

TREES



CARBON DIOXIDE ABSORBER
AND CARBON STORAGE



Department of Environment and Natural Resources
ECOSYSTEMS RESEARCH AND DEVELOPMENT BUREAU

WHAT SHOULD BE DONE?

According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, the forestry sector accounts for about 17% of global greenhouse emissions – the second largest source after the energy sector. The main cause is deforestation (<http://www.un-redd.org/AboutREDD>). Keeping the forest intact by stopping deforestation and destruction will significantly reduce CO₂ in the atmosphere.

Establishment of massive tree plantations in the country is a big help in alleviating global warming. In effect, plantation establishment for this kind of carbon offset will not only rehabilitate open and degraded lands but will also provide long-term carbon storage.



For more information, please contact:

THE DIRECTOR

Ecosystems Research and Development Bureau
Department of Environment and Natural Resources
College, Laguna 4031

Tel. Nos.: (49) 536-2229/2269

Fax: (49) 536-2850/7746

E-mail: erdb@denr.gov.ph

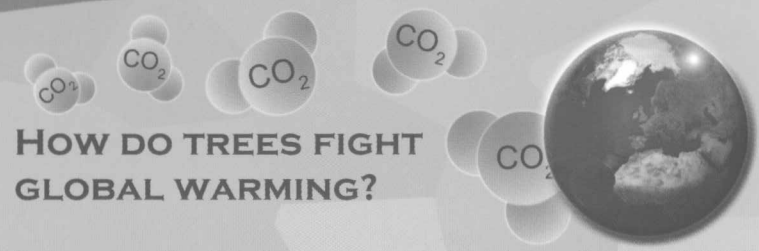
Website: erdb.denr.gov.ph





WHY ARE TREES IMPORTANT?

1. Trees provide two of life's essentials: oxygen and food.
2. Trees are a major source of medicines.
3. Trees provide shelter for birds and other animals.
4. Trees enhance the aesthetics of our environment.
5. Trees are good noise barriers.
6. Trees clean the air by removing dust and absorbing other pollutants such as carbon monoxide, sulfur dioxide, and nitrogen dioxide.
7. Trees can lower air temperature by evaporating water in their leaves.
8. Trees combat one of today's most pressing problems – global warming.



HOW DO TREES FIGHT GLOBAL WARMING?

Trees are the best absorbers of carbon dioxide (CO₂), one of the principal greenhouse gases.

During photosynthesis, trees take up CO₂ from the atmosphere and store the carbon in their biomass (roots, stems, leaves). This process of capturing carbon from the atmosphere and storing it in biomass is known as **carbon sequestration**.

The planting of trees to sequester atmospheric carbon has been considered as the most cost-effective, long-lasting, and significant strategy to address the problem of global warming.

Physiologically, the faster the tree grows, the faster the carbon is sequestered from the environment. Examples of fast-growing forest tree species which absorb large amounts of CO₂ are yemane, mahogany, mangium, bagras, falcata, and malapapaya. These species are commonly used in the establishment of forest plantations, reforestation, and agroforestry in the country.

Mature trees on the other hand, grow less rapidly and have lower intake of CO₂. If trees grow on to an overmature state, the rate of sequestration tends to be negative because the biomass material is breaking down faster than it is accumulating.

One way to use trees as carbon sink is to harvest the mature timber and convert it to wood products such as construction materials and furniture or handicrafts that would continue to store the carbon over years or even centuries.

HOW MUCH CO₂ DO TREES ABSORB?

Forests are carbon storage and sinks when they are left intact. Total carbon is stored in the trees and in the soils as dead organic matter.

Based on the results of an ERDB study, trees take CO₂ from the atmosphere at a rate of 0.4 to 0.8 ton for every cubic meter of growth or 14 to 17 kg of CO₂ per year. The resulting carbon is continuously locked during the lifetime of the tree.

One kg of carbon is equal to 3.67 kg of CO₂. With an average of 47.5% carbon content for the following tree species: mangium (49.37%), falcata (48.20%), bagras (47.80%), mahogany (47.20%), and yemane (44.73%), one ton of dry wood produced is equivalent to about 1.74 tons of CO₂ sequestered.

