CONFERENCE PROCEEDING

Implementation of Bokashi Composting in Boarding Schools

Awatif Afrina Mohd Asrul[1], Aisya Alya Mohd Ghazaly[1], Siti Adriana Faqihah Shafie[1,] Muhammad Hazim bin Remmie Hirman[1] Diani Mardiana Binti Mat Zin[1*]

[1]Kolej PERMATA Insan, Universiti Sains Islam Malaysia, 71800, Nilai, Negeri Sembilan, Malaysia

**Corresponding author*: dianimardiana@usim.edu.my

ABSTRACT

Food waste is a serious issue in educational institutions all around the world. According to data, Kolej PERMATA Insan's dining hall gathered about 13 kg of food waste every day on average. KPI produces an astounding 4.745 tons of food waste per year, or nearly the weight of a truck. According to earlier research, composting reduces both food waste and methane emissions that contribute to climate change. One technique for decomposing organic solid wastes is composting. This study utilizes an experimental and correlational methodology to examine whether composting should be included to the boarding schools' food waste management system. It was found out that Bokashi composting is indeed suitable to be implemented in food waste management in boarding schools. However, the bin should be re-designed and improved to ensure smooth integration of composting in food waste management in boarding schools.

Keywords: *composting; composting in schools; food waste; sustainability; zero waste*

INTRODUCTION

To minimize excessive food waste, composting food waste in schools has gained popularity. According to a recent report from the World Wildlife Fund (WWF), over 530,000 tonnes of food are thought to be wasted annually in school cafeterias, making such solutions crucial. Composting is a topic that has plenty of publicly available material, therefore it is not brand-new. Composting hasn't yet been utilized to its full capacity in actual practice, despite how appealing a concept it is. Large quantities of food waste and other organic materials that end up in landfills (and garbage dumps) turn into a source of greenhouse gas emissions instead of being a source of nutrients for soil. Although it appears to make sense in the overall scheme of things, the demand and supply theory does not yet seem to be bearing fruit for the composting industry.

MATERIALS AND METHODS/ METHODOLOGY

Gathered food waste from breakfast and lunch sessions in the dining hall on the same day. Then, placed layers of breakfast food waste and bokashi bran in a designated bran. Sealed the bin tightly to create anaerobic environment necessary for the process. The fermentation period will allow the food waste to undergo controlled fermentation for two weeks. The food waste collection in the formation of "bokashi tea", a nutrient-rich liquid byproduct. The bokashi tea will be collected from both bins and stored it in different bottles. The bokashi tea is diluted with water with a ratio of 1:200. The liquid

fertilizer in bottles labelled as "Breakfast" and "Lunch". This liquid fertilizer for plants and the partially fermented food waste buried in school garden's soil.

After the bokashi composting, the soil continues to compost. Pre-compost or bokashi was buried in the ground to continue the composting process. The bokashi was removed from the composting bin once the bokashi-composting process was finished. The bokashi was buried for three weeks after a hole was scooped out of the ground and filled with it.

An eggplant sprout was used as a test subject for the liquid fertilizer produced by bokashi composting for 20 days. Additionally, there were 2 other eggplant shoots, one of which was examined with NPK fertilizer and the other without. Each serves as a control.

RESULTS AND DISCUSSION

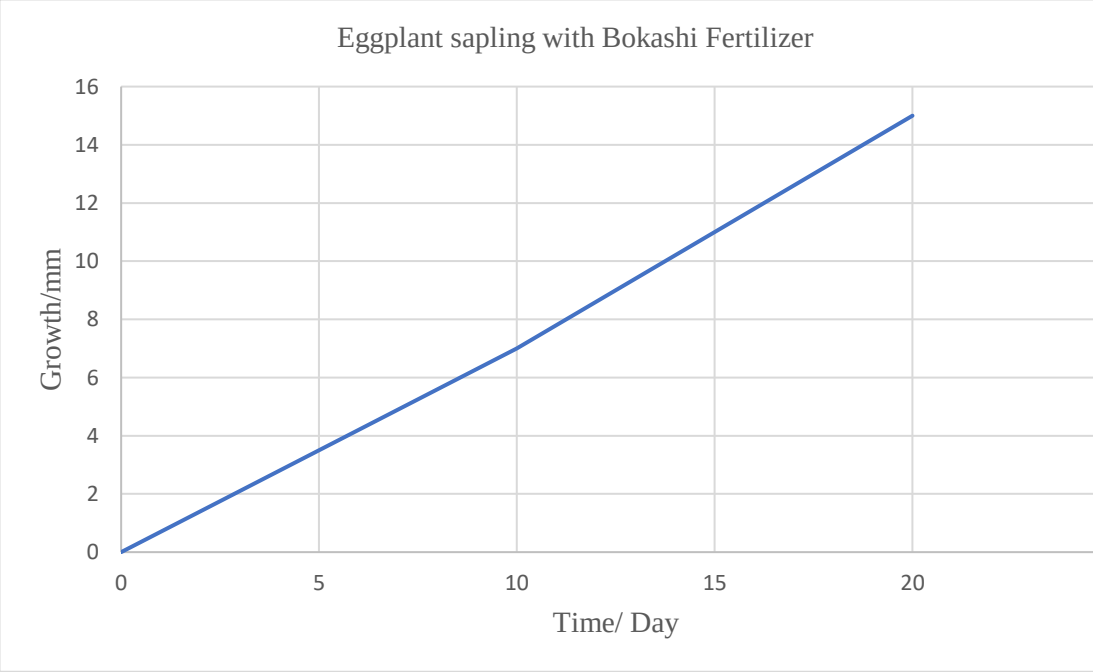

Figure 1. Graph of Eggplant sapling with Bokashi Fertilizer

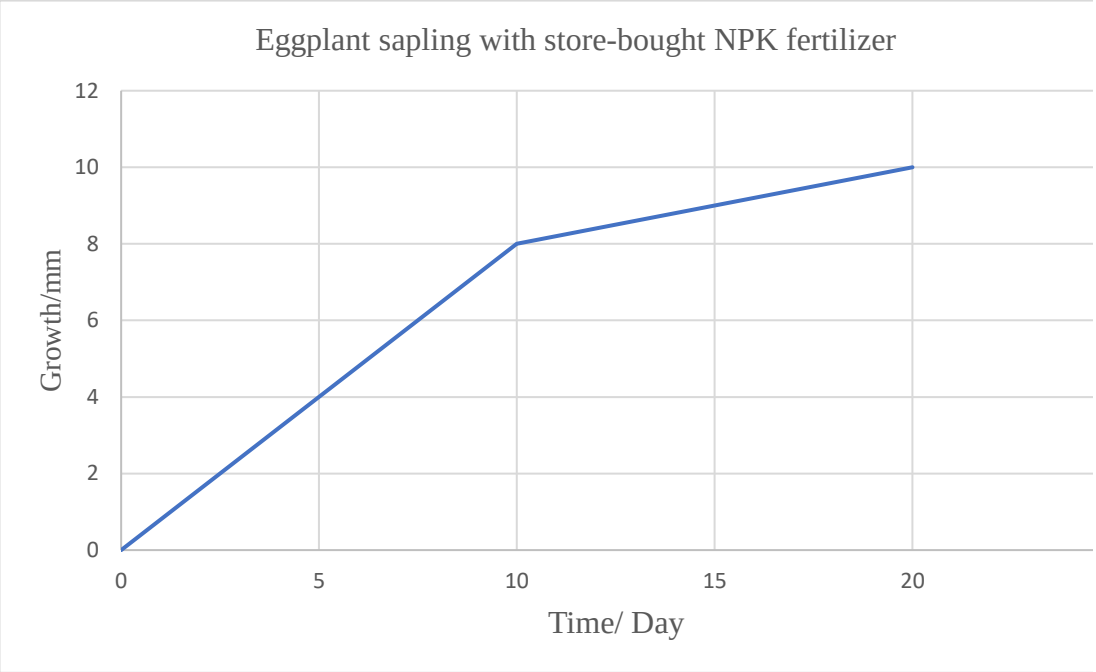

Figure 2. Graph of Eggplant sapling with store-bought NPK Fertilizer

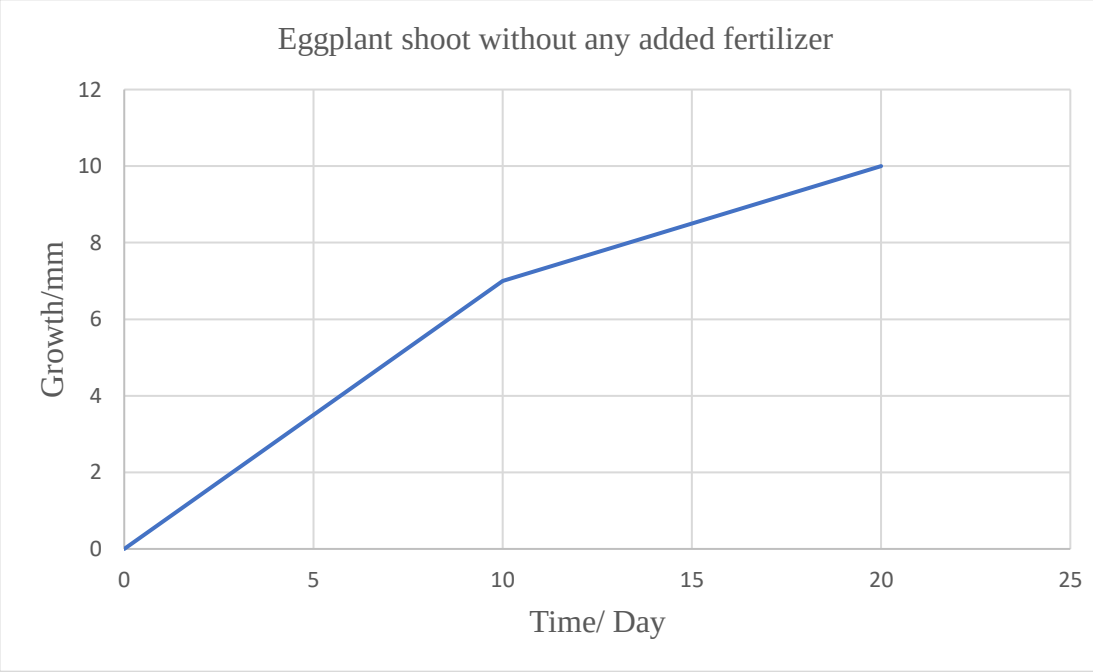

Figure 3. Graph of Eggplant shoot without any added fertilizer

DISCUSSION

Food waste reduction using bokashi composting is an option for boarding schools. Boarding schools produce a significant amount of organic waste, mostly from meals, due to their huge populations and centralized facilities. Management effectiveness is essential for sustainability. The fermentation-based composting technique known as Bokashi is investigated as a potential solution. Urban boarding schools with limited space and significant food waste may gain from bokashi composting. Bokashi bins

may easily fit into school kitchens because they are small and odour-free thanks to their sealed design. They help with everyday the disposal of waste, cutting down on landfill contributions, and instruct students on environmental sustainability and waste management. However, for a successful deployment, scale, stakeholder training, proper end-process management, and future technological integration must be taken into account. An enhanced bokashi bin system tailored for boarding schools is proposed, emphasizing its potential role in sustainability initiatives.

CONCLUSION

By effectively managing organic waste through composting and encouraging sustainability beyond trash management, the bokashi approach has proven to be quite successful in boarding schools. The resulting fertilizers have an extraordinary nutrient content that encourages the growth of healthy plants. Bokashi provides a comprehensive waste reduction strategy that is appropriate for indoor use, has little danger of pest infestation, and is conducive to educational integration. Boarding schools that use bokashi help the environment become greener and provide students practical experience with sustainability, enabling them to understand their impact on the globe.

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