutions in dealing with an agricultural problem in the region. The problem in urban areas is the limited land for cultivating.

The Surya Hijau farmer group is in the Mantrijeron sub-district, which consists of 250 houses. In this sub-district, the increase and population density resulted in a crisis of lack of land for various purposes and land uses. The results of the interview with the head of the farmer group revealed that 25 members of Surya Hijau had used the house land. The rest is planted with plants that are not productive or even have no green space.

An environment will be a healthy and pleasant area if there is a comfortable and sufficient green open space. Green open space involves public and private spaces. The public space greening is a part

of a government program. However, the private space in the neighborhood around the community is still not widely used for plant cultivation. The green open space function is social interaction, green tourist areas in urban areas, aesthetic value, community comfort, and improving the community's economy.

In urban areas, every house has a narrow yard due to the development of houses/buildings and the increasing number of people. The house's yard has not been used optimally for green open space, a model of urban agriculture. Viticulture is an urban farming system that can be conducted on limited land so that viticulture can fulfill the family's food needs. Various vegetables can be grown by viticulture, including mustard greens, lettuce, chili, eggplant, cabbage, kale, spinach.

The use of yards is carried out through vegetable cultivation. The benefits and advantages of vegetable cultivation are meeting the needs of quality food, creating jobs, increasing the consumption of fresh vegetables, good for the body, and mental health because plants can be used for therapy, creating a healthy environment and nice view. Another problem arises from agricultural waste and rabbit livestock, which disturb the environment. Agricultural waste is usually dumped in the vicinity of the housing, which causes a dirty environment. This waste can be made as liquid organic fertilizer, which can be used for vegetable cultivation. The utilization of agricultural waste and rabbit urine into liquid organic fertilizer is essential for vegetable plants' growth because the products produced are organic vegetables. It is hoped that after community empowerment, participants can independently cultivate vegetables by utilizing waste as liquid organic fertilizer.

II. LITERATURE REVIEW

Community empowerment is a process of increasing community empowerment in various aspects of life, both economic and social. According to Mardikanto & Soebianto (2013), empowerment activities that must be carried out are human development, business development, and environmental development. One way to empower farmer groups is through training. "Training is a short-term educational process that utilizes systematic and organized procedures to learn certain technical knowledge and skills" (Mangkunegara, 2009). The research aimed to improve the skills and knowledge of farmers in cultivating vegetable viticulture and making liquid organic fertilizers.

Viticulture is a growing crop technique on narrow land by utilizing vertical land as a terraced planting area. Viticulture in urban areas can create beauty, conserve soil and water resources, improve urban microclimate, fulfill family food and nutritional needs, and minimize family expenses (Mariyam et al., 2014). Viticulture is also one of the yards layout models to create a green environment, free of air pollution and oxygen sources. According to Paramita and Suparta (2019), without green open space, the microclimate in the city village could be affected. The unavailability of a green environment as a source of oxygen causes inadequate and imperfect air exchange.

Several containers can be used for vegetable viticulture, namely, pipe, bamboo, polybags, or pots (Hasyim and Mirajudin, 2013), while the plant media that can be used are soil, compost, and husk. Inline, According to Yosandy et al. (2018), a suitable planting medium is a soil: compost (1: 1) or soil: manure (1: 1). Viticulture requirements are healthy plants and easy to move. Plants to be planted should be adjusted for the needs and have high economic value, have short lives, and have short roots (Lukman, 2017).

Limited use of media must be accompanied by optimal nutrition. The nutrients that plants need are in liquid organic fertilizer, which can be given regularly for vegetable crops. Liquid organic fertilizers

can be made by utilizing waste from the surrounding environment. The most common wastes are agriculture waste and rabbit urine. According to Mutryarny et al. (2014), liquid organic fertilizer from rabbit urine increased plant height growth, leaf number, leaf width, fresh weight, and mustard plant weight. According to Rosdiana (2015), the treatment of rabbit urine liquid organic fertilizer dosage of 12 ml / l gave the highest results for plant height, number of leaves, leaf length, leaf width, wet weight, and weight mustard.

Rabbit urine contains nutrients such as nitrogen, phosphorus, and potassium, which are better than other livestock urine, namely 2.72% nitrogen, 1.10% phosphorus, and 0.50% potassium (Nurrohman 2014). While agricultural waste generally contains high N elements because it comes from the vegetative part of the plant. Mixing organic materials from agricultural waste and rabbit urine can be an alternative product of liquid organic fertilizers that can stimulate vegetable plants' growth. The harvest of viticulture vegetables is organic products that are safe for consumption as food. In an urban area, vegetable cultivation has an essential role in ensuring a sustainable food supply for the city's residents. Besides being used for daily consumption, the vegetable can be a side business for family members.

The conceptual framework in this study is consistent with the figure 1. Farmers group in an urban area usually have limited land. Furthermore, viticulture is a solution for cultivating in limited land. Increasing skills and knowledge of farmers can be conducted through training in vegetable cultivation and making liquid organic fertilizers. The success of the training can be demonstrated by the products produced by the participants, namely organic vegetables and liquid organic fertilizers.

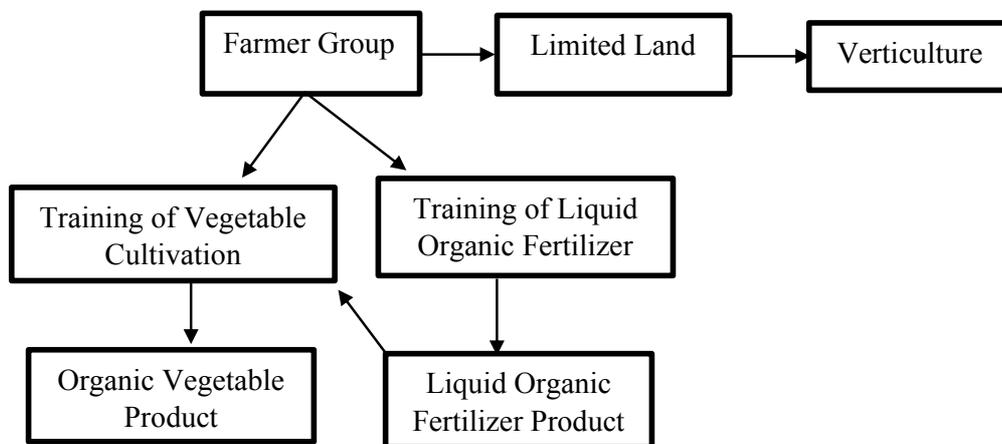


Figure 1. Conceptual Framework

III. RESEARCH METHODOLOGY

The method used is the descriptive method, which is to perform descriptive analysis to describe the concept of increasing skills and knowledge of farmers. The conceptual framework in this study is based on a synthesis of literature reviews, journals, and others. The number of training participants is 25 people. The training includes seeding and planting vegetables, making liquid organic fertilizer, applying liquid organic fertilizer for vegetables. Vegetables used include mustard greens, lettuce, chilies, and spinach. Sowing vegetables for 2-3 weeks or have grown 3-4 leaves. Liquid organic

fertilizer can be made from agricultural waste and rabbit urine. After three weeks, fertilizer is given to plants once a week for vegetables. Increased skills and knowledge of participants can be showed by the products produced.

IV. FINDING AND DISCUSSION

Philosophically, farmer groups are formed to solve farmer problems that cannot be solved individually. According to Sadjad (2010) states that the formation of farmer groups is a process of consolidating agriculture so that it can produce optimally and efficiently. Surya Hijau urban farmer group is a farmer group that has limited land problems. Based on the data, about 10% of the house yards are planted. This data becomes a consideration; it is necessary to expand the planting area in another yard.

The obstacle factor faced by farmer groups is the difficulty of getting people to use their yards with vegetable cultivation. The community needs concrete examples in managing their yards, significantly if they can increase their income. The role of farmer groups is essential in providing insight into the surrounding community. According to Nuryanti and Swastika (2011), the functions of farmer groups include learning forums, a vehicle for cooperation, and farming production units. As a learning forum, farmer groups of Surya Hijau need to improve their skills and knowledge to provide knowledge or invite people to use their house yards.

Farmer groups are informal organizations that have different human resource capabilities because group members come from different educational backgrounds. Group members do not fully understand vegetable cultivation in viticulture and making liquid organic fertilizers, so special training for group members is necessary.

The survey results were conducted on 25 members of Surya Hijau Farmer (table 1). Results of a study indicate that the age of group members is more than 45 years old as much as 80%, the slightly different amount indicated by the 35-45 years age by 16 %. While the age group of fewer than 35 years as much as 4%. Concerning the educational level, the majority of members of the group have gained enough education. 88% of farmer groups have the educational background dominated by high school graduates, 4% had a level of junior high school education, and 8% had graduates of diploma. 8% of respondents have single status, 88% of married, and 4% of divorce. The job of non-employee members is shown to be mostly around 64%, while 20% are entrepreneurs. 84% more of the group members are female than male as much as 16%.

Table 1. Profile of Surya Hijau members

No.	Profil of members	Category	Frequency	Percentage (%)
1	Members Age	Less than 35 years	1	4
		35-45 years	4	16
		More than 45 years	20	80
2.	Education Background	Junior high school	1	4
		Senior high school	22	88
		Diploma	2	8
3.	Marital status	Single	2	8
		Married	22	88

		Divorce	1	4
4.	Job	Permanent Employees	2	4
		Temporary Employees	2	4
		Entrepreneur/Self-Employees	5	20
		Unemployment	16	64
5.	Gender	Female	21	84
		Male	4	16

Viticulture cultivation training and organic liquid fertilizer production were conducted for all members of the farmer groups. Training success indicators are measured based on the level of community participation, based on changes in behavior (knowledge, attitudes, and skills) in vegetable cultivation using viticulture techniques and making liquid organic fertilizer. The material provided is about: 1) viticulture technique system; 2) planting containers and planting media; 3) Vegetable nurseries; 4) Maintenance & fertilization; 5) Making liquid organic fertilizer.

The activity was continued with the practice of cultivating vegetables using viticulture techniques and making liquid organic fertilizers. The advantages of the vermiculture system are: saving land, water, fertilizers, applying organic agriculture, that is, no need for excessive chemicals, suitable for urban agriculture, implementing marginal (narrow) land agriculture, increasing family income, and environmental sanitation.

In the psychomotor aspect, the training activity was also considered quite successful in increasing the participants' skills. In the practical activities of cultivating vegetables and the manufacture of liquid organic fertilizers, the participants were also very enthusiastic about participating. After training, there was an increase in members' skills in viticulture and the manufacture of liquid organic fertilizer. There was an increase in skills of 85% in preparing containers and planting media, 80% in seeding, 95% in planting vegetables, and 90% in making liquid organic fertilizers. The training of viticulture produces organic vegetables and liquid organic fertilizers.

The training activity is expected to positively impact the community, especially in the use of yards. Vegetable cultivation in the house yard, at least it can facilitate community access to consume healthy food. According to Andrianyta & Mardiharini (2015), cities with limited land areas will produce food volume is also not much. Therefore, the vegetable harvest in the house yard is usually only for their consumption. For the community with high income, using yard land is an attempt to pass on a healthy environment to the next generation.

Regarding environmental issues, the effort to use the house yard is considered an effort to maintain biodiversity and improve ecological conditions (Rauf et al., 2013). In the future, if it can be used as a commercial activity, the use of yardland can be developed based on the concept approach nano sociopreneur, which departs from small things and is expected to have significant benefits in the broader scope (Muttaqin & Sari, 2017). The cultivation of vegetables in the yard can be carried out collaboratively to fulfill the community needs to support national food security.

V. CONCLUSION AND FURTHER RESEARCH

The training participants experienced an increase in skills and knowledge, indicated by the enthusiasm of the participants to take part in the activity. The study concluded that farmer groups need to receive training in advance to be able to develop viticulture and make organic fertilizers on limited land. The resulting product has a good impact on improving the family's economy because the product can be sold. Further studies can be carried out by making other urban agricultural models. It can be made such as hydroponics, aquaponics, and wall gardens.

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