

MINIMIZE THE COST OF PURCHASING PLANT FERTILIZERS

THROUGH THE PROPER TREATMENT OF FOOD WASTE

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Food is something that cannot be separated from human life and the other living things on this earth. Food is a source of energy and nutrients that are needed by the body in order to carry out daily activities properly. Food consumed by humans can come from vegetables, fruits, meat, and other animal and vegetable products. In today's sophisticated era, the author often sees that people's consumption patterns sometimes lead them to prefer ordering food from fast food restaurants and other foods that can be ordered through delivery services. The impact of this is increasing the amount of packaging waste, such as plastic waste and Styrofoam used to package food. The impact of plastic waste has begun to be overcome with several innovations regarding processing plastic waste into crafts, such as bags from coffee wrappers that have various shapes and motifs created by PKK (Pendidikan Kesejahteraan Keluarga) program at village level to educate women on various aspects of family welfare as an effort to reduce plastic packaging waste and increase the productivity of home-based businesses that support the needs of daily life [1].

Not only plastic packaging that becomes waste, food scraps or food ingredients that are not consumed also cause waste. According to the search that the author did, based on the 2018 National Economic Survey (Susenas), it was noted that the majority of big cities in Indonesia were found to be producing organic waste in a larger amount than other types of waste. This organic waste includes food waste such as food waste, vegetable waste, rotting or damaged fruit, and so on. In Jakarta, the amount of food waste transported every day is 3,639.8 tons, while Surabaya produces 905.26 tons of organic waste. Then, with a fairly large difference, in Medan the amount of food waste transported is 560.7 tons per day. This wasted food waste is often just ignored because it is considered to be able to decompose easily by itself. Even though it is not uncommon for the authors to find that the presence of food waste is very disturbing to the cleanliness and comfort of the environment because of the unpleasant odor it often causes.[2]

The problems caused by the presence of food waste can become something complicated if left unchecked and not handled. So far, the problems caused by food waste include: food waste that rots and is scattered all over the place, making the environment smell bad; This scattered garbage can also cause disease because it invites the presence of animals and insects such as rats, cockroaches, flies and birds, which can be the cause of disease transmission because usually these animals and insects live freely and can carry bacteria and germs; Furthermore, food waste that has not been decomposed and scattered and piled up everywhere can also cause flooding because it blocks waterways as usually happens in traditional markets. Even this food waste can sometimes be easily decomposed, such as the rest of vegetables and fruits, but there is also food waste that can still be created into something interesting and can last a long time, such as shell waste.

In processing shellfish food, we usually only use the shellfish to be processed into ready-to-eat food while the shells are sometimes thrown away. Then, the various and very interesting forms of seashells finally encourage creative entrepreneurs to use them as business opportunities as basic materials for handicrafts [3]. The author often finds shell crafts in coastal tourist areas such as Kenjeran Beach and Surabaya. For the author, the idea of making shells is also very interesting because seashells can be made into various things, such as: curtains, photo figures, brooches, bracelet accessories, necklaces, and so on. In its efforts, this kind of processing can also help preserve the environment because it can reduce the remnants of clam shells that accumulate.

When it comes to food waste, or what is sometimes referred to as kitchen waste, households and traditional markets are the largest contributors. The food waste produced is not just waste such as chicken feathers or shells, as has been described previously. As for food waste that is easily decomposed, such as leftover pieces of vegetables and fruit, and fruit skins, Some fruit peels, such as mangosteen, banana, and corn peels, are often used for various preparations, such as being made into medicine, chips, or handicrafts. Sometimes food waste is not only in the form of good things; often at traditional markets we find rotten tomatoes, chilies, and vegetables lying on the floor or the ground, causing a bad smell. Shopping or making excessive food that causes food waste is also part of kitchen waste.

Usually, the chosen way to deal with this problem is to throw it carelessly until it rots and can decompose by itself or by allowing the leftover food to be eaten by chickens or mice. Of course, for me personally, this method is an easy thing to do, especially if the environment we live in is still in a rural area where there is a lot of vacant land to throw kitchen waste carelessly and let it be eaten by chickens or mice, but of course this is not the way. In the right way, handling food waste like this can actually invite many diseases because we have made the environment around our homes a waste disposal area, a nest of many germs and bacteria.

According to the author, instead of just handling it like that, it's better for us to process the food waste or kitchen waste into something more useful and profitable, such as making organic fertilizer from leftover food, vegetables, and fruit. As we know, lately, people have been fond of farming during the pandemic. Farming independently at home, in addition to being able to ward off boredom, can also save expenses if the plants planted are the result of vegetables and fruits. In addition, this plant cultivation activity can also be carried out by inviting other parties, for example, by inviting people with disabilities to participate in oyster mushroom cultivation [4]. Oyster mushrooms are indeed quite difficult to cultivate individually, but through training and the use of appropriate media, oyster mushroom cultivation can be a means of livelihood that will improve the economy. Of course, in every plant cultivation, a plant, both vegetables and fruits, really needs adequate nutrition. From here, processing kitchen waste into organic fertilizer can be very beneficial for farmers and other parties who like to grow crops because they don't have to buy chemical fertilizers or just wait for fertilizer subsidies from the government, which sometimes takes a long time.

Kitchen waste that we often encounter at home, such as leftover vegetables, rotten fruit, expired spices, and rotten meat, for example, can be directly processed into organic fertilizer, whether liquid or not. Liquid organic fertilizer contains various nutrients and is very good for plant growth because it is made from plant residues, vegetables, fruits, and even livestock manure. This liquid organic fertilizer will not damage the fertility of the soil and plants when

used continuously, so it is very suitable for farming activities at home. If you have kitchen waste, don't throw it away. This waste can be processed independently at home easily into liquid organic fertilizer. If we do organic fertilizer processing independently from the remaining kitchen waste that we have, then we can save costs on buying fertilizer and improve crop yields.

In this case, farmers can work together to collect materials in the form of kitchen waste to make organic fertilizer. So far, farmers rely heavily on fertilizer subsidies from the government, so sometimes the production of crops, vegetables, or fruits becomes less than optimal, causing losses. In addition, the authors often observe that farmers tend to use chemical fertilizers for their cultivated vegetables, even though if used continuously, chemical fertilizers will damage the nutrients in the soil and make the soil hard because the porosity is reduced because chemical fertilizers will increase acid levels in the soil. Soil with high acid content will make it difficult for plants to grow and develop, resulting in decreased crop productivity. As time goes on, the price of chemical fertilizers also increases, so it is better for farmers to work together to become one farmer group and make their own organic fertilizer products.

According to the author, farmers and the village government can help each other to realize this business so that kitchen waste from the households of the villagers can be useful and not pollute the environment. This can be done starting with the collection of kitchen waste such as leftover rice, rotten side dishes, leftover wilted vegetables, and fruit that is already wilted into one in a special collection point that has been provided. Then, this waste must be selected before being processed to ensure that no other waste is mixed with kitchen waste. Then, by using the available vacant land, farmers can make organic fertilizer by stockpiling it in the soil for about 3 weeks. The liquid extracted from the waste can be separated from the waste and can then be used as organic fertilizer that nourishes cultivated plants so that farmers can save costs from purchasing non-subsidized chemical fertilizers.

This processing does not only use kitchen waste but also uses agricultural waste such as straw waste, which usually accumulates before being burned. Not only that, kitchen waste that has been processed into organic fertilizer can also be sold to farmers in other areas so that it will increase the profits from the sales. According to the author, besides being used to make fertilizer, kitchen waste such as leftover vegetables and fruits that are still in good condition can also be destroyed and used as animal feed. This will also save costs for feed.

The advantages of using this organic fertilizer are that it can provide a good life for soil microorganisms that help maintain soil fertility; can prevent poisoning in plants due to excessive nutrient supply explosions; and can maintain soil moisture so that it can reduce soil pressure on the roots. Plant roots can prevent the soil from losing nutrients due to erosion of the topsoil. For farmers who have often used chemical fertilizers on their land, organic fertilizers can also help restore the soil and make the planted plants healthier and less susceptible to disease, so productivity and the quality of agricultural products can be improved.

Bibliography

- [1] I. N. Lokajaya, W. Indo, and A. Karunia L, "Pengolahan limbah plastik menjadi produk kerajinan tangan untuk meningkatkan ekonomi masyarakat sendang dajah," vol. 03, no. 04, 2019.

- [2] N. R. B. P. and T. Michael, "Human rights perspective in the right to fulfill an appropriate environment for Minggirsari Village community," *Scientific Papers of the Legislation Institute of the Verkhovna Rada of Ukraine*, no. 1, pp. 87–96, Feb. 2022, doi: 10.32886/INSTZAK.2022.01.09.
- [3] Y. Kartika and S. Mujanah, "KULIT KERANG DI KENJERAN KOTA SURABAYA," vol. 6, no. 1, pp. 38–44, 2020, doi: 10.9744/share.6.1.38-44.
- [4] H. S. Ramadhani and C. Chrismawan, "PELATIHAN BUDIDAYA JAMUR TIRAM UNTUK PERKUMPULAN PENYANDANG DISABILITAS INDONESIA DI MASA PANDEMI COVID-19," pp. 55–59, 2020.