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## RESEARCH ARTICLE

### Vermicast potential in lettuce growing in peri-urban farming

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#### Abstract

A complete randomized design (CRD) with 5 treatments and 3 replications was used to determine the growth performance of lettuce grown in different level of vermicast mixture as growing medium. The result showed that plant height, number leaves per plant, plant weight and total yield were significantly influenced by the different level of vermicast. Tallest plants with most numbers of leaves and greatest yield was exhibited by lettuce planted in 75% vermicast + 25% garden soil medium. This medium consistently excelled in all the treatments evaluated.

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## INTRODUCTION

Lettuce (*Lactuca sativa*) is a low calorie food and a source of vitamin A and folic acid. It is eaten either raw, notably in salads, sandwiches, hamburgers, tacos, and many other dishes, or cooked, as in Chinese cuisine. It also contains anti-oxidant quercetin, which is believed to help prevent asthma and allergies by acting as a natural antihistamine. However, as the trend towards healthier lifestyle continues to grow in the Philippines, the interest in organic farming is also expeditiously gaining ground due to the risk of consuming non-organic food is becoming more perilous to human health (OPTA) 2012. Further, these crops that are produced under modern agriculture techniques that use large doses of pesticides, herbicides and fertilizers are slowing down one's intelligence capabilities causes of brain damage particularly resulting to impaired intellect to people in poor or third world countries. OPTA reported that international studies have shown that chemical-infused crops have resulted in cancer, hormone disruption, neurological disorders and other life-threatening illnesses. Further, beneficial micronutrients in the soil that are needed by a human body are also killed such as calcium, magnesium, iron, zinc, copper, selenium, manganese and many others. The absence of these essential health elements in the planting grounds may cause malnutrition as the soil can no longer produce foods that are adequately supplied with important nutrients thus chemical farming destroys the environment. Organic agriculture is the way of the future not only to address hunger but also to sustain health and environment. The only way to lower production costs is for farmers to learn to process their own organic fertilizers like vermi composting. To recondition the soil, use of vermicasts or vermicomposts using earthworms will let the garden "rest" from the chemicals. Vermicast is a nutrient-rich organic fertilizer and soil conditioner in a form that is relatively easy for plants to absorb. The study was conducted to know the potential and effectiveness of vermicast on the growth and yield of lettuce.

## Material and Methods

A Complete Randomized Design (CRD) with 5 treatments and 3 replications was used to determine the effect of the different level of vermicast on the growth and yield performance of lettuce and to determine the best mixture of planting medium for lettuce production. The treatments were; T<sub>1</sub>- 25% vermicast + 75% garden soil, T<sub>2</sub>- 50% vermicast + 50% garden soil, T<sub>3</sub>- 75% vermicast + 25% garden soil, T<sub>4</sub>- 100% vermicast, T<sub>5</sub>- 100% garden soil, vermicast was thoroughly mixed with the prepared garden soil following the given treatment. Prepared soil medium was placed in 8" x 10" black polyethylene bags. Each bag contained 2 kilos of soil medium to wit; T<sub>1</sub>= 0.5kg vermicast + 1.50kg garden soil, T<sub>2</sub>= 1kg vermicast + 1kg garden soil, T<sub>3</sub>= 1.50kg vermicast + 0.50kg garden soil, T<sub>4</sub>= 2kg vermicast only and T<sub>5</sub>= 2kg garden soil

A total of 150 seedlings were used in this study. Two (2) seeds were sown directly to respective treatment pot. After emergence, it was thinned to one vigorous seedling. The entire experimental plants were protected from pest. Watering of plants was made every early morning. Harvesting was done by cutting off the entire plant of every pot per treatment per replication. The data gathered were; Average plant height (cm), Average number of leaves per plant per treatment, Average weight of plants (grams) and total yield (g/treatment).

## Result and Discussion

Lettuce planted in 75% vermicast + 25% garden soil exhibited the tallest plant (17.60 cm) among the treatments evaluated but statistically comparable to 100% vermicast (16.72 cm). This affirmed the study of Edwards and Burrows (1988) as cited by Arancon et.al. (2005) who reported that the increased in growth of 28 ornamentals and vegetables in plant growth media produced from processed organic wastes from earthworm *E. fetida* which was much greater than in commercially-available plant growth media.

The average number of leaves per plant per treatment of lettuce was significantly affected by the different growing medium. Results revealed that the production of leaves was attributed by the effects of the different treatments. Growing medium mixture of 75% vermicast + 25% garden soil produced more leaves per plant with an average of 8.06 leaves, statistically comparable to 100% vermicast with 7.71. The findings, supports the results of the research of Vishnu Export which indicated that microbial activity and the makeup of the microbial communities existing in vermicast play an important role in plant growth responses (Vishnu Export, 2008).

The weight of lettuce per plants was significantly affected by the different levels of vermicast. Results revealed that Lettuce planted in 75% vermicast + 25% garden soil obtained significantly the heaviest plant 9.59 g/plant compared to the rest of the treatment. These results support the study of Arancon et.al. (2005) who reported that there was a significant increase in growth and yields of field tomatoes and peppers with vermicomposts. The findings further, supports the study of Fair, J.R., 2008 that vermicast competes with any other products with regard to product efficiency, safety and yield potential.

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