

**Title :** Comparison of Carbon Sequestration Potential in Restored Forests of Different Ages at Limestone Mining Sites

**Author(s) :**

1. Nualphan Kanthawang
- 2.
- 3.

**Student ID :** 650510237

**Student ID :**

**Student ID :**

**Major :** Biology

**Advisor(s) :**

1. Assistant Professor Dr. Sutthathorn Chairuang Sri
- 2.
- 3.

**Type of presentation\* (choose 1) :**

**Oral Presentation** (เฉพาะ ตัวแทนศ.ที่สาขาเลือกให้นำเสนอแบบบรรยาย)

**Poster** (กรณี นำเสนอผลงานปัญหาพิเศษ/การค้นคว้าอิสระ)

**Cooperative Education** (กรณี นำเสนอผลงานสหกิจศึกษา)

## ABSTRACT

Forest areas are continuously decreasing due to population growth and human activities, such as mining, which cause land degradation after mining and require forest restoration. This study aimed to investigate the carbon sequestration potential in limestone mine restoration areas of Siam Cement Group (SCG) in Lampang Province. Specifically, this study determined carbon accumulation in trees within limestone mine areas of different plantation ages (planted in 2012, 2016, 2020, and 2024), compared aboveground biomass estimated using the allometric equations of Chave (2014) and Ogawa (1965), and compared the carbon accumulation in three specific species: *Gmelina arborea* Roxb., *Bauhinia purpurea* L., and *Oroxylum indicum* L. Data were collected from 200 m<sup>2</sup> sample plots, with three plots established for each age group. Diameter at breast height and tree height were measured for trees taller than 1.3 m. The results showed that carbon sequestration was directly related to the age of the restored forest. The 2012 planting had the highest carbon stock (78.5 t C ha<sup>-1</sup>), while carbon accumulation decreased with younger planting years, with the 2024 plots having the lowest carbon stock (0.7 t C ha<sup>-1</sup>). Total carbon stocks differed significantly among age classes. Comparison of the allometric equations indicated that Chave (2014) and Ogawa (1965) produced similar results. Among the species, *Gmelina arborea*

\*Type of presentation must be matched with an option you choosing on student upload system.

\*\*The abstract can be more than one page and must be approved by project advisor before upload.

showed the highest carbon sequestration potential compared with *Bauhinia purpurea* and *Oroxylum indicum*, particularly in the 2016 plots, with a mean of 18.1 kg C tree<sup>-1</sup>. Therefore, plantation age and tree species are key factors influencing carbon accumulation, and *Gmelina arborea* is a suitable species for accelerating carbon sequestration in limestone mining restoration.

Keywords: carbon sequestration, climate change, carbon stock, forest restoration, limestone mine