



Wichienmatu School

Abstract

1.) To assess the amount of carbon sequestration in the biomass of *Tectona grandis* L.f. and *Azadirachta indica* A.Juss. in the area, it was found that the total biomass carbon sequestration of *Tectona grandis* L.f. was higher than that of *Azadirachta indica* A.Juss. 2.) To analyze and compare the carbon sequestration potential in the biomass of *Tectona grandis* L.f. and *Azadirachta indica* A.Juss., it was found that *Tectona grandis* L.f. have a greater potential for carbon sequestration in their biomass than *Azadirachta indica* A.Juss. 3.) To study the economic returns of carbon credits of *Tectona grandis* L.f. and *Azadirachta indica* A.Juss., it was found that False *Azadirachta indica* A.Juss. are notable for their height, while *Tectona grandis* L.f. are notable for their girth, resulting in *Tectona grandis* L.f. having a higher biomass than false *Azadirachta indica* A.Juss. and higher long-term value. Both tree species generate income from the sale of carbon credits under the Thailand Voluntary Emission Reduction Program (T-VER).

Research Methods



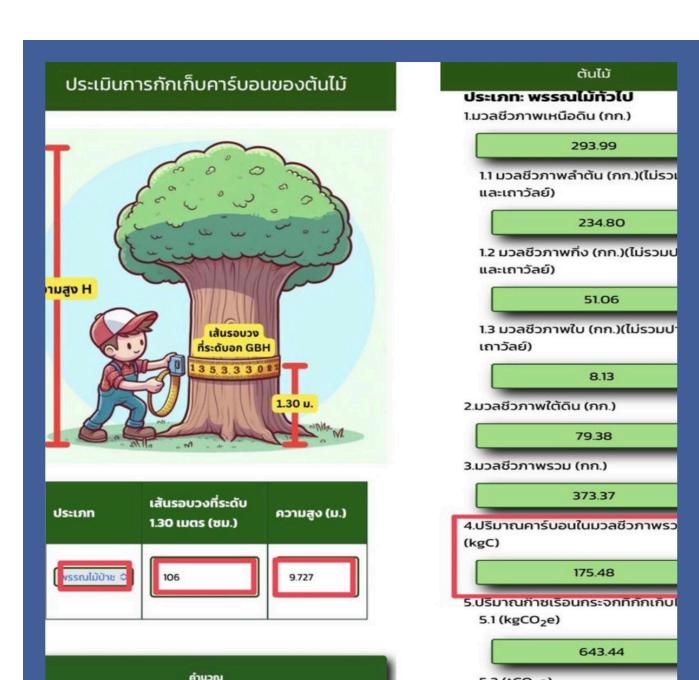
1) Define the study area for *Tectona grandis* L.f. and *Azadirachta indica* A.Juss at Baan Suan Prathanporn



2) Measure the height at a level of 1.30 meters from the ground and then measure the circumference of the trunk being studied.



3) Use a clinometer to measure the angle observed from the observer's eye level, then measure the distance from the base of the tree to the point where the observer can see the tip of the tree.



4) Calculate the total carbon content in the biomass using a tree carbon sequestration assessment website. Use the values obtained from measuring the circumference at a height of 1.30 meters and the height of the studied trees to find the total carbon content in the biomass.

Introduction

Global warming, caused by human daily activities such as deforestation which releases carbon dioxide (CO₂), negatively impacts the environment. Recognizing the importance of reducing carbon dioxide emissions, this study compared the carbon sequestration capabilities of *Tectona grandis* L.f. ,*Azadirachta indica* A.Juss. Both are important economic trees playing a significant role in Thailand's agricultural sector. *Tectona grandis* L.f. a high-value, slow-growing but long-lived hardwood, helps mitigate global warming due to its large wood mass, a crucial carbon sink. *Azadirachta indica* A.Juss. on the other hand, grows rapidly, yields fruit quickly, and rapidly absorbs carbon dioxide. Beyond its economic value from its timber, it also significantly contributes to mitigating global warming and reducing greenhouse gas emissions.

Research Questions

Do different types of trees store different amounts of carbon in their biomass?

Results

Tectona grandis L.f.

- Average height: 13.75 meters
- Average trunk circumference: 111.4 centimeters
- Total biomass carbon sequestration: 2,796.28 kilograms of carbon

Azadirachta indica A.Juss.

- Average height: 15.43 meters
- Average trunk circumference: 99 centimeters
- Total biomass carbon sequestration: 2,306.81 kilograms of carbon

Although *Azadirachta indica* A. Juss. has a greater average height, *Tectona grandis* L.f. has a larger trunk circumference, resulting in higher biomass and overall carbon sequestration potential.

Bibliography

Asst. Prof. Dr. Chakrit Na Takua Thung. Calculating Carbon in Total Biomass (kgC) to Assess Carbon Storage of Trees.

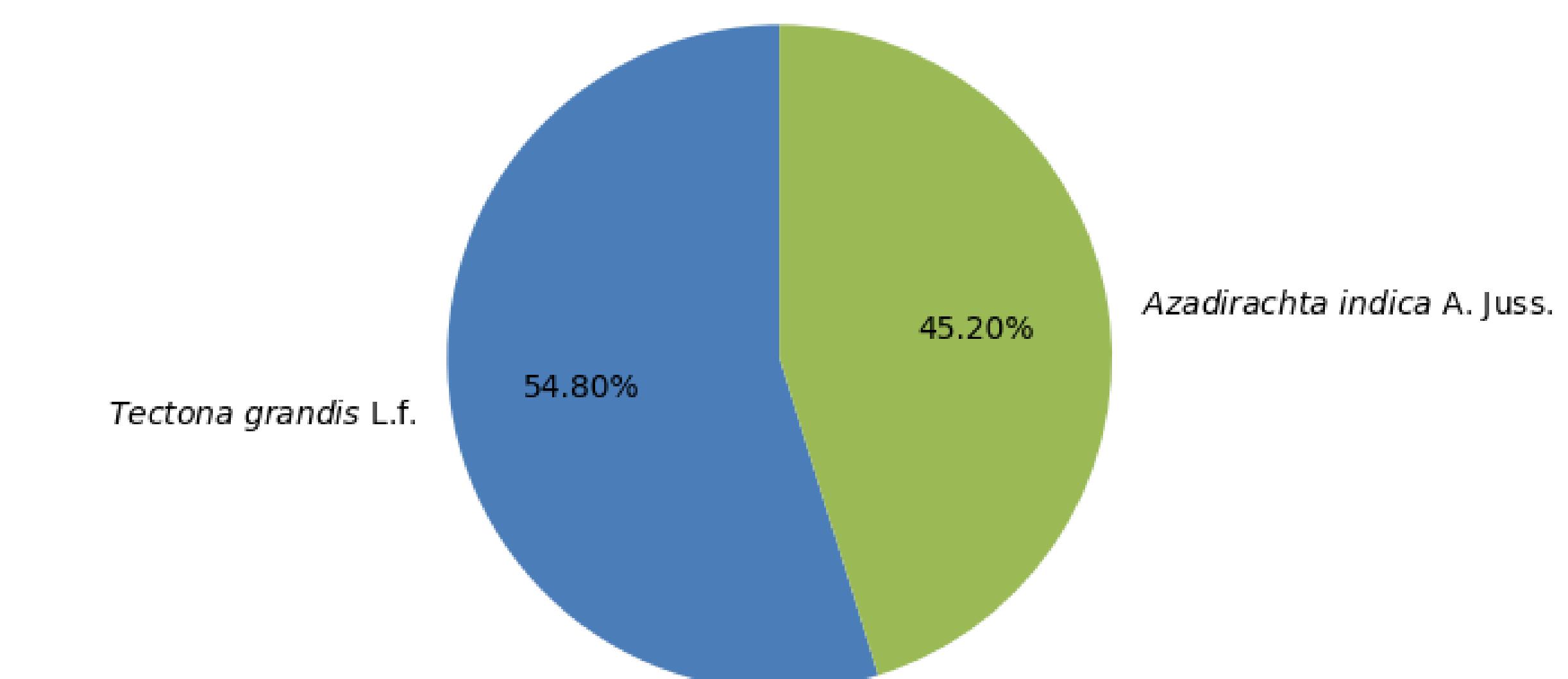
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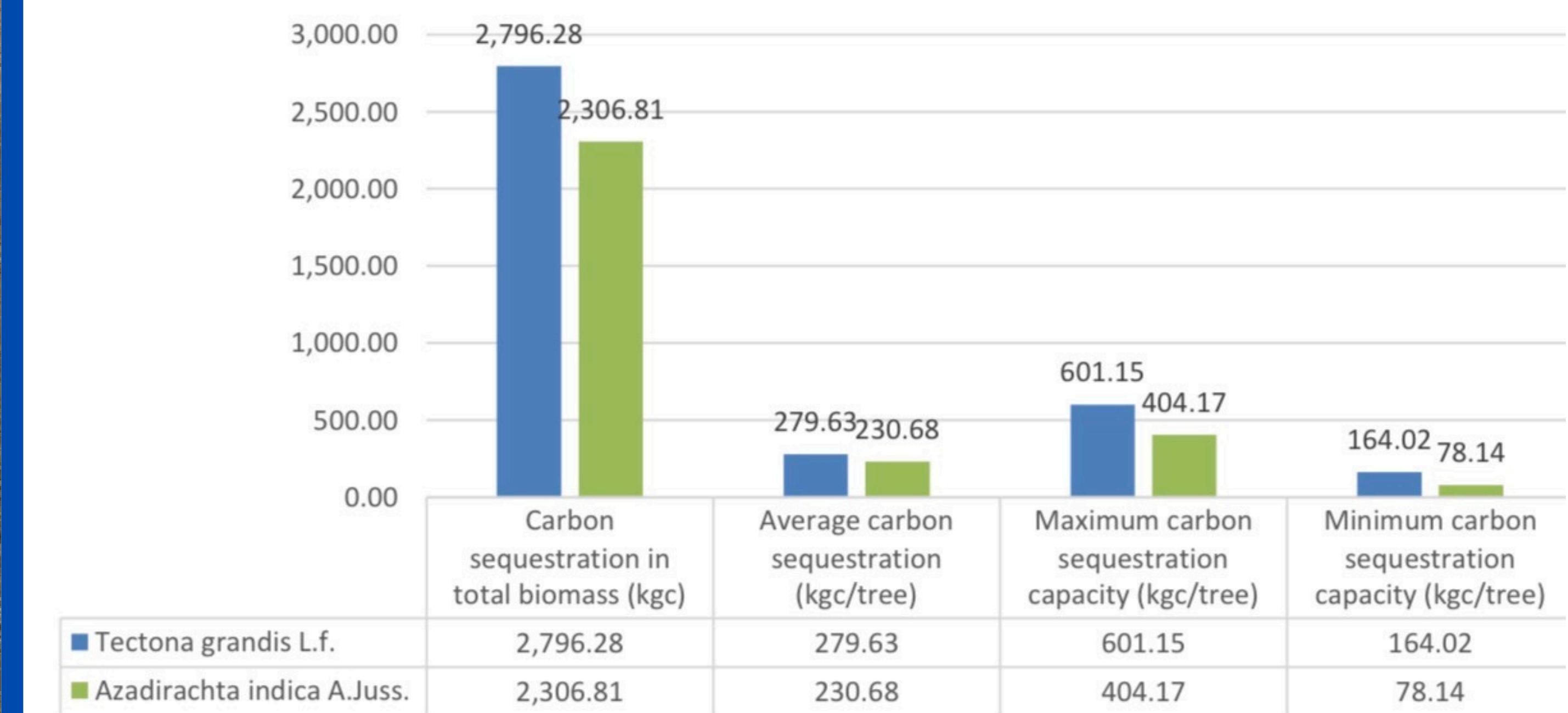
Discussion

Proportion of Biomass Carbon Storage



Tectona grandis L.f. can store more carbon than *Azadirachta indica* A.Juss, even though *Azadirachta indica* A.Juss are taller. *Tectona grandis* L.f. have a larger circumference than *Azadirachta indica* A.Juss, resulting in a higher biomass, thus making them more efficient at carbon sequestration.

Conclusions



- Tectona grandis* L.f. have a total biomass carbon sequestration potential of 2,796.28 kgC, representing 54.80%, with a maximum sequestration of 601.15 kgC and a minimum of 164.02 kgC.
- Azadirachta indica* A.Juss. have a total carbon carbon sequestration potential of 2,306.81 kgC, representing 45.20%, with a maximum sequestration of 404.17 kgC and a minimum of 78.14 kgC.

I am a Problem Solver.

Studying the carbon storage of trees to help reduce global warming and greenhouse gases.

I am a Data Scientist.

I collect and analyze data on carbon sequestration of teak and neem trees to compare their potential and carbon credit returns.

I am a collaborator.

I work on research as a team, from planning and field data collection to collaborative data analysis.