

Comparison Of Farming Method In Terms Of Crop Yields Of Pechay And Alugbati

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Abstract: *Since humans first started farming, they have developed a variety of techniques and procedures that have made producing plants more convenient over time. This study was carried out by the researchers to learn more about the application of electro-culture tradition. This approach is more favored, as the researchers have demonstrated. The researchers found that the plant can develop more quickly through electro-culture without the need for chemicals.*

Keywords — soil fertilization, cultivation, electro-culture, magni-culture

I. Introduction

Humans rely agriculture to meet their basic requirements for things like food, clothes, and shelter. According to studies, a review on Electro-culture, Magniteculture and Laser culture to boost plant growth [1]. Impact of cover crop use on a Southeastern Minnesota Soybean and Corn Field: An analysis of Soil Health and Macroinvertebrate Communities [2]. Solar-powered Electroculture technique for backyard farming [3]

Alugbati, often referred to as Malabar spinach or Ceylon spinach, is a well-liked vegetable crop that is grown extensively in the Philippines as well as other tropical areas like Southeast Asia and Africa. Native to India, this succulent, silky, twining, herbaceous vine requires little maintenance, is very simple to cultivate, and offers a host of health advantages due to its high nutrient content. Alugbati' (green variety) was purchased from Mintal Public Market, Davao City, Philippines. The powder was prepared from the fully expanded leaves (Soriano, 2020)

Pechay is a significant vegetable crop that is high in vitamin C and contains Fiber and significant levels of nitrogen molecules known as indoles both appear to be help reduce the risk of different cancers. A plant with an extraordinarily brief life cycle of 30 to 45 days has been created by selective breeding (Acero, 2013). Studies on fertilizers for agricultural productivity have thus far concentrated on both organic and inorganic forms. Fewer studies a comparison of the responses of plants to several types of solid and liquid fertilizers and application. Consequently, this investigation concentrated on the results of utilizing various kinds and concentrations of organic and the development and output of Pechay using various applications of inorganic fertilizer. Pechay applied with different levels of compost as organic fertilizer and determines the effect of organic fertilizer in terms of plant height, number of leaves per plant, fresh weight per plant and leaf area. (R. Gonzales, 2015)

A Review on Electroculture, Magniteculture and Laser Culture to Boost Plant Growth [1]

In this article, we used methodology of literature survey. In this short literature survey, we discuss some methods which may have great impact in terms of plant growth and also reduce time needed to grow. We tried to include not only literature from the Western publications, but also from Eastern Europe and also Asian authors, because some of the ideas are quite old. (Victor et al., 2021)

Impact of cover crop use on a Southeastern Minnesota Soybean and Corn Field: An analysis of Soil Health and Macroinvertebrate Communities [2]

I sampled macroinvertebrates at the six locations I took soil samples. To do this, I placed a 25 x 25 cm plot and dug down the depth of my trowel (approximately 12cm) and then sorted through the unearthed soil, placing all organisms I saw in a zip lock bag. I spent at least 15 minutes at each site hand-picking macroinvertebrates. Once in lab, I preserved the specimens in 70% ethanol and identified them to the best of my ability using mostly online resources. I used the three ecological groups – anecic, epigeic, and endogeic – for separating earthworms and identified all the other organisms down to at least order, sometimes going further to family, genus, or species. Statistical Analysis I ran statistical tests using R, version 3.2.4 with XQuartz 2.7.8 and created graphs to accompany this analysis in Excel for Mac 2011 version 14.5.7. (Reyes et al., 2019)

Solar-powered Electroculture technique for backyard farming [3]

The project study used engineering and planning type of research which involved the use of plans, procedures and strategies to come up with the working prototype. Conceptual literature and related studies were considered in the construction of the proposed project. The evaluation of the existing

electroculture included the analysis of the design, construction and operation of the previous models. (Reyes et al., 2019)

II. Materials and Methods

2.1. Procurement of Different Sources of Organic Materials

Compost, urine, and worms are a few examples of organic fertilizers that are helpful while growing pechay. The best organic fertilizers are compost, manure, and worm castings because they may give your crop a good amount of nutrients. Alugbati is a perennial herbaceous, twining, succulent plant that is used for its edible parts. Ten calories are included in a serving size of 44 grams. It contains 21 mg of magnesium, 50g of vitamin B9, 0.65 mg of iron, 55 mg of calcium, and 0.049 mg of copper. Microorganisms, tiny animals, and living and dead plants make up soil organic matter (OM). Things that we consider dead, such as dried-out, brown leaves or banana peels, are actually brimming with microbiological life. There can be a billion microorganisms in a teaspoon of compost or soil. (Traunfeld, 2020)

2.1.2. Composting Process

Three heaps were created utilizing various basic materials from various origins. This comprises half a bag of cow manure, one cellophane chicken poo, and one sack of wood dust. The entire pile was entirely covered with a plastic sheet in the shade to keep the heat from decomposition and reduce water evaporation and ammonia volatilization. The organic components were properly stirred twice a week to minimize overheating and aerate the pile for a speedier breakdown process. Watering was done on a regular basis to keep the composting materials wet. After 3 months of decomposition, the compost was retrieved. (Waqas, 2023) Composting is the biological conversion of the solid waste of plant and animal organic materials into a fertile matrix through numerous microorganisms, including actinomycetes, bacteria, and fungi, in the presence of oxygen.

2.1.3. Seedling Production

Pechay can be buried in the ground directly or indirectly. Direct seeding can be done either by spreading or by row-sowing. Raking or spreading extra top soil will allow to cover the seeds to a depth of roughly 1 cm. Water comes right after

planting. Rows of Alugbati should be about eight inches apart, and they should be planted about 1/4 inch deep. Alternately, scatter seeds evenly over the soil and afterwards thin the seedlings so that they are eight inches or less apart. Continually moisten the soil. The plants can blossom and produce bitter leaves if the soil dries up. Producing seedlings and transplants is a crucial aspect of growing crops for floriculture and vegetables. (Runkle, 2022) Quality young plants are a high-value product that can improve early establishment of crops; increase finish crop quality, uniformity, and yield; and decrease production time.

2.1.4. Transplanting

After 2 weeks of Pechay it was transferred per pot so that they would grow in different places and get nutrients. Same as Alugbati, it was transferred when the leaves got sprout and the researchers continued to take care of the plant to ensure its growth. (Muragi, 2019) The transplanting operation is one of the most labor intensives in vegetable production. India comes in second only to China as the world's largest producer of vegetables.

2.1.5. Experimental Design and Treatment

In the process of cultivating pechay and alugbati, the researchers added copper to the alugbati to give it a support system while it was growing. The researchers discovered that the plants in the experimental group produced more products than the control group.

2.1.6. Harvesting

The researchers observed that the alugbati's length increased by 17.3 inches in fifteen weeks and weighed more than 1/4 kilogram. During the growth of pechay it has gathered a height of (18.43cm), leaf length (10.29 cm), and the weight is (7.03cm) after 15 weeks of care it results to 1kg of weighed.

2.2. Data Collection

The process that the alugbati and pechay went through and was observed is associated with a copper that was attached to the alugbati and pechay, assisting them in growing more quickly and stabilizing their growth over the course of 15 weeks.

III. Research Design

The research employs experimental research design. Crop yields have been demonstrated to rise dramatically with electroculture farming. Since the electric field improves the plants' ability to absorb nutrients, resulting in increased growth and production. Water Conservation: Electro-culture farming can cut water consumption by up to 50%. The researchers built a fence out of one meter of bamboo. Bamboo has several uses, the most frequent of which is construction. When the researchers planted the alugbati, they built a bamboo fence-like cover to allow the alugbati to propagate through it. For pechay, the Researchers prepared a sizable disused container, organic soil, our homemade organic fertilizer, and fifteen flowerpots were the items employed for a better development.

IV. Subjects of the Study

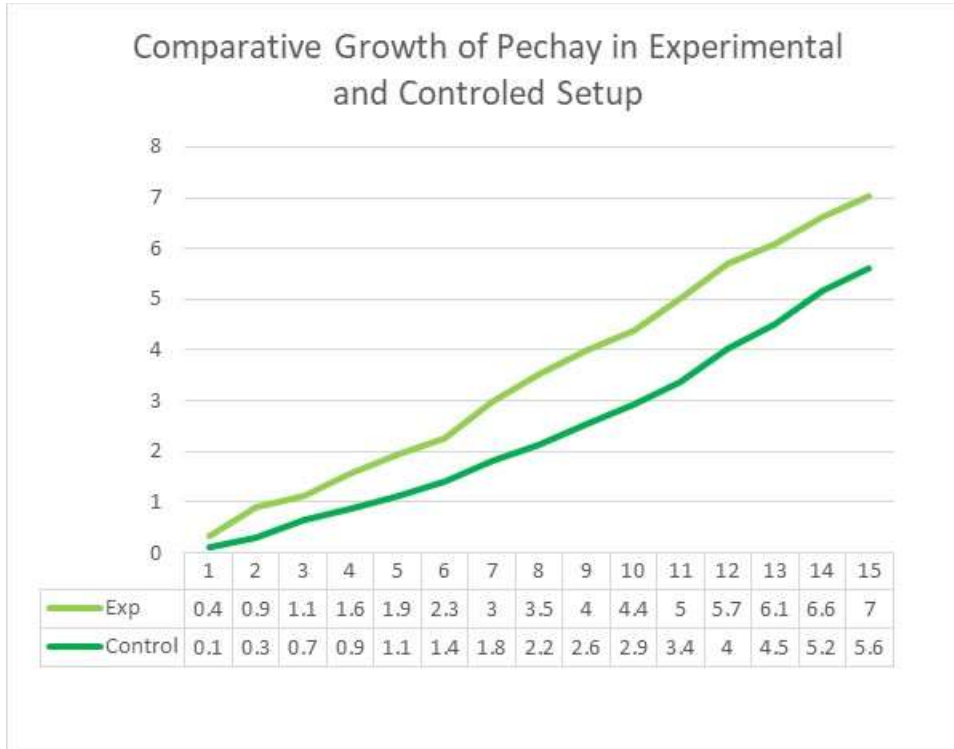
Agriculture is the art and science of tilling land, producing crops, and rearing animals. It entails preparing food items from plants and animals for human consumption and supplying them to markets. Agriculture produces the majority of the food and textiles used worldwide. Pechay is a leafy, shallow-rooted, cool-season crop, but if provided enough moisture, it may withstand warmer temperatures. Alugbati is one of the vegetables that is eaten most frequently in Asia, but its health advantages have not received much attention. It is historically acknowledged as a medicinal plant having anti-bacterial, anti-oxidant, and anti-cancer potential and is known to demonstrate a wide variety of biological actions.

V. Data Analysis

This study was carried out to see if there is any difference in growth between the experimental group and the control group of the plant pechay that was planted directly in the pot and the alugbati that has been cultivated and accessorized and to see which of the two cultivated plants can produce more products employing the experimental method and the control method.

VI. Results and Discussions

General Observations:



4.1. Growth of Pechay



The components required to prepare the soil for pechay development were prepared by the Researchers. A sizable disused container, organic soil, our homemade organic

fertilizer, and fifteen flower pots were the items employed. For a better development, the researchers added some organic fertilizers to maintain the growth.

4.1.2. Growth of Pechay within 3days



After three days, the researchers eventually observed the pechay's little growth. Even after the sprout appears, the

researchers continue to manage the soil to maintain its health. Fertilizers were still being distributed for improved results.

4.1.3. After 2 weeks of Pechay



At 2 weeks the pechay finally reached its full length of 4 centimeters. The supplies required to transfer the pechay were ready. Small flower pots are the resources required for the



plant resettlement. The flower pots are 8 centimeters in height and 10 centimeters wide. For pechays, it is the ideal pot.

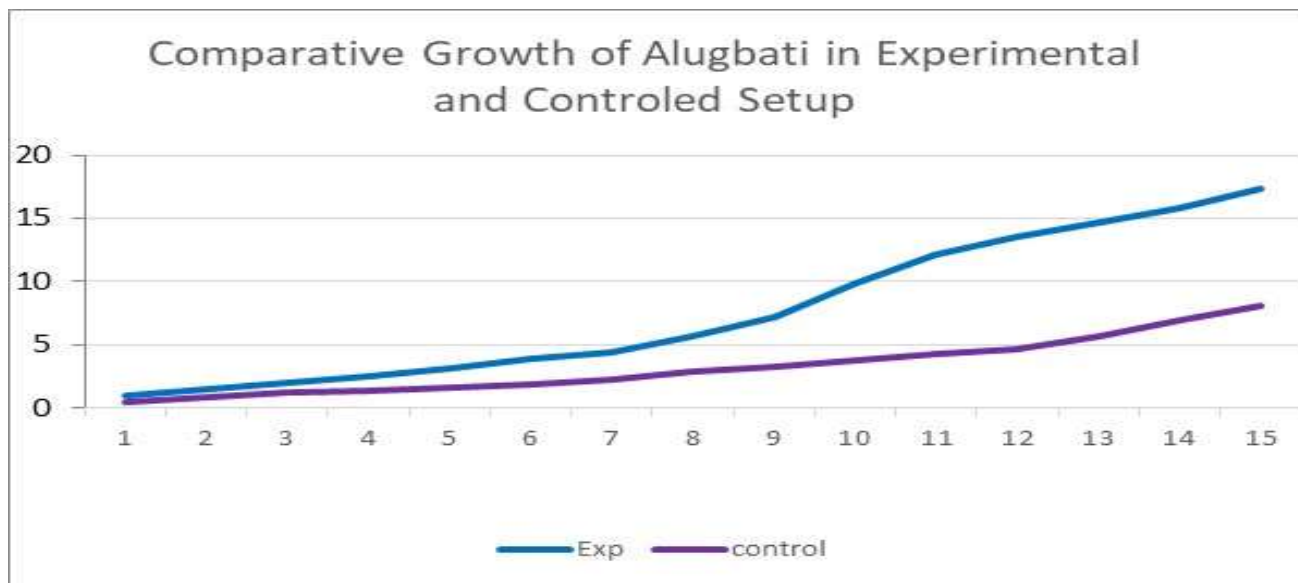
4.1.4. 7weeks and 4days of Pechay with Cultivation



The pechays had made significant strides by week seven. The researchers studied 20 plants, but only 15 of them made it. due to inadequate sunlight and abrupt weather changes. The researchers also struggled with time management on a personal level. The plants are currently still being watched over, and they are receiving the necessary care and supplies.

4.1.5. 15 weeks of Pechay with harvesting

After 15 weeks, its breadth reached 7.03 in the experimental control and 5.62 in the control group; the survival of pechay in the suffuse sample was significantly reduced in the revised, covered plots in the two studies. from its roots, the researchers only plucked the fully grown leaves.



4.2.1. Alugbati



The researchers took precise measurements of the plant locations in order to make the alugbati preparations. About one centimeter was measured and then designed the plantation's floor plan. The researchers gathered the materials after the cultivation. The materials are pliers, bamboo sticks, and a coil of steel wire measuring 3 centimeters. Following

the cultivation, the team used the bamboo stick to make a fence-like structure. Since alugbati is a vine plant, this is done in order for it to spread out. There are six slots in a box, each with two to three seeds, while the other two have four seeds in total.

4.2.2. Alugbati within 3 weeks



In the first 3 weeks, you can already witness its growth. Small sprouts have already emerged and are providing a

wholesome hue. The first sprout appeared in the middle slot. The group took great care to provide the plant with proper

resources and attention. Because of the rapid shift of weather, the researchers took extra precautions in taking care of the

plants. Some of the seedlings did not grow in the same way as the others.

4.2.3. Alugbati within 6 weeks



The researchers see some poor alugbati leaves after less than six weeks. Following discussions with the other researchers, they came to the decision to trim the leaves. Because it could impact the other leaves. The fertilization procedure was

strangely out of balance, which is why the leaves turned out to be unhealthy, and the unexpected fluctuations in the weather were another major contributing factor.

4.2.4. Alugbati within 15 weeks



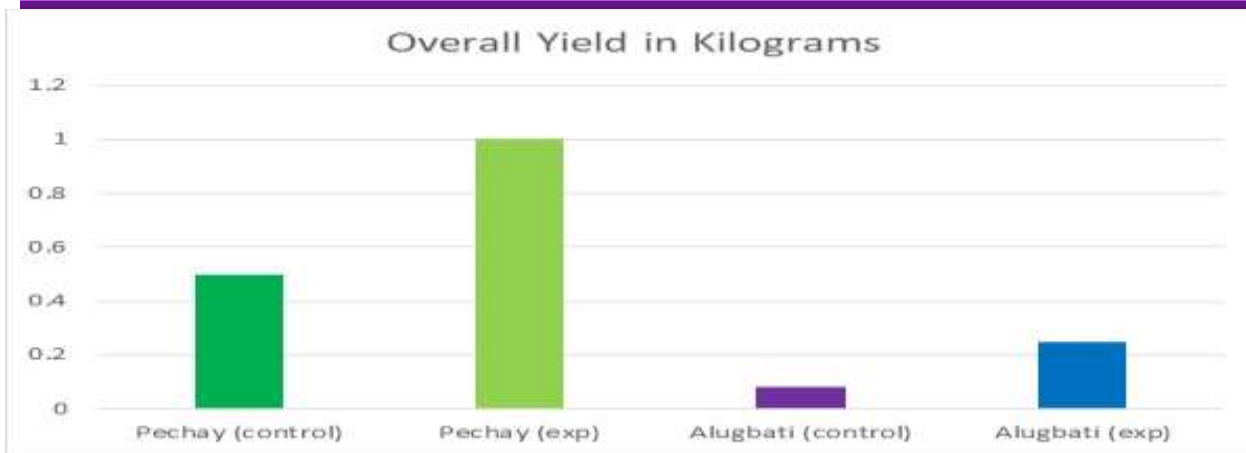
After four months, the alugbati has already developed its distinctive red stem color, which is visible in the middle slot. The bulk of the measurement for the alugbati, which was

taken, is 17.3. The cow manure is what allowed the alugbati to produce such robust leaves and stems.

VII. Synthesis of the Findings

The purpose of the study was to perform experimental and control studies on pechay and alugbati. The 20 pechay pots and 8 pairs of alugbati were successfully planted by the

researchers. For growing, the researchers make use of various discarded items that are commonplace in a home. Organic agricultural techniques were the ones that were employed by the farmers. The researchers were able to successfully produce a plant with the use of organic fertilizers.



VIII. Conclusions and Implications

The research COMPARISON OF FARMING METHOD IN TERMS OF CROP YIELDS OF PECHAY AND ALUGBATI provides knowledge about how effective the experimental method really is when it comes to growing plants and vegetables. This study identifies the ways of improving one's crops that can be a source of either one's income or their source of food. The researchers have accumulated enough crop yields for themselves after the harvesting process, which shows that in the course of 15 weeks the researchers successfully provide information that the experimental method that they used work. Some of the techniques offered are as follows methods for facilitating the growth of the control and experimental yield groups:

For quick growth, the researchers suggest the techniques:

Electroculture. In this strategy, the practice of applying strong electric fields or other sources of small air ions to growing plants, has potential to markedly increase crop production and to speed crop growth. (H. A. Pohl et al., 1981) The considerable evidence for its effectiveness, and the studies of the mechanisms for its actions are discussed.

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Cow manure. (Zhang et al., 2020) Cow manure is not only an agricultural waste, but also an organic fertilizer resource. Applying organic fertilizer is a workable way to counteract the degradation of the soil that comes from using chemical fertilizers excessively, which can alter the bacterial community composition and diversity in soils.

Soil Fertilization. (Berner et al., 2016) The enhancement of soil fertility was a crucial value already to the pioneers of organic farming, but the conservation of fertile soil is not always given enough attention. And yet, healthy natural soil fertility is essential for organic farming. Damaged and exhausted soils are unable to provide the required results. Soil fertility cultivation is a labor-intensive process. The purpose of the study was to perform experimental and control studies on pechay and alugbati. The 20 pechay pots and 8 pairs of alugbati were successfully planted by the researchers. For growth, the researchers make use of various discarded items that are commonplace in a home. Organic agricultural techniques were the ones that were employed by the farmers. The researchers were able to successfully produce a plant with the use of organic fertilizer.

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