ASSESSING THE QUALITY OF COMPOST AVAILABLE IN THE MARKET THROUGH PLANT (*Zea maize*)GROWTH STUDIES

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B.Sc (Agri. Sp.)

Dissertation submitted in partial fulfillment of the requirement for the

MASTER OF ENIVRONMENT SCIENCES OF THE

OPEN UNIVERSITY OF SRI LANKA,

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ABSTRACT

Municipal solid waste (MSW) is waste from households, commercial centres, institutions such as schools and offices and is collected usually by local government bodies. Composting of these solid wastes has been taking place in various parts of the island as a solution to get rid of this menace.

This study was conducted in the district of Kalutara at Phorowatta compost facility which is under the solid waste management authority of western provincial council. Except the Dikovita compost which was taken after making biogas, the other 07 varieties (Agalawaththa, Mathugama, Madurawela, Beruwala, Horana, Mihisaru Segregated and Mihisaru mixed) are being made from aerobic method through piling and turning of solid wastes. The soil from the site was used as the control for this study. This study firstly focused on growth parameters such as number of leaves, stem girth, plant height and wet biomass after panicle formation to understand the quality and effectiveness of commercially available compost with 1:1, soil: compost ratio and secondly, the study tried to identify the best soil compost ratio that gives the best growth of the crop for the four selected compost varieties namely Mathugama, Agalawaththa, Dikovita and Mihisaru segregated.

First study showed that results were inconsistent and no relationship was shown based on growth parameters. The measurements of plant height showed that different compost preparations performed in different manner at different time intervals; 4WAP,6WAP and 8WAP. This may be due to the requirement of different nutrients that the plants wanted at different stages of development.

The stem girth parameter on measuring growth rate showed that both Mihisaru types were better in helping the growth of the Maize plants up to 6 weeks. But, at the 8 week, Dikovita compost has shown the highest stem girth. When growth of the number of leaves at 4 WAP, 6WAP and 8WAP are considered, Mihisaru mixed performed better than other treatments.

Wet biomass measurements showed that the highest average value was given by Mihisaru mixed (460.83g) followed by Dikovita (438.33g).The least weight was by Mihisaru mixed (216.33g).

During the second stage, trials were conducted by using the composts from Agalawaththa, Mathugama, Dikovita and Mihisaru segregated including control only soil. The used soil: compost ratios were 1:0.5, 1:1 and 1:1.5. Plant height measurement at both 4WAP and 6WAP with Dikovita compost performed better in all three ratios. However, at 1:1.5 ratios, Agalawaththa (83.00cm) was the highest value for plant height.

The plant height at 8WAP showed that Dikovita compost treated plants were better than other treatments at 1:0.5 and 1:1ratios. At 1:1.5 ratios the Agalawaththa (131.33cm) was the best.

The analysis of stem girth at 4WAP at all ratios showed that the compost treatment Dikovita was performed better. At ratios of 1:1 and 1:1.5 at 6WAP, compost treatment with Mathugama showed the highest stem growth. But at the 1:0.5 ratios, the Dikovita performed better. At 8 WAP, stem girth responded differently having the highest values for Dikovita at 1:0.5, Mathugama at 1:1 and Mihisaru Segregated at 1:1.5 respectively.

When growth of leaves were analyzed at 4WAP it was very clear that Dikovita treatment performed much better than all ratios. Number of leaves at 6WAP, Mathugama was the best at 1:0.5 ratio followed by Dikotvita(1:1) and Agalawaththa (1:1.5). At 8 WAP, Dikovita was the best at all ratios.

With respect to weight of wet biomass, Dikovita (550.00g) was the best at 1:0.5 ratio and Mathugama (605.00g) was the highest at 1:1. At ratio 1:1.5, Mathugama showed the highest value of 561.67g. The least weight of 183.33g was recorded by the control.

The treatments were studied in a complete randomized design (CRD) in the pot experiment with three replications each. The results analyzed by MANOVA (multivariate analysis of variance) showed some significant variances at both stages. When the data of 8WAP at different soil: compost ratios were analyzed using ANOVA and DnMRT on the measured growth parameters such as plant height and stem girth, there were significant differences between control and the rest of the treatments. When considered the parameter of number of leaves, there were no significant differences between control and rest of the treatments. The contrast analysis results showed that compost treatments acted differently on parameters such as number of leaves, plant height and stem girth.