

I. INTRODUCTION

1.1 Background

The growing and rapidly growing population in the world have resulted in increasingly large and dense residential areas. One of the problems caused by the increase in the high population is the increase for waste. The greater the number of the human population with various activities carried out, the greater the garbage that will be produced. Nainggolan (2015) explained, the garbage that is not managed properly, besides disturbing the view (aesthetics) of the environment, garbage can also cause several diseases, such as vomiting, diarrhea, and respiratory tract infection. Trash can also pollute water, pollute the soil, and cause flooding.

Sumantri (2015), explained that based on the 2012 Ministry of Environment data, the population of Indonesia produced 178.850.000 tons/year of waste. Where 60% of this amount is organic waste, the volume of waste produced has increased from year to year since 2010. Landfills generated from various sources, such as housing, offices, markets, shops, restaurants, schools, hospitals, and many more.

Ramadhani (2013) explains that one of the biggest contributors to waste is traditional markets. The market waste composition is more dominant than organic waste that is biodegradable waste. Because of a large amount of waste in the traditional market, it often found that garbage generated by activities in the market, this should be a concern of the market sellers, market managers and the community, where the daily landfill will disrupt health, cleanliness and pollute the environment.

According to Muwakhid and Amrullah (2015) market vegetable waste is discarded material in an effort to improve the appearance of merchandise in the form of vegetables to be marketed. Vegetable waste usually consists of

ingredients that have a considerable amount of water, making it easy to rot quickly. According to Nisa (2016), it explained that vegetable waste that did not managed properly could result in reduced quality of sanitation, environmental pollution, and the emergence of certain diseases.

Processing of solid waste in the form of vegetables needs to be done, one way to treat solid waste is by making compost. Compost is organic fertilizer, the use of organic fertilizer is very widely used because it has 3 advantages, namely: benefits for the environment, soil and for plants. Compost is very helpful in solving environmental problems, especially waste. The raw material for composting is garbage, so the problem of house waste and municipal waste could be overcome. For soil, compost can add nutrients and can improve soil structure and texture and store water. Thus, the better the quality of the soil and supported by sufficient nutrients, the plants will produce optimal production (Murbandono, 2000).

According to Diah (2006), decomposition in the open environment, organic fertilizer can be formed by itself. The decay process occurs naturally but not in a fast time, but gradually. The stages that go through are natural processes, grass, leaves and animal feces, and other debris that are decaying due to factors of radiation and weather. The decay process occurs for around 5 weeks to 2 months. Composting in an aerobic system can make approximately two-thirds of carbon (C) evaporate (into CO) and the remaining one-third of the part reacts with nitrogen (N) in living cells. During the aerobic composting process, it does not cause a foul odor. During the decomposition process, it will be exothermic so that it causes heat due to the release of energy. The increase in temperature in the accumulation of organic material benefits thermophilic microorganisms. However, if the temperature exceeds 65-70°C, the activity of microorganisms will decrease due to the death of organisms due to high heat.

Local microorganisms (MOL) are organic fertilizers that rely on local microorganisms. MOL also often called Liquid Organic Fertilizers (POC). Mol can be another alternative as an effort to free plants from adverse effects is the chemical residue that been used by the community to fertilize the soil (Nisa, 2016).

Local Microorganism Solution (MOL) made from natural ingredients, as a living medium and the development of microorganisms that are useful for accelerating the destruction of organic matter. MOL can also be called a bio activator that consists of several collections of microorganisms by utilizing the potential of local natural resources. MOL can function as a breaker of organic matter and as a liquid fertilizer through a fermentation process. The main factors causing the widespread use of chemical fertilizers are easy to find or obtain, fast response and complete nutrients (Setiawan, 2013).

Effective Microorganism 4 (EM4) is a mixture of microorganism inoculants (Lactobacillus, actinomycetes, yeast, photosynthetic bacteria, and cellulose decomposers) that can accelerate the maturity of organic fertilizers in composting or decomposing organic matter. The fermentation of organic matter by EM4 microbes takes place in semi-aerobic and anaerobic conditions at a temperature of 40-50°C (Rachman, 2006).

1.2 Formulation of the Problem

1. What microbial groups found and what is the total number of microbial groups in MOL?
2. How is the quality of compost produced by adding MOL and EM4 as a control?

1.3 Research Purpose

1. To find microbial groups and find out the total number of microbes found in MOL.
2. To find out the quality of compost produced on MOL and EM4 as controls.

1.4 Benefits

The benefits of this study are to provide information on the presence of local microorganism products (MOL) made from fruit-organic organic waste and vegetables that are easily available and certainly have equal work effectiveness even more than commercial products such as EM4.

