The Effectiveness of Organic Compost of Brown Sugar, Onion, Garlic, Charcoal and Kangkong (SOGCKONG) in Our Lady of the Lourdes Elementary School Garden

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ABSTRACT

This study attempted to determine the effectiveness of SOCGKONG on mustard plants in Our Lady of Lourdes Elementary School garden.

The Experimental method of research was used. No statistical treatment was used. Observation, measurements, and photographs of plants were used to determine the differences between the treated and untreated (control) plants.

SOGCKONG was from organic materials such as sugar, onions, garlic, charcoal and kangkong. It is Organic compost materials used for bio intensive gardening that promoted the organic way of gardening.

SOGCKONG compost is an effective soil enhancer. The components of SOGCKONG are rich sources of vitamins and minerals that are vital to plants overall growth and development. The components of SOGCKONG poses no health risk because there are all organic.

KEYWORDS: *Organic, bio intensive gardening, soil enhancer, hazardous free*

INTRODUCTION

National programs mandated teachers to encourage planting of vegetables in schools and within the vicinity of their schools. The “GPP” Gulayan sa Paaralan specifically provided the promotion of vegetable production in public elementary and secondary schools. DepEd Secretary Leonor Magtolis Briones said that the DepEd – through the Learner Support Services-School Health Division (BLSS-SHD) – sustains the implementation of the “Gulayan sa Paaralan” (GPP) in public elementary and secondary schools nationwide “to address malnutrition and promote vegetable production and consumption among school children.” Briones explained that the DepEd Memorandum No. 293 series of 2007 was issued to “encourage both public elementary and secondary schools to establish school gardens to ensure continuous supply of vegetables.

The guidelines on the implementation of the GPP, Secretary Leonor Briones said, is stipulated in the DepEd Memo No. 223 series of 2016 which directs the strengthening of the GPP. Briones said that the general objective of the GPP is to “promote food security in schools and communities, through self-help food production activities and values among learners and appreciation of agriculture as a life support system.

It likewise sought to produce vegetable in schools that are sources of protein, vitamins, minerals and increase eventually vegetable consumption and improve the learner’s nutrition. The Department of Education (DepEd) will sustain the implementation of the vegetable production program in all public schools nationwide.

The organic substances in compost can improve the biological, physiological, and chemical properties of the soil. According to Merfield, micro- organisms such as bacteria, fungi, and actinomycetes feed on organic materials and convert hydrocarbons into carbon dioxide and water by oxidation and are essential in photosynthesis.

According to Chandramohan, organic materials from compost contains growth promoting substances like enzymes and hormones which are essential for improvement of soil fertility and productivity by improving soil texture and microbial status.

It also served as “laboratory for learners” and “produce in schools’ vegetables which have rich sources of protein, vitamins, and mineral, and eventually increase vegetable consumption and improve learners’ nutrition. The GPP also aims to “showcase small-scale food production models” and “inculcate among the learners the values of gardening, good health and nutrition, love of labor and caring for others.

Administrative Order No. 15 mandated the promotion of vegetable production through natural farming. Natural farming is the cultivation of crops by addition of organic inputs to contribute to the environment of sustainability. The intension is minimizing the use of chemical fertilization that is hazardous to the environment.

Organic farming is defined as a production system that sustain health of soil, ecosystem, and people. It relies on ecological process of biodiversity and cycle adapted to local condition rather than the use if inputs with adverse effects. (Development Bank 2015. Organic 2015. Edited by Sununtar Satboonsaraq Ariel Markaudya)

Composting is the transformation of a raw materials substances suitable for a variety of soil and plant uses. Essentially, decomposition of natural breakdown processes that occur when organic residue meets soil. (Um, Madison, January 13, 2016 volume 31, page 203).

Organic materials also improve growth, yield, and quality by improving the physical properties of the soil such as aggregation, aeration, permeability, and water holding capacity. An important project component of Administrative Order No. 15(specifically, Section 4) is sustainable production of vegetables. According to the

Food and agriculture Organization, (FAO) natural farming or organic farming contributes to optimum productivity and environmental quality. Natural farming offers one of the most sustainable farming systems with recurring benefits and provides long lasting stability in production.

At day 1 both treated and controlled samples were weighed. The number of leaves were counted. The condition of the leaves was noted. The height was measured. All the plants were photographed. The data gathered were tabulated.

Organically produced vegetables are considered wholesome and valuable. They have greater physiological maturity and longer storage life (Samaras, El- Saidy and Abebe). Organically grown vegetable have greater mineral and vitamin content than crops grown conventionally (Hormick and Parr).

METHODOLOGY

The researcher used experimental method of research. Control group and experimental group observed, measured, and photographed in the 1st day, 10th day, 20th day and 30th day of planting.

The experimental method of research was used. According to Manuel and Medel (2012), the basic purpose of experimental research is to discover the influence of one or more factors upon a condition, groups or situation, purpose of which is to discover “What Will Be”.

1. Seeds of mustard were broadcasted in a box with soil.
2. 20 seedlings were planted in plastic containers with no treatment. Each were weighed and measured.
3. Another 20 seedlings were planted in plastic containers with SOGCKONG treatment. Each were weighed and measured. Treatment was done during the day of transplanting, after 10 days, and 20 days after planting.
4. All experimental mustard were treated of SOGCKONG from the 1st, 10th, 20th day and 30th day of planting.
5. All treated and untreated plants were observed for the development of leaves, leaves characteristics, weight, and height.
6. All results were tabulated.

The above procedure was repeated on day 10, day 20 and day 30. All data gathered were tabulated. All the procedures and processes should be followed in preparing and preserving the SOGCKONG from the preparation of all the materials needed and all ingredients for the preservation of organic compost fertilizer up to the broadcasting of seeds and transplanting of mustard as the first day of observation, in the tenth day as the experimental plants and 20 control group. the number of leaves, gross plant weight in kilogram and length of leaves in terms of inches should be observed for both 20 experimental plants and 20 control group.

SOGCKONG applied in the first day, 10th day, 20th day and 30th day for experimental group. Daily observation was done, for both control and experimental group, if there were changes in color and characteristics of leaves, if there were insect bites.

The height of Plants No. 3, no 7, No 17 was 2.6 inches. Plant No. 4 was 1.8 inches high. Plant No .5 was 1.7 inches high. Plant No. 6 was 3.0 inches high. Plants No. 9 and Plant No.2 were 1.4 inches high. Plant No. 10. And No 19 were 2 inches high. Plant No.11 was 2.2 inches high. The height of plants No.13 was 1.5 inches. Plants No.15 and No. 20 have the height of 1.6 inches. Furthermore, the plants were weighed to determine their gross weight.

First day of planting of mustards in the control group, all samples weighed of 1.5 kilograms. Picture C-1 to C-20 (C pertains to control group) The conduct of the observation among the control group plants followed a certain procedure from the first day to the tenth day. On Day 1, the seedlings were planted in twenty (20) containers as shown in the pictures, and they were watered accordingly. On the second day, the plants were sprinkled with water. On the third day, control plants were sprinkled with water and observed for number of leaves developed,

weight and height of plants.

Both experimental and control group were treated the same, like watering daily from the very beginning up to the 30th day of planting, except the SOCKONG organic compost application for experimental group. Both plants were weight and measured in the length and height of leaved terms of centimeter.

RESULTS

The conduct of the observation among the control group plants followed a certain procedure.

There was comparison of observation in terms of height, weight, and physical appearance of treated and control mustard from the first day of planting 10th day, 20th day and 30th day of planting.

It displays the number of leaves developed, the weight of the plants and the height of plants for the control group on Day 1. All twenty plants had seven (7) leaves.

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There was no change in weight in all the control plants at 1.5 kilograms. During the 7th plants number 1, 3, 4, 5, 6, 7, 9 and 15 increased in height by 1 inch. Day 8, it was observed that plants number 6, 16 and18 decreased in the number of leaves by 2. Likewise, plants number 1, 3, 5, 10,11 and 12 decreased in the number of leaves by 1. The same procedure of sprinkling water was done among the plants on the 9th day. The plants were observed for the presence of weeds. They also showed changes in weight. It was noted that the weight of all plants remained the same at 1.5 kilograms. Day 10, the number of leaves, weight of plants and height of plants for the control group.

All evidently shows that all the samples in the experimental group and control group had 7 leaves developed and weighted 1.5 kilograms, there were some numerical differences in height of plants in terms of inches. Table 1 and table 2 displayed the number of leaves developed gross plant weight in kilograms and height of plants in terms of inches.

On the first day, the experimental plants were treated with SOGCKONG after transplanting them in twenty (20) containers. On the second day, they were sprinkled with water. On Day 3 the treated plants were observed for the existence of weeds.

Day 4, the experimental plants were sprinkled with water and observed for number of leaves developed, weight of plants and height of plants. It was observed that plants number 2, 3, 4, 5, 12,14 and 16 lost one (1) leaf each; while plant number 6 did not lose any leaf. On the contrary, plant number 8 increased in the number of leaves by 1. On the fifth day, the experimental plants were observed for changes in gross weight. All experimental plants increased in weight by 2 kilograms. Day 6, the experimental plants.

There were slightly increase in length of leaves in terms of inches. This stage was in the critical period because it was the

adaptation of mustard in SOCKONG for experimental group and adaptation of mustard in natural ph of soil which has a mixture of organic minerals, water, air, organic matter and countless organisms that are the decaying remains of once-living things, it was a natural humidity of soil where control mustard adapted.

With regards to development of leaves. It was observed that the number of leaves remained the same in plants number 1, 9 and 15.

It was observed that there were loses in the number of leaves in 13 control plants. It could be concluded that there was a continuous depletion of nitrogen which is essential for the development of leaves.

Plant number 20 decayed. It is apparent that there was depletion of phosphorous. The decayed occurred in the 19th day of planting, It was rotted due the insect bites and lack of nutrient and minerals from the soil. The total depletion of plant in numerical value in focused of the study, the number of leaves developed, the gross plant weighed and length of leaves of plants were the result of the absence of SOGCKONG. The SOGCKONG components and nutrient value as organic composed fertilizer aforesaid in the preceding statements

Data presented herein that the numerical value depleted, leaves were lost due to the insect bites and natural decayed of plants. It was because the absence of the SOCKONG in the soil. Plant number 20 totally underwent decay due to insect bites and lack of macro- nutrients and minerals that serves as soil enhancers. The natural Ph of soil was lost because the mustards not only the number 19 but all the samples in control group. Planted in the plastic containers, in the absorption of roots of mustard plants were limited. There was no micro-nutrients and minerals that swept away to the harmful insects and other foreign plants parasites. According to Laird et al. the addition of charcoal to agricultural soils increased water holding capacity and increased nutrition leaching.

Procedures of Observation on Experimental Group from Day 21- 30. Day 21, the plants were sprinkled with water. It was observed that there was no change in the number of leaves developed in plants number 1, 3 and 10. The same is true with regards to gross weight. There was no increased in weight in plants number 1, 2, 5, 6 and 12. In plant height plant number 9, 14 did not increase in height. Day 22, it was noted that plants number 14 and 15 did not increase in number of leaves. However, there was an increased in height by .5 inch in Plant number 11.

Brown sugar is source of molasses that give energy to the plants, it was also fungicide as well.

Onions contain nutrients such as vitamin C. Dietary fiber, manages, molybdenum, b6, tryptophan, folate, potassium, phosphorous, copper, beta carotene and lutein. It controls pesky bugs.

Garlic supplements were known to boost the function of the immune system, Allicin is an organo-sulfur compound obtained from garlic, a species in the family Alliaceae. The allicin generated is unstable and quickly changes into a series of another Sulphur. Containing compounds such as diallyl disulfide. Allicin is part of a defense mechanism against attacks by pest on the garlic plant.

Charcoal was generated from plant materials, and it was non-toxic to plants. So, there were many tiny pores in it. Once applied to the soil, the pores allow air to diffused into the soil. It was believed that it helps plants by improving soil pH, which is increasing water absorption. Charcoal increased the nutrient and water holding capacity of the soil. Charcoal was generated from plant materials, and it was non-toxic to plants. So, there were many tiny pores in it. Once applied to the soil, the pores allow air to diffused into the soil. It was believed that it helps plants by improving soil pH, which is increasing nutrient and water holding capacity of the soil.

Water Spinach or kangkong contains Vitamin, B and C. It also contains minerals

such as calcium, magnesium, potassium and phosphorous.

Summary of data in the control group and experimental group Day 30. With respect to the number of leaves developed on Day 30, the last observation period, plants numbers 1, 3, 15 had a difference of 6 which means the experimental group developed 6 leaves more than the control group.

DISCUSSIONS

The conduct of the observation among the control group plants followed a certain procedure.

There was big comparison of observation in terms of height, weight, and physical appearance of treated and control mustard from the first day of planting 10th day, 20th day and 30th day of planting.

It displays the number of leaves developed, the weight and the height of plants for the control group and experimental group on Day 1. All had seven (7) leaves develop from seedlings.

In Control group composed of 20 mustards samples, in day 1 up to 10th day of planting, the mustard (there were no treated of SOGCKONG) the total development of plants was improved, increased number of leaves, gradually increase in weight and height of leaves.

The crucial period at this experiment in control group was the Day 10, second experimental study, where the mustards adapted the humus (Ph) of the natural soil that helped control mustard increased in number of leaves and height of plants that presented in table in preceding pages.

Experimental group at day 10 were totally stop the growth, it was unpredictable result, because there was reverse as expected result, it does not change in weight, length, and height of leaves, instead, there were some yellowish leaves, insect bites, and rotten leaves.

Furthermore, this stage was a vulnerable period for the experimental plants, where the effect SOGCKONG applied in the mustard caused moderate decrease in terms of number of leaves and height of plants due to the ferocity of its components such as sugar, onions, garlic which secreted the allicin substance, the charcoal which was a source of nitrogen, and the water spinach of kangkong, which produced phosphorous and potassium. The ferocity from the SOCKONG organic components was the results of the depletion of growth of mustard.

While days run from week 11- 20 for both experimental and control group, there was a snap change. The control group (untreated plants) were stopped the growth, there were many insect bites, there were rotten leaves, the lower leaves (first and second leaves from seedlings) were decayed it. On the other hand, experimental group (treated with SOGCKONG) grown, there were green leaves, very healthy mustards, increase of weight, height, and length of leaves.

The continual improved of mustard plants in the control group form the first day up to 10th day of planting was due to the soil ph from the soil. The humus came from the soil that the control mustard absorbed, that humus contained of minerals, and micronutrients were untreated mustard grown by its natural soil ph.

The experimental group (treated with SOCKONG) from the first to day 10 of observation was stopped the growth in the preceding statements because treated mustards were shocked to the SOCKONG components as organic fertilizer that contain NPK (nitrogen, phosphorous and potassium) from the materials use. NPK is 15-15-15 fertilizer that boost total growth of plants. It gives energy to the any kind of plants, that is also contain in chemical fertilizer. There were also magnesium, nitrogen, manganese, and calcium. The disturbance of treated mustard was affected to total growth at that stage for experimental mustards.

Day 20 for both experimental and control mustard were big difference, control mustard stopped the growth, there were

many yellowish and rotten leaves, many insect bites, some of them were survived but majority would not but 19th mustard plants would not. It was totally go off. Contrastingly, Experimental were improved leaves height, length, and weight. The Effect of SOCKONG was very much manifested.

At day 30 for experimental mustard were ready to harvest. All of leaves were green, length, width of leaves was progressed, weight of mustards was increased. Contradictorily to control group or untreated mustard, majority of them yellowish in color; the too much discoloration of mustard exhibited the absence of SOGCKONG fertilizers.

In this study, it was proven that brown sugar is source of molasses that give energy to the plants, and fungicide as well.

Effectiveness of SOGCKONG composting came from all the ingredients such as, molasses, secreted from brown sugar that breakdown microorganisms to the soil. It contains high concentration also iron, potash, and Sulphur. It acts as fungicide. It also contains of minerals such as calcium, potassium, magnesium, potassium, phosphorous, manganese.

Onions is a disease resistance. It also source of potassium, calcium, iron magnesium and copper.

Garlic supplements were known to boost the function of the immune system, Allicin is an organo-sulfur compound obtained from garlic, a species in the family Alliaceae. The allicin generated is unstable and quickly changes into a series of another Sulphur. Containing compounds such as diallyl disulfide. Allicin is part of a defense mechanism against attacks by pest on the garlic plant. Garlic is organic pesticide. It is repellant and sending mot pest scurrying away in a hurry.

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Water Spinach or kangkong contains Vitamin, B and C. It also contains minerals such as calcium, magnesium, potassium and phosphorous. phosphorous help to any plants for flowering. Kangkong is best for 15-15-15 fertilizer. It is NPK used as an active bio fertilizer this is important fertilizer for plant growth.

The SOGCKONG was good soil enhancers and enriched the nutrient of plants. SOGCKONG produced the micro-organisms such that swept away fungi bacteria and other insects. The SOGCKONG was good soil enhancers and enriched the nutrient of plants.

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SOGCKONG is an organic compost that contains of nutrients and minerals that vital to plant growth. It has high concentration of sulfur, iron, and potash. It also contains calcium, potassium, phosphorous, manganese, magnesium, molybdenum, and trepan that provides and promotes the organic vegetable production that improve the learner's nutrition.

The effectivity of SOGCKONG as organic composed fertilizer was evidently seen in the pictures presented in the preceding pages. The SOGCKONG components came from the brown sugar, onion, garlic, charcoal, and water spinach that enhanced soil and enriched the growth of plants.

SOGCKONG is source of energy for the total growth of plants. It is source of micro- nutrients and mineral as well as fungicide and insecticides that stay away to plants. SOGCKONG Is give multi -purpose for plants.

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SOGCKONG is a source of Nitrogen, phosphorous and potassium or NPK are the "big 3" in a commercial fertilizer. Each of these fundamental nutrients plays key roles in plant nutrition. Nitrogen is the most important nutrient and the plant absorb more than any other element. Nitrogen is used by plants for lots of leaf growth and good green color. Potassium is used by plants to help form new roots, make seeds, fruits, and flowers. It is also used by plants to help fight diseases. Potassium help plants make strong stems and keep growing fast. Phosphorous is vital for strong growth. Insufficient phosphorous in the soil will cause stunting in crops. use phosphorous for photosynthesis and energy and nutrient transport. It also encourages the growth of roots and blooming but also helps plants to withstand stress and diseases. It also hastens maturity.

SOGCKONG is eco-friendly. It is non-synthetic substance that added to the soil to enhance the total growth of mustards in experimental group. It is friendly market price for the small-scale farmers because the ingredients are always cost available in the market. It is encouraging the growth of any plants for vegetable and fruit production. The slow of organic released of fertilizer reduces nutrients that leaching thus maintained the soil fertility.

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