*Effects of fertilized soil compared to non-fertilized soil in growth of Mung Beans (Vigna radiata)*

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1.

**Chapter 1**

**THE PROBLEM AND ITS SCOPE**

**Rationale**

Fertilizers are used by every farmer in the world since 2,000 to 3,000 years ago and until now. Fertilizers can help plants or crops grow from a small garden of plants and flowers to a large farm with some crops.

Wide range of fertilizers have been developed to help different plants and crops grow in different weather conditions. Without fertilizers, plants will struggle to replenish and get the nutrients in the soil.

Too much of fertilizers can also affect the plant. Some of these effects include algae blooms that causes the depletion of oxygen in surface waters, pathogens and nitrates in drinking water, and the emission of odors and gases into the air. Fertilizers can also increase air pollution, waterway pollution, and soil acidification.

Use of excessive quantity of synthetic fertilizers can also harm the human health. High levels of nitrates and nitrites in chemical fertilizers may cause some disease like hemoglobin dis order, Alzheimer’s disease and diabetes mellitus.

2.

**Conceptual Framework**

The focus of this study is to determine the difference of the effects of non-fertilized soil and fertilized soil in the growth of the mung bean (Vigna Radiata). The researchers aim to know which kind of soil is better for the mung bean (Vigna Radiata). This study will be conducted on the house of the researchers.

Diagram

Description automatically generated

3\.

**Statement of the Problem**

This research attempts to find evidence if fertilized or non-fertilized soil is more effective to the growth of the Mung Bean. More specifically it seeks to find the answers to the following question.

1. Which is more effective to the growth of the seeds, fertilized soil or non-fertilized soil?
2. How can the environment of the place affect the growth of the seeds.
3. Does the amount of water affects the growth of the seeds.
4. What can the fertilized soil do that the non-fertilized soil cannot and vice versa.

**Significance of the Study**

This study will help us know what the good and bad effect of the fertilized and non-fertilized soil to the plant is. Fertilizers play an important role to the world, providing crops with nutrients they need to grow and be harvested for nutritious food. Fertilizers also help deliver enough food to feed the world’s population. Fertilizers also is important to the farmers because it maintains the soil fertile, so the farmer can continue to grow nutritious crops and healthy crops. Farmers use fertilizers because it contains potassium, phosphorus and nitrogen that can help the plant grow.

4.

**Chapter 2**

**Related Literature**

A fertilizer is any material of natural or synthetic origin that is applied to soil or to plant tissues to supply one or more plant nutrients essential to the growth of plants. Many sources of fertilizer exist, both natural and industrially produced. It improves the growth and productiveness of plants. Fertilizers enhance the natural fertility of the soil or replace the chemical elements taken from the soil by previous crops. There are two types of fertilizer: organic and inorganic. In the broadest sense all types of fertilizers include any substance, living or inorganic which aids in plant growth and health.

Organic fertilizers was used by farmers 2,000 to 3,000 years ago and until now some people uses organic fertilizers to help their plants grow. The first chemical fertilizer was created by Fritz Haber a German citizen born on December 9, 1868. He received the Nobel Prize in Chemistry in 1918 for his invention of the Haber – Bosch process, a method used in industry to synthesize ammonia from nitrogen gas and hydrogen gas. Developed by industrial chemist Fritz Haber and scaled up by the chemical engineer Carl Bosch, the Haber-Bosch process takes nitrogen from the air and converts it to ammonia. This made it possible for the first time to produce synthetic fertilizers and produce sufficient food for the Earth's growing population.

Fertilizers are food for the plants. Fertilizers replace the nutrients that crops remove from the soil. Without the addition of fertilizers, crop yields and agricultural productivity would be reduced. All the nutrients in our food originally come from the soil. In order to create healthy crops full of nutrients, farmers need to work with a healthy soil. Farmers uses fertilizers because these substances contain plant nutrients such as nitrogen, phosphorus, and potassium that can help the plant grow faster and healthier.

Fertilizers are widely used on farms to produce more crops it is also used in our gardens because it helps on plant growth. There are issues about fertilizers that we face until now, fertilizers cost more than the organic ones which are made up with mixed leftovers and dried leaves. Fertilizers contributes to water contamination, contaminants include nitrates and phosphates. It can slowly kill nature in varying ways.

5.

Fertilizers widely used on our local farms this helps on the growth of the plants to produce more crops. This also makes the plants healthy, using composts as fertilizer can be a cheaper alternative to commercial fertilizers and also non-contaminant to the water and to the soil, example of this is coconut husk and manures.

6.

**CHAPTER 3**

**RESEARCH METHODOLOGY**

**Research Method**

This study is designed as a quantitative study, aiming to know which type of medicine is preferred by Junior High School students. A descriptive type of qualitative data, describing the situation that addresses the "what" question rather than questions about how, when, and why. This design involves collecting and analyzing the data that was gathered.

The researcher's used descriptive research design in collecting the data since the researchers aim is to know which type of soil is effective towards the growth of the mung bean. This design is preferred because it is concerned with answering the questions such as, how, what, which, when and how much. A experimental study is carefully designed to ensure complete description of the situation, making sure that there is minimum bias in the collection of data and to reduce errors in interpreting the data collected.

7.

**Research Environment**

The locale of the study is in the house of the researcher, which is located in Basak, Lapu - Lapu City. This study does not have respondents.

**Research Respondents**

This research study does not have any respondents.

**Research Instrument**

The instruments used in this study are Mung bean seeds, ruler, water, plant pot with fertilized soil and a plant pot with non-fertilized soil.

The mung bean seeds, fertilized and non-fertilized soil is the most important instrument for the study. These instruments would be used to determine if the fertilized or non-fertilized soil is more effective to the growth of the plant.

The third instrument used in this research is water, the water is used for the seeds to grow well, same amount of water is used for both of the soil to ensure fairness.

The fourth instrument is the pot, the pot is used for the seeds to grow there. The researchers were preparing 3 pots of each different soils to ensure fairness and to ensure that there is no bias.

8.

**Data Gathering Procedure**

After the instruments are gathered, the researchers then proceed to start the experiment, the research data will be gathered during the experimentation stage. The researchers first setup the plant b and plant a with different soil type but the same plant which is the Mung Bean. We then wait for 2-3 weeks for the plant to grow, the gathered results are then recorded in a table which consists of the following data, Plant Height, Date, Type of Soil, Water Quantity etc.

**Data Analysis**

The researchers used inferential analysis to describe the relationship of the growth of the mung beans to fertilized and non-fertilized soil. The researchers will also take pictures of the different soils to compare which is more effective. The researchers also used quantitative data to measure the plants growth and to determine which soil is more effective to the plant.

Measurements and data gathering is needed to compare the effectiveness of the non-fertilized and fertilized soil. The measurement used to determine the height of the plant is in centimeters

9.

**Ethical Considerations**

Ethics is observed during the experimentation process. Our goal is to prolong or improve the growth of the plant. The researchers are doing their best to keep the plant healthy and alive. The plant will be stored in a safe area free from animals and harmful insects. The plants will be watered regularly, the data will be collected based on what’s happening real time while the researchers are gathering. The researchers will do their best to keep the extraneous variable away from the experimentation area.