ORGANIC WASTE MANAGEMENT TO SUPPORT SUSTAINABLE AGRICULTURE

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Abstract - *This article discusses the socialization of organic waste management to support sustainable agriculture. Management of organic waste into organic fertilizer (liquid) is considered to be able to support the movement of sustainable agriculture. Sustainable agriculture is an agricultural activity carried out by taking into account environmental conditions so that it can continue to run and there is no damage so that it can remain sustainable. In this case, there is a need for community participation and various other aspects to manage waste for the creation of sustainable agriculture.*

Keywords: *Organic Waste, Organic Fertilizer, Sustainable Agriculture*

1. INTRODUCTION

Garbage is something that is usually thrown away because it is considered no longer useful. Garbage is usually solids or semi-solids. Types of waste are divided into two, namely inorganic waste and organic waste. Inorganic waste is composed of inorganic compounds (plastics, bottles, metals) which are very difficult to decompose by tiny bodies (Nur *et al*., 2016). Household organic waste is very useful if processed properly. Food waste, rotten vegetables, tea and coffee grounds, even rice bath residual water are examples of household organic waste that can be processed into plant fertilizer. According to data from the National Waste Management Information System (SIPSN) of the Ministry of Environment and Forestry (KLHK), Indonesia produced 19.45 million tons of waste generation throughout 2022. Of these, the majority or 39.63% of them came from household waste generation. This waste generation will increase along with the increase in population. Solid waste that is not balanced with processing, will cause various diseases from waste pollution in water, soil, and air (Putra & Ratnawati, 2019). Imagine if each family is able to process their own waste, it will certainly have a big impact on the sustainability and comfort of the environment. One of the challenges in organic waste management is the lack of public knowledge about the procedures and uses of the waste itself. In contrast to the management of inorganic waste such as plastic and glass which are relatively more commonly known by the public. In addition, there are also plastic and glass waste management sites or plastic and glass waste management sites. In fact, organic waste management can certainly support sustainable agriculture.

Sustainable agriculture is an agricultural activity carried out by taking into account environmental conditions so that it can continue to run and there is no damage so that it can remain sustainable. The concept of sustainable agriculture is needed in current conditions considering the decreasing agricultural land due to damage caused by human activities, one of which is agriculture that imposes high production yields using chemicals that damage the soil and the surrounding environment. The destruction of soil and ecosystems in the

agricultural environment causes damage to the environmental balance so that agriculture carried out on the land cannot run optimally.

Given the importance of sustainable agriculture, in 2019 Law number 22 of 2019 concerning sustainable agricultural cultivation systems was established. In the law, part of sustainable agriculture is all aspects of agriculture that do not damage the environment and are organized based on the principles of usefulness, sustainability, sovereignty, integration, togetherness, independence, openness, efficient justice, local wisdom, sustainability of environmental functions, and state protection (Law No. 22 of 2019). *Sustainable agriculture* is an agricultural system built with renewable resources derived from the farming environment and its surroundings. Sustainable farming systems are carried out to reduce environmental damage, maintain agricultural productivity, increase farmers' incomes and improve the stability and quality of life of people in villages.

The use of chemicals in agricultural cultivation results in *levelling off* or equitable distribution where production is not equivalent to the amount of input used and has a negative impact on land fertility. The application of organic farming development using organic fertilizers is considered one approach in sustainable agriculture and is expected to restore soil fertility, increase productivity, and preserve the environment.

2. METHOD

1. Literature Study

   The research will begin with an in-depth literature study to identify key concepts in organic waste management and sustainable agriculture.

2. Field Survey

   Furthermore, field surveys will be conducted to collect empirical data on organic waste management practices in sustainable agriculture. The survey was conducted at agricultural sites that apply various methods of organic waste management.

3. Data Analysis

   The data collected will be analyzed using qualitative approaches to analyze and describe organic waste management to support sustainable

agriculture. Data analysis will include organic waste management and its impact on agricultural productivity, soil quality, and other sustainable aspects.

3. RESULT AND DISCUSSION

In general, waste has a negative impact on society, waste has three impacts on humans and the environment:

1. The effect of garbage on health

   Improper waste management has a negative impact on the health of the surrounding community. Waste can be harmful to health, such as diarrhea, typhus, cholera, fungal diseases, helminthic diseases.

2. Impact of waste on the environment

   In addition to the fact that improper waste management has a negative impact on public health, it also has a negative impact on the environment. Debris that often accumulates in waterways causes uneven water flow and can cause flooding. In addition, liquid waste near the water stream gives rise to an unpleasant odor.

3. Social and economic impact of waste

   Improper waste management also affects social and economic conditions.

Unhealthy environmental conditions due to poor waste management can have an impact on the social life of the community as a whole. According to the Law on Waste Management of the Republic of Indonesia No. 18 of 2008, waste is the residue of human daily activities and/or natural processes in solid form. To minimize the waste problem, garbage disposal must occur at the source. Waste management is a systematic, comprehensive, and sustainable activity that includes waste reduction and processing. Waste management must be comprehensive and integrated from start to finish to provide financial benefits, be healthy for the community, be safe for the environment and change people's behavior. Good waste management can be integrated to support sustainable agriculture.

Sustainable Agriculture or translated as 'sustainable agriculture' is an alternative agricultural system based on resource conservation and quality of

life in rural areas. Sustainable agricultural systems are aimed at reducing environmental damage, maintaining agricultural productivity, increasing farmers' incomes and improving the stability and quality of life of rural communities. Three major indicators that can be seen are that the economy is increasing (prosperous), socially accepted by the farming community, and the environment remains sustainable. Sustainable agriculture began to be developed in the 1980s as a result of the green revolution activities launched during the New Order period to increase agricultural productivity using chemicals. The green revolution did put Indonesia in a state of food self-sufficiency at that time. However, behind the success of the green revolution there are negative impacts caused by the use of chemicals. Land degradation causes environmental damage and also reduces agricultural productivity (Rivai, 2016).

Sustainable agriculture indicators with ecological, economic, and socio-cultural insights are expected to be a guide in the implementation of sustainable agriculture. Here are the indicators in sustainable agriculture:

1. Ecological Aspects

   Agricultural ecology is the study of living things and the environment of plant cultivation cultivated by humans. While the ecology of organic agriculture illustrates that the relationship between living things and the plant environment runs in harmony with nature *(back to nature).* Aspects of pollution and damage in the agricultural environment can be caused due to disproportionate use of agrochemicals (fertilizers and pesticides). The negative impacts of the use of agrochemicals include pollution of water, soil, and agricultural products, farmers' health problems, decreased biodiversity. Excessive use of pesticides in the long term, will have an impact on the life and existence of natural enemies of pests and diseases, and also have an impact on the life of soil biota.

   This ecological principle in organic farming states that production is based on ecological processes and recycling. The cultivation of agriculture, animal husbandry, and harvesting of organic wild products must be in accordance with the ecological cycle and balance in nature. These cycles are universal but their operation is local-specific. Organic

management must be adapted to local conditions, ecology, culture, and scale. Dietary materials should be reduced by reuse, recycling and by efficient management of materials and energy to maintain, improve quality and protect natural resources. Organic farming can achieve ecological balance through patterns of agricultural systems, habitat building, maintenance of genetic diversity, and agriculture (Kuswaji, 2015).

2. Economic Aspect

   The characteristics of sustainable agriculture are economically profitable and economically viable. Farmers are able to generate profits at a sufficient and stable level of production, at a tolerable level of risk. Ecologically sound. The quality of agroecosystems is maintained or improved, by maintaining ecological balance as well as biodiversity conservation. An ecological-minded agricultural system is a healthy system and has high resistance to stress and shock. Social justice. An agricultural system that ensures equitable access to and control over land, capital, information, and markets, for those involved regardless of socio-economic status, gender, religion or ethnic group. Humane and respect the local culture. Respect existence and treat wisely all kinds of existing beings. In the development of agriculture does not break away from the local cultural context and appreciate the order of values, spirit and local knowledge. Adaptable. Able to adapt to ever-changing conditions, such as population growth, new policy challenges and changes in market constellations (Asnawi, 2013).

3. Socio-Cultural Aspects

   Meanwhile, from the socio-cultural aspect, it can be seen from the community being able to create equitable distribution of development results and institutional development. According to Rudy *et al*., (2016), To achieve sustainability from socio-cultural aspects, support from the surrounding community is needed in the development of agricultural businesses. By considering the form of business, the provision of labor,

and other criteria that are in accordance with the customs and norms of the surrounding community, the community's response will be better and support the development of sustainable agricultural businesses.

Sustainable agriculture is expected to be able to become a "model" of agriculture in the present and the future. In addition, it is also expected to be consistent in fulfilling food productivity that pays attention to the ecological balance of every aspect of life order. Furthermore, adhering to the welfare of farmers accompanied by the development of qualified technology, appropriate land use and the use of internal inputs in the implementation of agricultural practices.

Unfortunately, sustainable agricultural practices that are still not in accordance with the concept of sustainable agriculture are the use of pesticides, most of which still use chemical pesticides, as well as seeds used for the cultivation of various types of plants still buy seeds or do not sow themselves by farmers. The use of organic fertilizers produced through waste in the surrounding environment is an alternative that can be used for sustainable agriculture. Organic materials/fertilizers are very useful for increasing agricultural production both quality and quantity, reducing environmental pollution, and improving land quality in a sustainable manner. Long-term use of organic fertilizers can increase land productivity and can prevent land degradation. The source of material for organic fertilizer is very diverse, with physical characteristics and chemical/nutrient content that is very diverse so that the effect of using organic fertilizer on land and plants can vary (Supartha, 2012).

In this case, organic waste can be managed into organic fertilizer. One of them is liquid organic fertilizer. Liquid organic fertilizer is a type of liquid fertilizer, not solid, easily soluble in the soil and carries important elements for plant growth. Liquid organic fertilizer has many advantages including, the fertilizer contains certain substances such as microorganisms rarely found in solid organic fertilizer in dry form (Mufida, 2013). Liquid organic fertilizer is a solution derived from the decay of organic matter derived from plant residues, animal manure whose nutrient content is more than one element. The advantages of liquid organic fertilizer are that it quickly overcomes nutrient

deficiencies, is not problematic in nutrient leaching, and is able to provide fast nutrients. Liquid organic fertilizer in addition to improving the physical, chemical and biological properties of the soil, also helps increase crop production, improve the quality of plant products, reduce the use of inorganic fertilizers and as an alternative to manure (Yuanita, 2013).

4. CONCLUSION

Household waste is very useful if processed properly. Food waste, rotten vegetables, tea and coffee grounds, even rice bath residual water are examples of household waste that can be processed into organic fertilizer. One of them is liquid organic fertilizer. Liquid organic fertilizers can help increase crop production, improve the quality of plant products, and so on. Therefore, organic waste management can certainly support sustainable agriculture. Sustainable agriculture is an agricultural activity carried out by taking into account environmental conditions so that it can continue to run and there is no damage so that it can remain sustainable.

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