



A Comparative Study of Carbon Sequestration of Various Perennial Trees At Varee Chiangmai School, Chiang Mai

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Abstract

This study demonstrates that different perennial tree species have varying capacities for carbon sequestration, influenced by factors such as canopy cover, tree height, circumference, biomass, and growth characteristics. Although most areas of Varee Chiangmai School exhibited moderate to high canopy density, the absence of natural ground cover due to artificial grass limited additional carbon absorption at the ground level. The results showed that the Queen's Crape Myrtle and the Golden Shower Tree had the highest carbon sequestration potential, while the Silver Trumpet Tree had the lowest, highlighting the importance of species selection in urban green spaces. Overall, the findings of this research can be applied to environmental planning, particularly in selecting appropriate tree species to enhance carbon absorption, increase green space efficiency, and support sustainable environmental management in school and urban settings.

Keywords : Carbon Sequestration, Perennial Trees

Objectives

1. To measure and calculate the amount of carbon sequestered by various perennial trees within Varee Chiangmai School.
2. To compare the stored carbon quantity among different tree species.
3. To study the relationship between tree structural variables (circumference and height) and the amount of carbon sequestered.
4. To provide recommendations for the school's green space management to increase carbon sequestration potential.

Questions

1. Do different perennial tree species in Varee Chiangmai School sequester different amounts of carbon?
2. Is tree size (circumference and height) related to the amount of carbon?
3. Which tree species has the highest potential for carbon sequestration in the study area?

Materials and Equipment

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|---------------------------|---------------------------------------|
| 1. Tape measure | 2. Measuring tape |
| 3. Clinometer | 4. Calculator or calculation app |
| 5. GPS or mobile phone | 6. Data recording sheet |
| 7. Camera | 8. Computer for data analysis |
| 9. Excel or SPSS software | 10. Compass |
| 11. Data recording sheet | 12. Pen or pencil |
| 13. Camera | 14. Tape measure |
| 15. Densitometer | 16. MUC Local vegetation field guides |



Expected Benefits

1. Obtain data on the carbon quantity of each perennial tree species in the Varee Chiangmai School area.
2. Use as supporting data for planning to increase green spaces in Varee Chiangmai School.
3. Serve as an environmental learning resource for students.
4. Apply the data to the school's carbon footprint system.
5. Support tree planting activities according to the global warming reduction policy of Varee Chiangmai School.

Introduction

Climate change caused by increasing carbon dioxide from human activities has serious impacts on the environment and human life. Perennial trees play an important role in reducing atmospheric carbon by absorbing and storing carbon through photosynthesis, although their carbon sequestration capacity varies by species. Studying these differences at Varee Chiangmai School provides useful data for improving green space planning, selecting suitable tree species, and supporting environmental learning. This research therefore contributes to sustainable environmental management within the school.

Research Methodology

This study applied GLOBE standards to survey and measure perennial trees at Varee Chiangmai School. Tree species, physical characteristics, and canopy data were collected and statistically analyzed to compare carbon sequestration among species. The results were organized and shared through the GLOBE database to support analysis, conclusions, and environmental education.

Research Outcomes

From the comparative study of carbon sequestration of various perennial tree species at Varee Chiangmai School, Chiang Mai Province, the results are as follows:

Conclusion and Discussion

This study examined canopy cover, ground cover, tree characteristics, and carbon sequestration of perennial trees at Varee Chiangmai School. The results showed that areas with higher canopy cover had greater potential for biomass production and carbon sequestration, while the absence of natural ground cover was due to the use of artificial grass. The Golden Shower Tree had the greatest height and circumference, indicating high biomass potential, while the Queen's Crape Myrtle sequestered the highest amount of carbon. These findings confirm that carbon sequestration capacity varies among tree species and is influenced by their physical characteristics and growth patterns.

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