Carbon Sequestration of Sri Trang trees and White Samet trees in the Botanical garden at Wichienmatu School Trang, Province

Research Team: Mr. Pataadon Lomkhong
Mr. Phootanet Jittra
Mr. Passakorn Wongteppaboot

Advisors: Mrs. Kwanjai Karnjanasrimek
Mrs. Suteera Thacheen

School: Wichienmatu School, Mueang District, Trang Province

Grade Level: Mathayom 5

Abstract

This study aimed to examine the carbon sequestration of Sri Trang trees and White Samet trees in the botanical garden at Wichienmatu School, Trang Province. Measurements of the circumference and height of both tree species were conducted, and the data were used to calculate carbon sequestration using a carbon storage calculation program. The results indicated that White Samet trees had a higher carbon sequestration capacity than Sri Trang trees.

Keywords: Climate, Carbon dioxide levels, Tree circumference, Tree height

Introduction

Forest resources are crucial in Thailand, playing a vital role in sustaining life and maintaining the balance of nature. Forests significantly impact our planet by helping to mitigate global warming, exchanging carbon dioxide, preserving soil, and storing carbon. They absorb carbon dioxide from the atmosphere, which results from greenhouse gas emissions and global warming. Additionally, forests serve as essential sources of gas exchange for living organisms, contributing to ecological stability.

Studying the carbon storage capacity of trees is essential for conservation efforts. Wichienmatu School, a part of the botanical garden project, has a large number of trees, making it an ideal location for such research.

This study focuses on two tree species Sri Trang trees and White Samet trees. Sri Trang is the symbolic tree of Trang Province, while White Samet represents Wichienmatu School in Khuan Lobb Subdistrict, Mueang District, Trang Province. Our group aims to investigate the carbon storage capacity of these two tree species, utilizing the findings to support natural resource conservation and environmental restoration.

Research Question

How do the carbon sequestration capacities of the Sri trang tree and the White Samet differ?

Research Hypothesis

The carbon sequestration capacities of the Sri trang tree and the White Samet are different.

Variables

Independent Variable : Sri Trang trees, White Samet trees

Dependent Variable : Amount of carbon sequestration

Controlled Variables : Weather conditions, time period, sequestration method

Materials and Equipment

Clinometer

Measuring tape

Measuring rope

Study Locations

Sri Trang Tree: Latitude: 7.50419592° N
Longitude: 99.6301057° E

White Samet Tree: Latitude: 7.5042255° N
Longitude: 99.6301644° E

Sri Trang Tree

White Samet Tree

Study Locations

1. Circumference Measurement:
Use a measuring tape to measure the circumference and diameter at 1.30 m height.
2. Height Measurement:
Select five tall (4–5 m) trees per species. Measure the distance to the tree base (AC), eye level height, and angle of elevation (BAC) using a clinometer.
3. Height Calculation:
The height of the tree (meters) = (Distance (meters) × Tangent of the angle of elevation BAC) + Height from the ground to the observer's eye level (meters).

Variables

Software for Calculating Carbon Dioxide Sequestration of Sri Trang Trees and White Samet Trees:
https://me-qr.com/TG8qrzLp
GLOBE THAILAND:
https://globefamily.ipst.ac.th/globe-protocols/biosphere

Research results

Part 1 : Showing the carbon storage capacity of the Sri Trang tree in the botanical garden of Wichianmatuth School, Trang Province.

Sri Trang tree			
Order	Circumference (Cm)	Height (M)	Carbon storage capacity (KgC)
1	120	21.04	459.58
2	76	11.6	110.49
3	132	29.9	766.61
4	105	16.6	285.57
5	122	21.28	479.25
Overall average carbon sequestration capacity			420.3

Part 2 : Showing the carbon storage capacity of the White Samet tree in the botanical garden of Wichianmatuth School, Trang Province.

White Samet tree			
Order	Circumference (Cm)	Height (M)	Carbon storage capacity (KgC)
1	260	11.73	1140.05
2	128	12	305.56
3	125	14.35	345.92
4	170	10.7	468.53
5	130	9.6	254.86
Overall average carbon sequestration capacity			502.984