A Study on the Effects of Salinity and Washing in on Aerobic Composting of Food Wastes

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Abstract

This study was performed to estimate the effects of salinity and washing of food wastes on temperature, pH, and salinity in aerobic composting of food wastes. Weight ratios of food wastes to water in washing were 1.0(Control), 1:1(W-1), 1:2(W-2), 1:3(W-3) and 1:4(W-4), respectively. Ratios of food wastes to wood chips in reactor of Control, W-1, W-2, W-3 and W-4 were 5kg:5L, respectively. Reactors were operated for 24 days with 1 hour stirring by 1 rpm and 2 hours aeration per day. The increase in the ratio of food wastes to water used in washing resulted in the decrease of the highest reaction temperature and the elongation of the high temperature reaction period. The lowering of the ratio of food wastes to water used in washing resulted in faster pH increase The final salinities of Control, W-1, W-2, W-3 and W-4 were 0.95%, 0.73%, 0.65%, 0.57% and 0.41%, respectively.

Keywords : Salinity, Washing, Food wastes, Aerobic composting, Wood chips

I. Introduction

It is necessary to find out the adequate methods to each country because the characteristics of food wastes in each country are very different with one another. one of the characteristics of compost from our country's food wastes is very salty. That effects harmfully on the growth of various vegetables. In this study the food wastes were washed to reduce the salinity, and the effects of salinity and washing of food wastes on temperature, pH, and salinity in aerobic composting of food wastes were estimated.

II. Materials and Methods

Weight ratios of food wastes to water in washing were 1:0(Control), 1:1(W-1), 1:2(W-2), 1:3(W-3) and 1:4(W-4), respectively. Ratios of food wastes to wood chips in reactor of Control, W-1, W-2, W-3 and W-4 were 5kg:5L, respectively. Reactors were operated for 24 days with 1 hour stirring by 1 rpm and 2 hours aeration per day.

Ⅲ. Results and Discussion

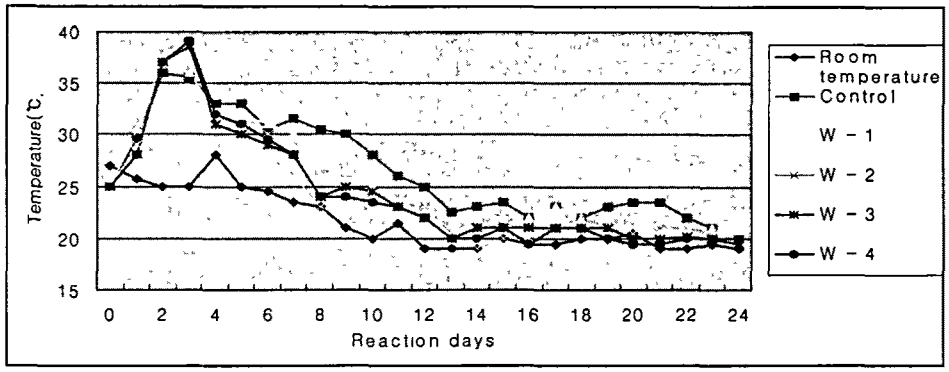

Fig. 1. Comparison of temperature changes by reaction days.

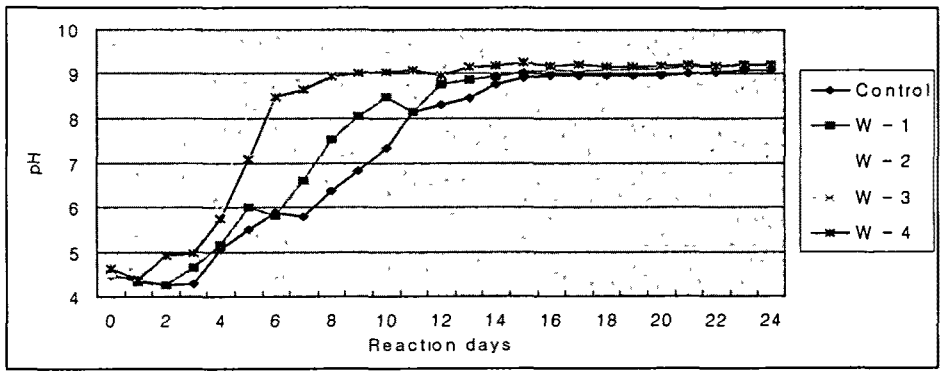

Fig 2. Comparison of pH changes by reaction days.

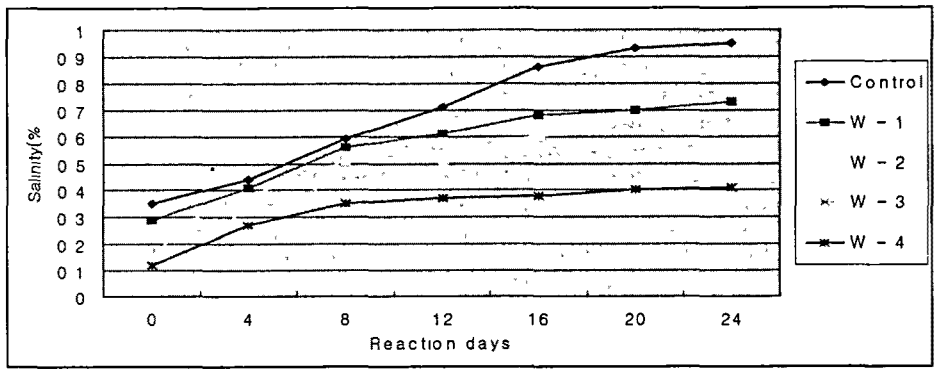

Fig 3. Comparison of salinity changes by reaction days

IV. Conclusion

The increase in the ratio of food wastes to water used in washing resulted in the decrease of the highest reaction temperature and the elongation of the high temperature reaction period. The lowering of the ratio of food wastes to water used in washing resulted in faster pH increase The final salinities of Control, W-1, W-2, W-3 and W-4 were 0.95%, 0.73%, 0.65%, 0.57% and 0.41%, respectively.

References

1. Park, S. H. : Effects of Salinity and Moisture Content on Aerobic Composting of Food Wastes. *Kor. J. Env. Hlth. Soc.*, 24(1), 120-131, 1998.
2. Ministry of Environment of Korea : Standard Method of Test in Solid Wastes Management in Korea, 2000.
3. Park, S. H. : Effects of Compost Derived from Food Wastes on Germination and Growth of Vegetables. *Kor. J. Env. Hlth. Soc.*, 27(3), 21-26, 2001.
4. Hwang, J. Y. : Composting of the Pig Manure Used with the Ceramic Biocarrier. *J. of KOWREC,* 11(2), 110-116, 2003.
5. Kang, C. M. : The Study of Efficient Treatment Conditions on the Composting of Food Wastes. J. *of KOWREC,* 11(2), 117-124, 2003.