The Compost Made of Sludge from Banglen Water Treatment Plant to grow the baby corns

1. Abstract

To experiment by mixing the compost made of sludge and organic waste at the ratio of 1:2 with chemical fertilizer for 5 different ratios i.e. 0:1, 100% sludge, 1:1, 1:3 and 3:1 by weight, the result shows that it can significantly boost the crop of baby corns to reach 10,099 kg./rai by the optimum ratio of 1:3. The crop from this ratio substantially differs from the crop produced by other ratios. However, its productivity is close to the one produced by 100% chemical fertilizer which generates 9,924 kg./rai. The second and third ranked ratio between the compost and chemical fertilizer to boost the crop of baby corns are 1:1 and 3:1, while, 100% sludge is the poorest ratio.

2. Introduction

The process to treat the natural raw water always creates the sludge which is from the sedimentation process due to the chemical reaction with liquid alum and polymers. This process is carried out by Banglen Water Treatment Plant of TTW Public Company Limited with maximum capacity of 440,000 cubic meter/day. Our water treatment plant generates the sludge around 20 ton/day causing the difficulty in transportation and landfill.

3. Objectives

3.1 To study the feasibility to produce the compost from sludge and organic waste in order to substitute the soil.

3.2 To study the result of the usage of the compost made of sludge and organic waste together with chemical fertilizer towards the growth of baby corns.

4. Results

4.1 To use the compost made of sludge and organic waste and chemical fertilizer at different ratios will significantly cause the different growth rate and productivity for baby corns.

4.2 To use the compost and chemical fertilizer at ratio of 1:3 by weight will provide the highest growth rate and productivity to baby corns for 10,099 kg./rai and substantially differs from other ratios. Anyhow, this productivity is close to the crop produced by 100% chemical fertilizer which generates 9,924 kg./rai. The second and third ranked ratio between the compost and chemical fertilizer to boost the crop of baby corns are 1:1 and 3:1, while, 100% sludge is the poorest one.

4.3 This study is the guideline to support and encourage the usage of sludge from the water treatment plant to benefit for agricultural activities, reduce production cost, and subside the environmental impact incurred by the sludge removal.

Procedure

1.Preparation and Planning

Step 1 Collect the soil from Banglen district, Nakhon Pathom and crash such soil to become small particles and put into the pot with 55-centimeter diameter and 37-centimeter height (24 inches pot) about 40 kg. each for totally 15 pots.

Step 2 Plan the experiment as Completely Randomized Design for 3 repeated times by 5 different ratios of the sludge, the compost, and chemical fertilizer as shown below:

A1 : 100% chemical fertilizer
A2 : 100% sludge
A3 : The compost : Chemical fertilizer = 1:1 by weight
A4 : The compost : Chemical fertilizer = 1:3 by weight
A5 : The compost : Chemical fertilizer = 3:1 by weight

2.Planting

Step 1 Put the seed in the soil hole with chemical fertilizer, formula number 16-20-0 together with the compost at the bottom for each ratio. The seed should be placed around 2-3 seeds per hole and the distance between each of hole should be 25x25 centimeters.

Step 2 When baby corns reach 15 days old, they shall be removed but leaving only 1 baby corn per pot.

3.Maintenance

Step 1 Watering: When the baby corns are just sprouts, water them every 1 – 2 days. When they reach 50-60 centimeters height, water them every 2-3 days around 1-1.5 liters each time.

Step 2 Weed removal : Remove weeds by hands every 1-2 weeks.

Step 3 Stamen removal: When the baby corns are 35-45 days old, remove their stamen to sterilize and prevent the breeding.

Fertilization: When the baby corns are 20 days old, fertilize them by chemical fertilizer, formula number 21-0-0 together with the compost as per the suitable ratio by putting around their trunk and finally hoeing the soil.

Harvesting: When the baby corns reach 55-60 days old (2 months old), harvest them.

4. Recording and Sampling

Step 1 Growth of baby corns is considered below:

1.1 The height of trunk, measured from the base line to the end of the longest leaf

1.2 Diameter of trunk, measured around the base line

Step 2 Productivity and property of baby corns

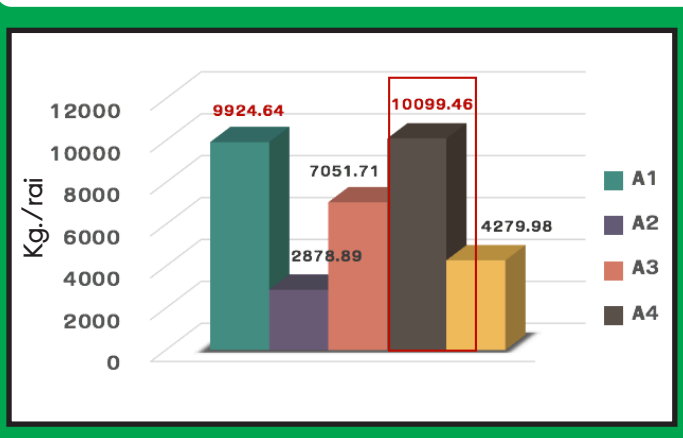
2.1 The number of sheaths per area (rai)
2.2 The size of sheath
2.3 The weight of sheath including shell
2.4 The sheath of sheath excluding shell
2.5 The weight of shell and silk
2.6 The weight of remaining trunk after harvesting
2.7 The total weight of by-product (total weight of topic no. 2.3, 2.4, 2.5)

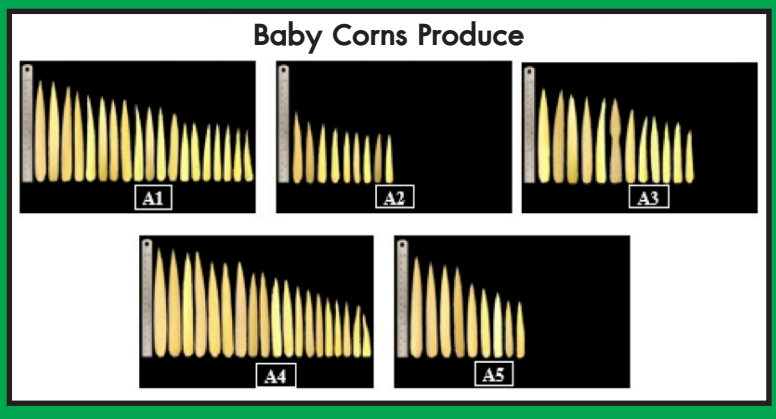
5. Suggestion

5.1 This experiment was done only 1 crop and applied for the baby corns with short duration since the beginning of growth until harvesting (2 months). This experiment and its data can be applied for other similar plants with the shorter or longer duration for various benefits.

5.2 By-product of baby corns i.e. trunk, bark, and silk can be used to feed the pets as the added value.

5.3 The result can be further developed to become the manual to produce the compost by sludge from the water treatment plant and organic waste in order to grow the baby corns.





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