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Performance and Growth of Pechay Using Fermented Plant Juice

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***Abstract*—** This paper presented the effectivity of Fermented Plant juice in pechay plant. The study was conducted at Libertad, Banate, Iloilo. There were total of 5 treatment 3 replication laid out in Randomized Complete Block Design (RCBD) there are 3 replication with 5 treatments. The measurement of the width and counting the number leaves of the pechay were done every week. As to the result researcher found out that the higher growth the concentration of the Fermented Plant Juice, the higher growth of the pechay plant and the other levels of Fermented Plant Juice such as 50ml. Fermented Plant Juice are lesser growth as compared to 100ml. of Fermented Plant Juice. Therefore, the researchers recommend the Fermented Plant Juice to be used by farmers as fertilizer rather than using commercial fertilizer.

***Keywords*—** pechay, fermented plant juice, growth, performance.

I. INTRODUCTION

Fertilizer is the main factor used in order that the plant will grow healthy. Using inorganic or organic fertilizer bases is one of the best mutual traditional practices in vegetable production. Pechay (Brassica napus L.) is a group of the Brassiceae family and one of the common vegetables in the Philippines. It is also one of the oldest green vegetables in Asia. Therefore it plays vital role in the Philippine economy as well as in the nutrition of the Filipino people. Pechay is used mostly for its young, but fully expanded tender leaves.

The most potential bases of organic fertilizers is compost. Composts are a formula of organic fertilizer; they are measured low-analysis fertilizers because they contain about 1% N and P and their organic nitrogen mineralization rate is about 10% [1]. In current years, foliar fertilizers, particularly organic ones, have flourished in the agricultural fertilizer marketplace [2].

Rising vegetables has remained as a practice for eras in cultured nations. Vegetables are a very significant food commodity [3]. It is highly recommended source of income and a sideline even for limited space adopting the common vertical gardening with the use of recycled bottled/containers as planting media [4]. In marketable production, the use of commercial compost fertilizer together with commercial effective microorganism is suggested for higher growth and yield[5]. Fermented Plant Juice is used in solutions for seed and soil treatments and plant nutrition. It contains of the young shoots of vigorously developing plants that are permitted to ferment for approximately 7 days with the used of brown sugar [6].

The aim of this study is to determine the performance in growth of pechay using fermented plant juice. This can also promoted environmentally friendly method in growing a pechay.

II. MATERIALS AND METHODS

Materials

The materials used in this study are kitchen knife, plastic container, 1.5 litre empty bottle, cloth bag, pail, string/rubber band, paper, cloth, pechay seed, garbage bag, seed tray, molasses, banana leaves, chopping board, weighing scale, sprinkler, hand towel, spade tray, ripe banana leaves and basin.

Research Methodology

This study was conducted for a period of four to five weeks as the time requirement of pechay for harvest period. The study was conducted at Libertad, Banate, Iloilo. There were fifteen (15) plants, planted in fifteen pots which one (1) pechay plant per pot. The seeds was purchased at the accredited agricultural supply in the Municipality of Banate, Iloilo. The seeds was planted in the seed tray. Healthy and well-hardened seedlings was selected for transplanting. Seedlings are transplanted in 7 days after sowing when the seedlings are about 2 -3 times tall or when seedlings have at least 2 -3 true leaves. Transplanting was done early in the morning around 6:00 AM when the heat is less intense to minimize transpiration of the seedling which permit them to recover faster.

The treatment of the height and number of leaves of each pechay was check once a week. The plant were checked by counting the numbers of leaves and measuring the length and width of each plant. The

Seedlings are transplanted in 7 days after sowing when the seedlings are about 2-3 times tall or when seedlings have at least 2-3 true leaves. The average measurement was calculated for the variation of the treatment.

Experimental Layout

Table 1: *Factorial Complete Randomized Design (FCDR)*

R1	R2	R3
B	C	A
D	B	D
E	A	C
C	D	E
A	E	B

Fermented Plant Juice

The following treatment was used in the study:

- Treatment A (50 ml of Fermented Plant Juice. With 50 ml water)
- Treatment B (100 ml of Fermented Plant Juice. With 50 ml water)
- Treatment C (150 ml of Fermented Plant Juice. With 50 ml water)
- Treatment D (200 ml of Fermented Plant Juice. With 50 ml water)
- Treatment E (Control of Intervention)

Application of Treatments

There were total of 5 treatment 3 replication laid out in Randomized Complete Block Design (RCBD) there are 3 replication with 5 treatments.

T1 applied with 50ml of Fermented Plant Juice with 50ml plain water. T2 applied with 100ml Fermented Plant Juice with 50ml plain water.

T3 applied with 150ml of Fermented Plant Juice with 50ml plain water.

While, T5 is the control or no intervention. The application of different treatments will be done every 7:00 AM in the morning and three times a week.

The different treatment of the amount of concoction are applied in each pot.

Water Management

Water the plants when necessary. It is desirable that the plants receive sufficient moisture for the early stage of growth.

Weeds Management

Remove the weeds near base of the plants before the first fertilizer application. Cultivate and hill-up the soil juts after fertilizer application to cover the fertilizer and to control weeds. Mulching also conserve soil moisture aside from controlling the growth of weeds.

Pest and Disease Management

The use of natural method of getting the insects or picking wherein the pechay are raised from the soil to prevent fungal disease development especially on the leaves. If the disease is caused by fungus, remove the damage leaves. If it is caused by a virus or bacterial, pull-out and burn immediately the whole plant to prevent spread of the disease to other healthy plants. Use fungicides if needed in order to maintain a good quality plant.

Data Gathering

There were 15 healthy plants of pechay was used in the study. The 15 healthy plants of pechay were planted in the 5 days after transplanting. A replanting of missing hills will be done. The number of leaves of the plants, width and length of leaves were checked after harvesting.

The treatment was done 7:00AM in the morning. Three times a week when the study started after 7 days of transplanting. Each plant was given different amount of concoctions base on its treatment.

The measurement of the width and counting the number leaves of the pechay were done every week. The measurement of the plant of each were done after treatment of forty – five days or after harvesting. Measurement were taken 7:00AM in the morning for the number of leaves, length and width of leaves and for the final length and width of the crops were gathered after harvesting.

III. RESULTS

Base on the observation of the researcher the different levels of Fermented Plant Juice when applied or introduce to the pechay plant, the researcher observed that the growth and yield of pechay vary with different levels of Fermented Plant Juice.

The researcher found out that the higher growth the concentration of the Fermented Plant Juice, the higher growth of the pechay plant and the other levels of Fermented Plant Juice such as 50ml. Fermented Plant Juice are lesser growth as compared to 100ml. of Fermented Plant Juice.

While 50ml. of Fermented Plant Juice the researcher observe that is was exceed because the growth was not good compared to 100ml. on the other hand the 200ml. of Fermented Plant Juice was almost the same with 150ml. Therefore the researchers deemed it right that 100ml. of Fermented Plant Juice should be used in pechay plant. The growth of pechay in the set-up was normal, and only water was introduced and no other intervention.

Table 2: *Fermented Plant Juice Growth*

FPJ	No. Leaves	Height
A1 50ml	4	6cm
B1 100ml	5	7cm
C1 150ml	5	8cm
D1 200ml	5	5cm
E1 control	4	5cm

FPJ	No. Leaves	Height
A2 50ml	5	6cm
B2 100ml	6	8cm
C2 150ml	4	6cm
D2 200ml	5	5cm
E2 control	5	5cm

FPJ	No. Leaves	Height
A3 50ml	4	4cm
B3 100ml	6	6cm
C3 150ml	5	5cm
D3 200ml	5	5cm
E3 control	4	5cm

CONCLUSION

Based on the results presented on the study, the researchers concluded that the greater the concentration of Fermented Plant Juice, the higher the possibilities of growth of pechay plant. Furthermore, this study will help farmers endeavor to yield good harvest and spend less in terms of applying fertilizer.

RECOMMENDATION

Therefore, the researchers recommend the Fermented Plant Juice be used by farmers as fertilizer rather than using commercial fertilizer. Because the best solution for farmers in such situations is to switch to commercially sold fertilizer to the natural fertilizer have immense benefits for the soil and crop production over time, organic fertilizer will make your soil and plant healthy and productive. The farmers used the organic fertilizer the environment friendly benefited because of the organic fertilizer prevent soil acidity and soil erosion.

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