

Research Title: A Study of Soil Quality in Areas Where Ram Yai Trees Grow

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Abstract

The study of soil quality around Ram Yai trees was conducted at the Ram Yai area of the Trang Agricultural Research and Development Center, Palian District, Trang Province. The objectives of this **study are as follows** :1) To investigate the soil structure in the Ram Yai tree area,2) To examine the soil pH, 3) To measure soil temperature, and 4) to determine soil moisture.

The study was carried out using measurement methods based on the GLOBE program guidelines. Soil samples were collected and analyzed for soil structure, soil pH, and soil moisture around the Ram Yai trees.

The results showed that the soil in the Ram Yai tree area had a uniform structure, which was granular soil. The soil pH was slightly acidic, the soil temperature was 30°C, and the soil moisture was 10%.

Keywords: Ram Yai tree, soil quality, soil pH, soil moisture, soil tempe

Background and Significance

Soil is a fundamental natural resource that is extremely important to all living organisms, especially plants. Soil serves as a medium that anchors plant roots, supporting stems so that plants can grow upright and steadily. In addition, soil is a reservoir of water, air, and essential nutrients required for plant growth such as nitrogen, phosphorus, and potassium. When soil has suitable properties, it enables plants to absorb nutrients efficiently, resulting in healthy growth and increased longevity.

Soil with an appropriate structure contains pore spaces between soil particles, allowing for good aeration and water drainage that helps prevent excessive water retention, to be cause root rot. Moreover, soil pH plays a crucial role in the solubility and availability of nutrients. If the pH level is unsuitable, certain nutrients may become unavailable to plants, directly affecting their growth. Soil temperature and moisture also influence the activity of soil microorganisms, which play an important role in decomposing organic matter and enhancing soil fertility.

Ram Yai (*Artocarpus* species) is an important traditional medicinal plant, particularly in southern Thailand. Various parts of the plant, including leaves, young shoots, fruits, and roots, are used to treat a wide range of ailments such as fever, diarrhea, parasitic infections, and skin diseases. It is also consumed as a fresh vegetable and can be cultivated as an ornamental plant due to its medicinal properties and antioxidant compounds found in the ripe fruits. Furthermore, Ram Yai trees are valuable to the area of the Trang Agricultural Research and Development Center, which serves as an important learning resource and natural conservation site.

One of the most important factors affecting the growth of Ram Yai is soil. Soil provides physical support for roots and supplies water, minerals, and nutrients essential for plant growth. When soil has suitable characteristics such as good structure, appropriate pH levels, and optimal temperature and moisture conditions for plants to grow and develop effectively.

Therefore, this study aims to investigate the soil quality in areas where Ram Yai trees are grown by examining soil structure, pH, temperature, and moisture. The results will serve as baseline

data for the proper care and management of Ram Yai trees and provide guidelines for sustainable soil management to support healthy plant growth.

Research Questions

1. Is the soil structure in the Ram Yai planting area suitable?
2. Is the soil pH in the Ram Yai planting area appropriate?
3. Is the soil temperature in the Ram Yai planting area suitable?
4. Is the soil moisture in the Ram Yai planting area appropriate?

Research Hypotheses

1. The soil structure in the Ram Yai planting area is suitable.
2. The soil pH in the Ram Yai planting area is appropriate.
3. The soil temperature in the Ram Yai planting area is suitable.
4. The soil moisture in the Ram Yai planting area is appropriate.

Research Materials and Equipment

1. Soil samples collected from the Ram Yai planting area at three locations
2. Petri dishes
3. Beakers
4. Glass stirring rods

5. Distilled water
6. Filter funnels
7. Filter paper
8. Soil pH meter
9. Soil moisture meter
10. Soil thermometer
11. 20× magnification lens (macro lens for mobile phones)
12. Mobile phone
13. Notebook and pen

Research Procedures

1. Select the area around the Ram Yai trees and determine three soil sampling points
2. Collect soil samples from each point at an appropriate depth and place them in proper containers.
3. Examine the soil structure using a 20× magnification lens together with a mobile phone and record the observed soil characteristics.
4. Mix the soil samples from each point with distilled water in a beaker and stir thoroughly using a glass stirring rod.
5. Filter the soil solution using a filter funnel and filter paper.
6. Measure the soil pH from the filtered solution, conducting three measurements at each sampling point.
7. Measure the soil moisture in the area around the Ram Yai trees.

8. Measure the soil temperature in the area around the Ram Yai trees.

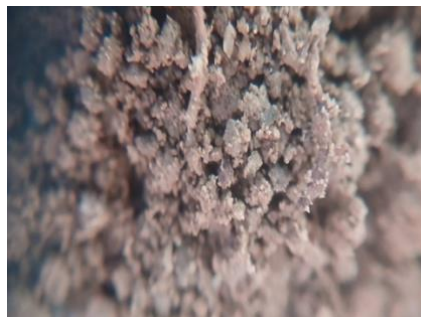
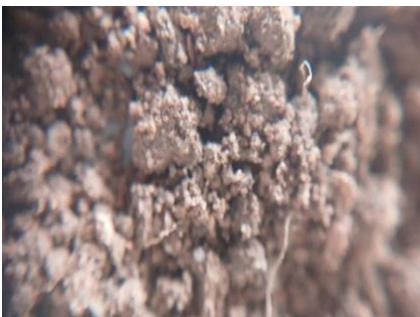
9. Record all measurement results in a table and calculate the average values.

10. Analyze the data and summarize the results of the study.

Data Analysis

The data analysis in this study was conducted by collecting data from soil quality measurements in the area where Ram Yai trees were grown at three sampling points. The study focused on examining the soil structure around the Ram Yai trees to determine its characteristics. Soil pH was measured three times at each sampling point while soil temperature and moisture were measured once at each point.

The obtained values were then used to calculate the average in order to describe the characteristics and quality of the soil that affect the growth of Ram Yai trees by the results to be presented in the form of tables and photographs.



Soil Structure in the Ram Yai Tree Area : The soil was found to have a granular structure to be suitable for plant growth because it allows good aeration and effective water retention.

Table 1 shows the results of soil pH measurements in the Ram Yai tree area.

The results of soil pH measurements around the large Ram yai tree			
The area where large Ram yai trees are planted	1st time	2nd time	Third time
Point 1	6	6	6
Point 2	6	6	7
Point 3	7	7	7
average	6.4		

From Table 1, it can be seen that the average soil pH in the Ram Yai tree area is 6.4

Table 2 shows the results of soil temperature measurements in the Ram Yai tree area.

The results of soil temperature measurements around the large Ram yai tree	
The area where large Ram yai trees are planted	1st time
Point 1	30
Point 2	30
Point 3	30
averag	30

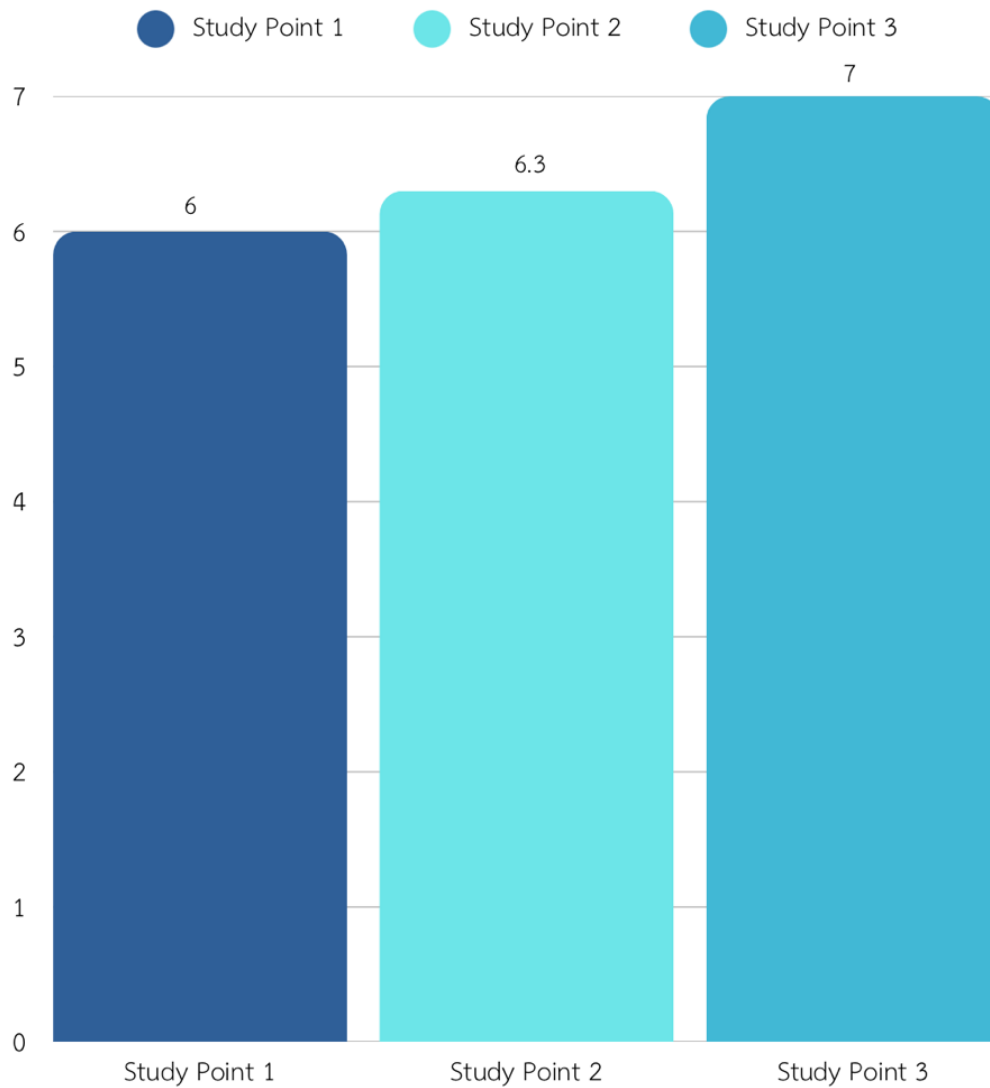
From Table 2, it can be seen that the average soil temperature in the Ram Yai tree area for 30°C.

Table 3 shows the results of soil moisture measurements in the Ram Yai tree area.

Soil moisture measurement results from the area around the large Ram yai tree	
The area where large Ram yai trees are planted	1st time
Point 1	15
Point 2	10
Point 3	5
average	10

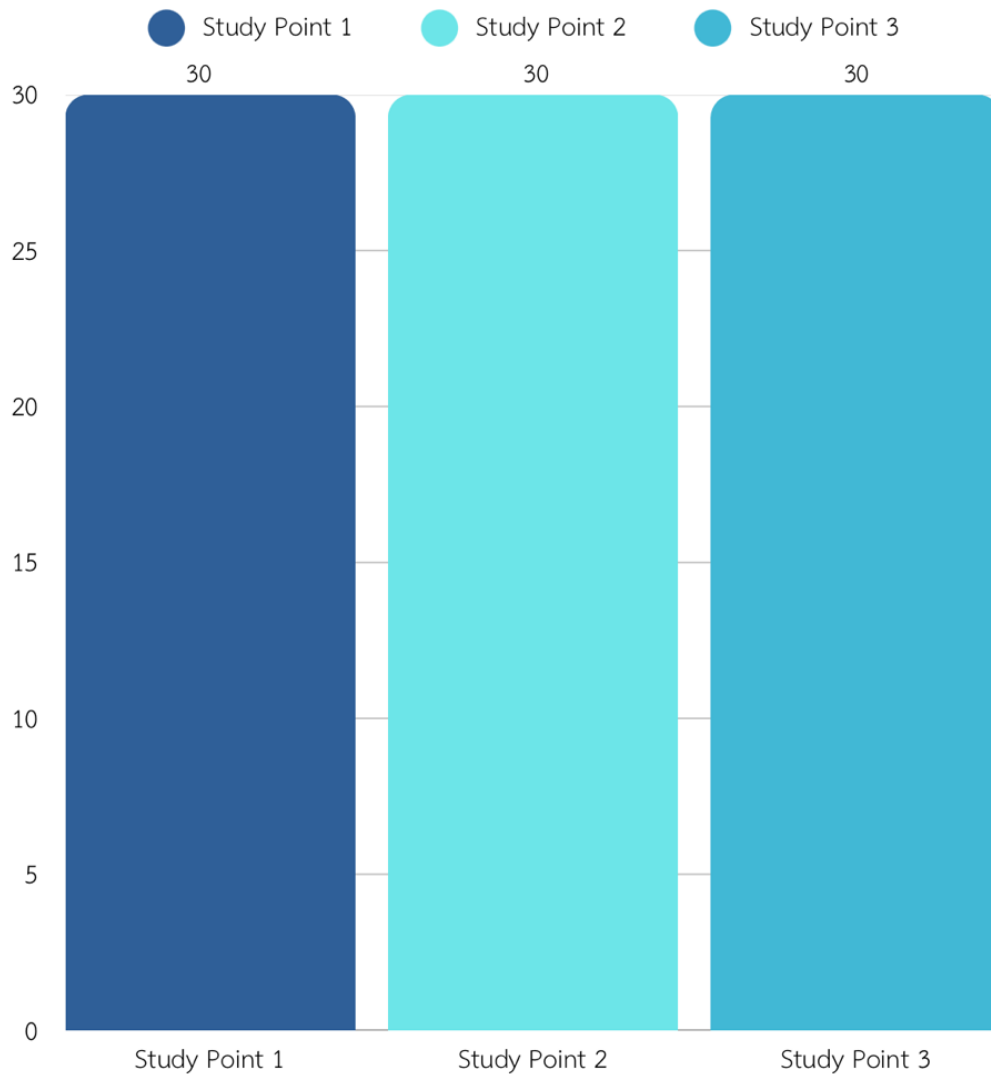
From Table 3, it can be seen that the average soil moisture in the Ram Yai tree area is 10.

Bar chart showing the soil pH values in the Ram Yai tree area



From the bar chart showing soil pH values in the Ram Yai tree area, points 1 and 2 are slightly acidic, while point 3 to neutral.

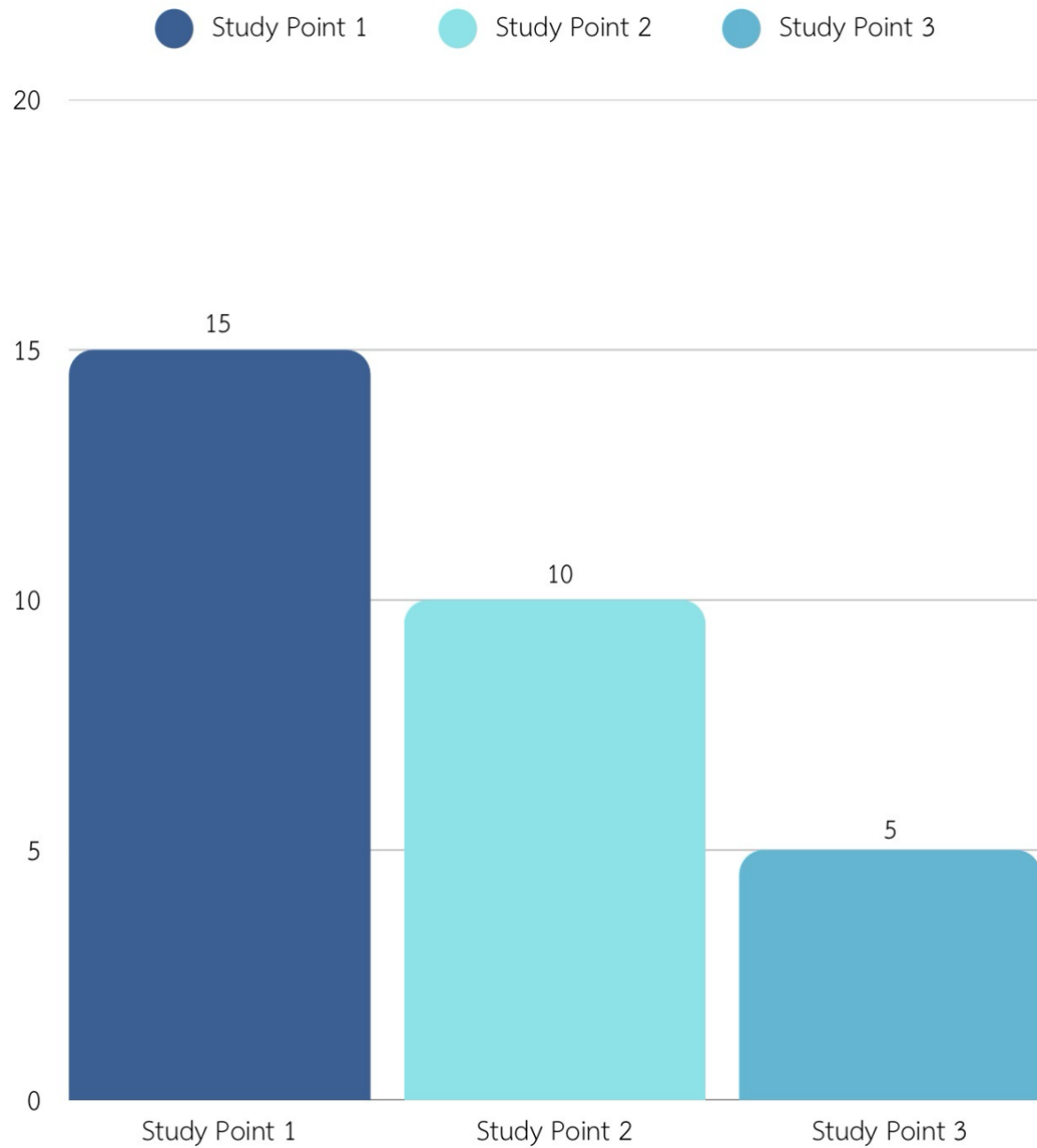
Bar chart showing the soil temperature values in the Ram Yai tree area.



From the bar chart showing soil temperature values in the Ram Yai tree area, it can be seen that all three points have the same temperature value of 30°C.

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Bar chart showing the soil moisture values in the Ram Yai tree area.



From the bar chart showing soil moisture values in the Ram Yai tree area, point 1 has a moisture value of 15, point 2 has a moisture value of 10, and point 3 has a moisture value of 5. The moisture levels at all three points are different.

Research Findings

From the study on soil quality in the area where Ram Yai trees grow, the findings are as follows:1)Soil structure: The soil in the Ram Yai tree area has a granular structure,2)Soil pH: The soil pH in the Ram Yai tree area is 6.4, which is slightly acidic,3)Soil temperature: The soil temperature in the Ram Yai tree area is 30°C and 4)Soil moisture: The average soil moisture in the Ram Yai tree area is 10%.

Conclusion and Discussion

From the study of soil quality in the Ram Yai tree area, it was found that the soil has a granular structure, which is suitable for plant growth because of allowing for good aeration and effective water retention. This helps plant roots absorb water and nutrients efficiently. The soil pH in the area is 6.4, which falls within the slightly acidic range, suitable for the nutrient uptake of most plants. The average soil temperature in the Ram Yai tree area is 30°C, indicating that the study area has relatively consistent environmental conditions. This is likely due to being under the same tree canopy and measuring at the same time. Considering the soil moisture, which has an average value of 10%, the soil conditions are appropriate for plant growth. Therefore, it can be concluded that the soil quality in the Ram Yai tree area is suitable for tree growth. The results of this study can be used as baseline information for the care and management of trees and soil in the surrounding area.

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