

Organic Waste Processing System Innovation with Ergonomic Composter

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Abstract:

Community empowerment activities, in the form of technology socialization on making composters, are efforts to harness the potential of household kitchen waste as organic waste. Garbage, containing high water content and easily susceptible to rot, can impact the environment and lead to disease outbreaks. Composting organic waste, especially kitchen waste, is an effective method to mitigate these issues. The method used in this activity is to present the material by means of socialization to residents, especially to the Head of Dermo Village, Head of RT, Head of RW, BPD, Cadre and Youth Organizations of Dermo Village. Provide material about various organic waste materials around the household environment that can be used as a source of raw materials for making compost. The socialization was carried out by doing the practice of designing tools to make compost using raw materials for forage/leaves, banana weevil, and cow dung which are widely found around the household environment, then added with ready-made fertilizer, EM4 liquid (for plants) and air enough. The transfer of technology for making compost provides great benefits, namely an increase in people's knowledge about the benefits of organic waste residue as raw material for making compost

Keywords: community empowerment, fertilizer, organic, compost

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Introduction

KKN is Community Service which tightly very with practice student from college. KKN must followed as condition graduation. studying Work This is actually a means to implement the Tri Dharma of Higher Education, in general Tri Dharma College Tall is Wrong One objective Which must achieved And carried out by every university in Indonesia. Of course from a student perspective involved Also will get experience And knowledge new past program KKN the. A composter is a tool used to make compost. In simple terms, a composter can be made yourself using used/new plastic barrels which are modified and usually placed indoors or outdoors. Composter it has installations for air circulation in it so it can help the process composting aerobic.

It is also able to maintain humidity and temperature so that bacteria and microorganisms can work parse material organic in a way optimal. Composter Also possible. Genre leachate separated from solid material so, it makes it easier to get fertilizer.

KKN Program is Planning System Processing Organic Waste with Ergonomic Composter Innovation, the aim of the work program is to manage and coordinate waste into fertilizer compost so it's useful and reduce potential environmental pollution.

Benefit fertilizer compost as following:

1. Give nutrition on plant / increase availability hara in the land
2. Increase soil fertility
3. Repair structure and characteristics land
4. Increase Capacity Absorb Water Land
5. Capable increase Ph land on acidic soil
6. Increase activity microbes land
7. Provide hormone and vitamin for plant
8. Push growth / attack disease plant

Tools is required in making tool composter as following: Drum size 60 L, Saw, Drill, Meter, Cutter, Pencil, Scissors, Paralon glue, Iron size ½ inch.



Engaging in Studying Work Real is an activity closely tied to practical experiences for college students. KKN is a graduation requirement, serving as a means to implement the Tri Dharma of Higher Education. Specifically, the Program Work Planning System Processing Organic Waste with Ergonomic Composter Innovation aims to manage and coordinate waste into compost, reducing potential environmental pollution.

Method

Socialization activities will be held on September 18 2022 at the Village Hall Dermo, Benjeng District, Gresik Regency. Participants in the activity are the Head Dermo Village, RT head, RW head, BPD, Cadre Women and Dermo Village Youth Organization. The method used in this technology socialization activity is providing material and demonstration. Participant listening exposure from speaker which next with demonstration of the design of the composter and its use. The tools used in training form greenery/foilage Which Lots there is around environment House ladder, Then added with fertilizer Which Already So, fluid EM4 (For plant) And enough water.



Figure 1. Socialization Making Tool Composter Simple



Figure 2. Photo with members

Results and discussions

Activity empowerment public form socialization technology about making compost use tool composter simple is an effort utilize the potential of the surrounding environment in the form of leftover organic waste from households. Inhabitant Village Dermo which follow activity this obtain knowledge about making compost and handling potential household organic waste and turn it into compost. In making this compost, waste materials are used organic waste from households and their surroundings in the village house environment Dermo, like green/leaf, hump banana, remainder vegetables Which Not yet cooked. Method composting is carried out namely aerobically.

Delivery technique making composter tool for making compost done with socialization by participant KKN Industrial Engineering Study Program.

Method tool installation composter as following:

1. Punch holes in the bottom of the barrel on 4 sides and 2 holes at the top and make holes for plastic faucet
2. Tool For hollow out use iron pipe $\frac{1}{2}$ inches which heated
3. After hollowed out, perfect it the circle with pipe which will be installed
4. Hole small This works as ventilation For emit gas methane with use long methane waste pipe 56 cm dg size 2 inches
5. For a number of hole small on low part hole in a number of side
6. Prepare pipe pieces existing link punched in 4 corners
7. Insert pipe $\frac{1}{2}$ inch on hole which are already prepared
8. So insert end pipe to pipe liaison and pass through to hole barrel which one way
9. Cut second pipe end on the outside barrel
10. Insert back end pipe to connecting pipe
11. Repeat step – step up to end pipe connected
12. Prepare looks plastic for filtering
13. Install the 21 cm $\frac{1}{2}$ inch supporting paralon pipe and the top supporting paralon pipe 45 cm with size $\frac{1}{2}$ inches form letter Q Which Already hollowed out to pipe liaison part lower

14. For composter size 60 L will produce compost for media plant and fertilizer organic liquid assisted by vertical media will be useful for greening.

The way to make compost with a composter is to chop up the waste first organic, Put the waste mixture into a barrel 5 cm thick, Put in the fertilizer Once it is 1 - 2 cm thick, spray evenly with sufficient water mixed with EM4 solution (1 cap of EM4 with 1 liter of water), repeat this arrangement continuously until barrel full, Then closed meeting, Need Also stirred, Harvesting can done after 2 – 4 weeks.

The community empowerment initiative, involving socialization on composting using simple composters, aimed to utilize the potential of organic waste from households. Participants in Dermo Village gained knowledge on composting and converting household organic waste into valuable compost material. The composting method employed aerobic decomposition, utilizing organic waste such as green leaves, banana peels, and uncooked vegetable remnants.

Conclusion

In conclusion, the results indicate that composting is an effective method for accelerated decomposition of various organic materials. A controlled process, involving balanced ingredient mixing, sufficient water addition, and periodic stirring, ensures the successful formation of compost. This research contributes to creating a simple and effective composting method. Continued efforts in such community initiatives can significantly impact waste processing technology.

Activity devotion this society hopefully can Keep going accomplished in subsequent periods for help public in convey outlook and knowledge especially in field of waste processing technology.

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