



Short Communication

Comparison of Compost Organic Matter prepared by using Different Substrate

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Abstract

The time of composting is depend on the nature of the substrate used for decomposition. The nature of organic waste is an important factor to decide the quality and stability of compost. This study was designed to check the organic matter of compost formed by using different substrate. The windrows were composed of different organic waste and sprayed with commercial BST inoculum to enhance the process. The compost samples were collected after 3 months of composting. It was concluded from this study that the percentage of organic matter was varied and the ideal organic matter content was given by experimental windrows composed of screening matter +Cow Dung +Saw dust +Green Waste and screening matter +Cow Dung +Saw dust +paper. The range of OM was between 25-27%.

Keywords: Organic matter, Compost, Substrate, Windrow.

Introduction

The biochemical change of organic matter by the action of microbes with metabolism follows at water solvable phase is called composting. The changes takes place during composting process. These changes can be useful in determining the stability and maturity of compost by assessing the organic matter content. Composting is a process in which the organic waste is converted in to blackish end product and many microbes take part in decomposition, these microorganisms include yeast, different bacteria and fungi or some worms to initiate vermicomposting¹.

The Percentage of the organic matter range between 30% to 56%. The speed of degradation of organic matter relates to it stability and maturity. Organic matter is an important factor to check the maturity of compost. The compost can be evaluated by performing different physical biological and chemical tests. The most important physical tests includes odour, colour and pore size of the compost. The biological tests include viable counts per ml. determination of organic matter is the most important parameter that need to be evaluated at the end of composting process. The percentage of organic matter depends on the nature of substrate used to degrade in to compost.

Methodology

The eight windrows were prepared with different substrate. The final volume of each windrow was adjusted at 650 tons. The windrow one included screening matter, cow dung, saw dust and paper. The windrow two composed of municipal solid

waste, cow dung, and green waste and saw dust. Windrow three was composed of cow dung, green waste, MSW and humic acid. Windrow four was composed of green waste, cow dung, MSW and press mud. The experiment was perform in replicates. The composition of each windrow is given in Table-1.

The sample were collected from each windrow to determine the organic matter content². The 10g of compost sample was taken in crucible and weight it. The crucible than weight again after drying in oven at 105 C for 4 hours. The samples were then placed in muffle furnace. The value of organic matter was determined by subtracting the final weight of ash from the fresh weight.

Table-1
Composition of different substrate used for composting

Humic Acid + Screening matter +Cow Dung	15.5+163+17+334	650 tons	BST
Screening matter +Cow Dung +Saw dust +Green Waste	17.5+165+17+352	650 tons	BST
Screening Material +Cow Dung+ Green Waste + paper	16.7+21+21+0.3	650 tons	BST
Press Mud + Screening matter +Cow Dung	15.6+161+17+321	650 tons	BST

Results and Discussion

There was a variation in organic matter profile of each substrate used to made compost. The better results were given by windrows composed of Screening matter +Cow Dung +Saw dust +Green Waste and Screening Material + Cow Dung + Green Waste + paper. The organic matter ranges in these windrows sample was 27-25. The windrows composed of press mud and humic acid addition showed higher organic matter as compared to other experimental windrows. The value of organic matter must be below 30% as it indicate the sign of compost maturity. The low organic matter content below 30 showed that the degradation rate is high and humification index is also high³. The amount of organic matter should not be very high at the end as it is not a good composting and it result in low humification index⁴.

By the utilization of microorganisms the organic matter is decreased with increase in time of composting process⁵. The organic matter content above 30% shows that the degradation rate and humification index is slow. The low temperature conditions gives high organic matter⁶. Figure-1 shows the comparison of OM.

Conclusion

It was concluded from this study that the percentage of organic matter is mainly dependent on the nature of substrate. The variation in organic matter percentage was observed in compost after 3 months of complete decomposition. The ideal results was given by Screening matter +Cow Dung +Saw dust +Green Waste and Screening matter +Cow Dung +Saw dust + paper.

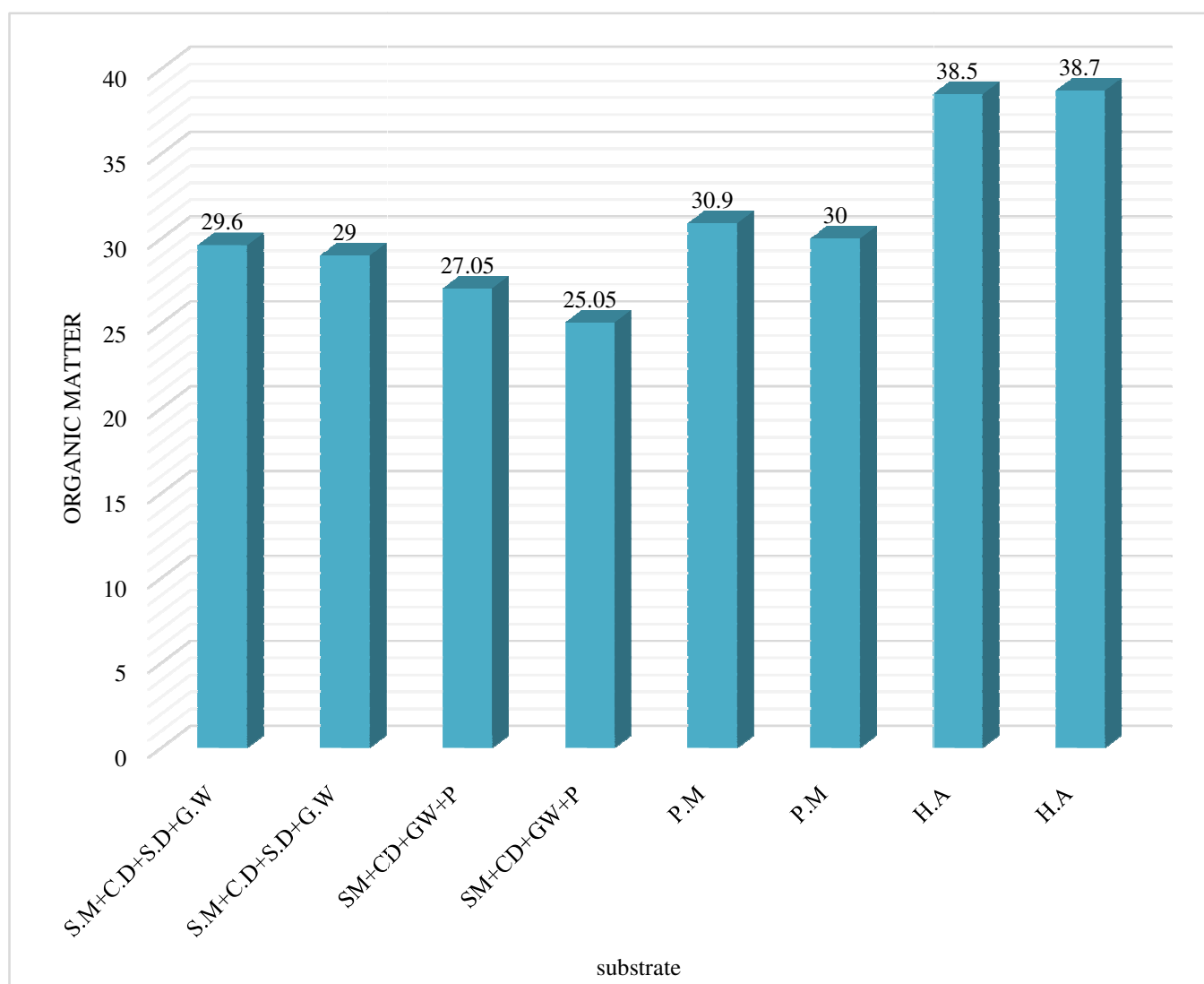


Figure-1
Effect of substrate on Organic matter

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