




Lecture 12
Tropical Forestry



Eucalyptus in Brazil



Firewood collection: A necessary activity in the tropics

Tropical forestry involves the exploitation and management of tropical forests.

At the present time tropical forests represent a tremendous reservoir of fixed carbon and an important natural oxygen generating system.

Furthermore tropical rainforests consist of great biodiversity with potential riches for agriculture, horticulture, forestry, and medicine.

Loss of the tropical forest is now considered one of the great potential calamities facing our planet.

The tropical world is not particularly interested in saving the tropical forest (at least not without compensation) for the benefit of the temperate world which has destroyed its forests.

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However the loss of temperate forests is not universal.

In the Eastern United States there is a tremendous regrowth of the native forest.

Driving US 80 across Pennsylvania one sees continuous forest regrowth.

Clearly a way must be found to protect the rainforest and improve the lives of people who live in the tropics.

Leaving all of the tropical forests as a natural reserve for humanity is not an option at the present time because of expanding population in the tropical world.

Agriculture may be one “enemy of the forest”

Forests are threatened by:

Human activity
(clearing and burning)

Insects (leaf cutting ants, termites)

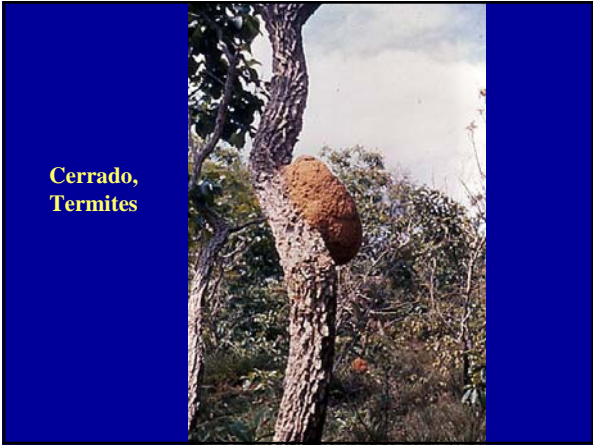
Diseases and parasites



Cerrado Burning, Brazil

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Tropical Forest Management

Tropical forest management is complicated and little understood.

Over 5000 species, and very mixed, often 100–200 species per acre.

The abundance of many species makes natural extraction of timber species uneconomic.

For example, Philippine mahogany, grown in Asia is not a single species but many species of the Dipterocarpaceae.

(True mahogany with very large leaves is *Swietenia macrophylla*, Meliaceae; *Khaya* spp. are known as African mahogany.)

Furthermore many important tropical species such as rosewood (*Dalbergia nigra*, Fabaceae or Leguminosae) do not grow well under management.

Many tropical legumes, palms, and tropical fruits still await exploitation.

The tropical rainforest is also rich in animal and bird biodiversity that is also being threatened.

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Many exotics are being planted, particularly:
Pines, tropical species (Mexico, Caribbean)
Eucalyptus (*Eucalyptus citriodora* Myrtaceae, an import from Australia, will grow at twice the rate of pine)
Teak (*Tectonia grandes*, Verbenaceae, native to Burma)





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Many integrated industries associated with forestry

Extractive industries (nuts, oil crops, medicinal plants)

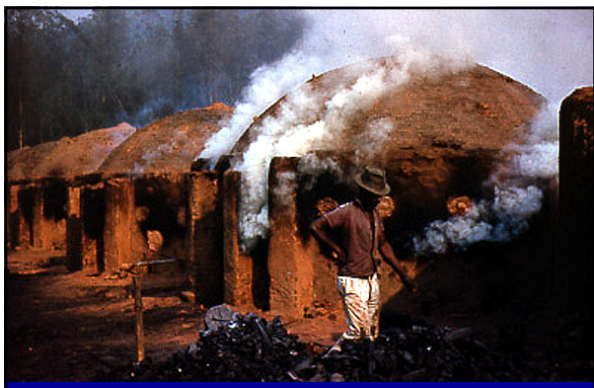
Pulp mill (but note disastrous experience of Daniel Ludwig in Brazil along the Jari river)

Saw mills

Charcoal (important in tropical America because coal is scarce and carbon is needed to make steel)



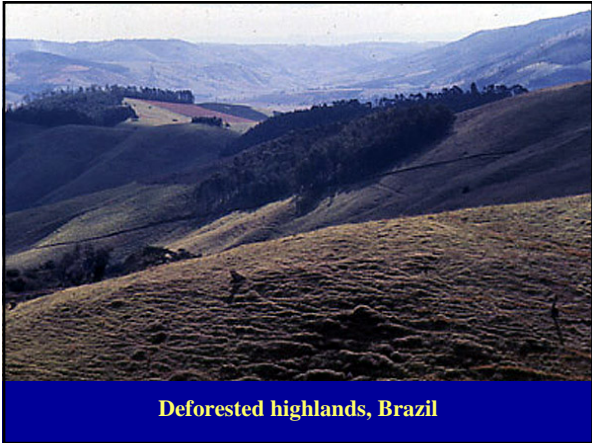
Charcoal, Brazil

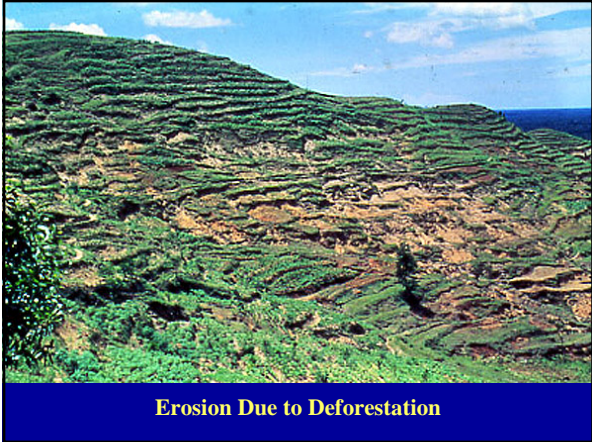


Charcoal, Brazil

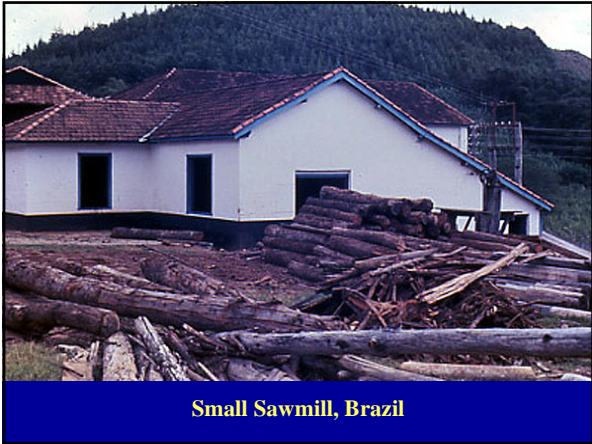
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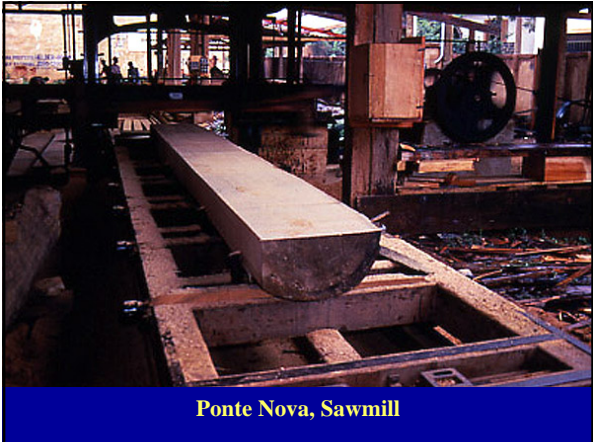
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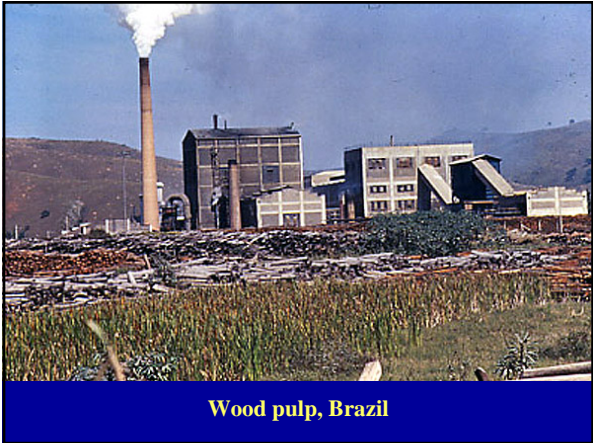






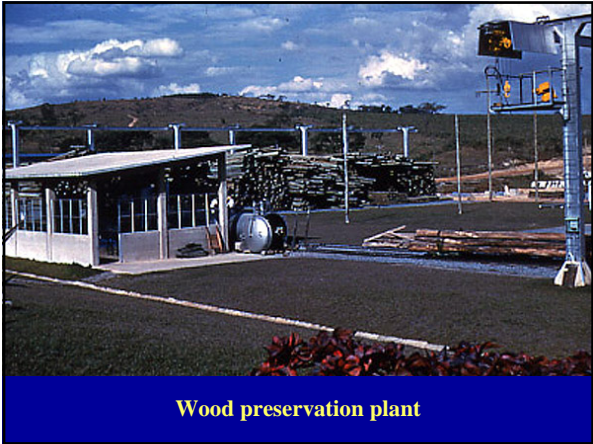
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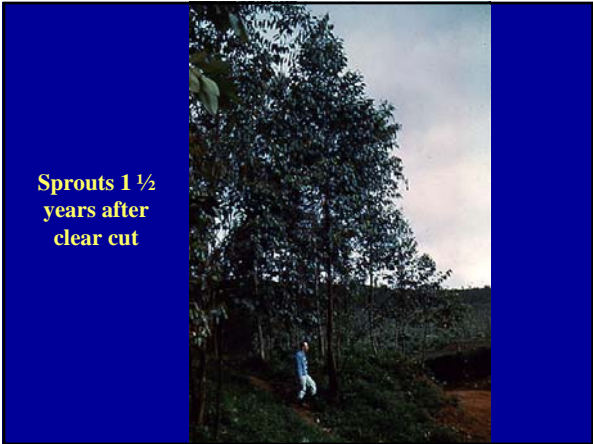




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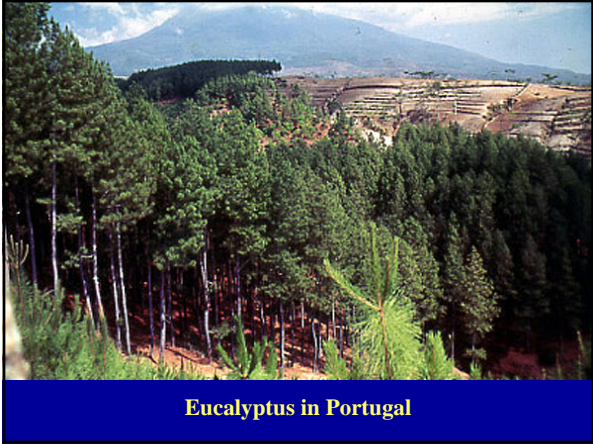




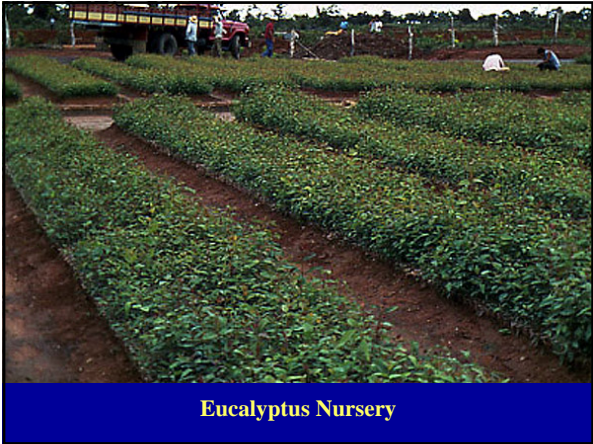
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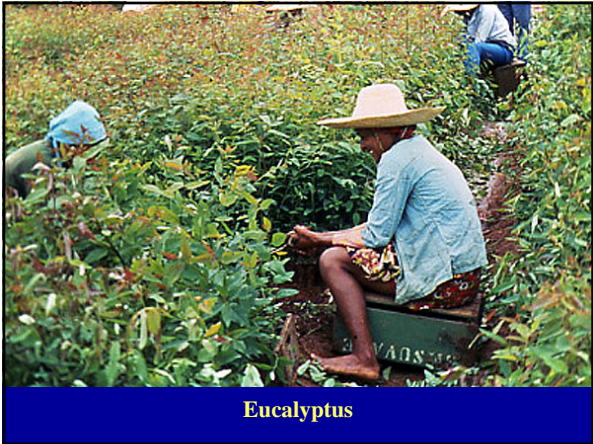




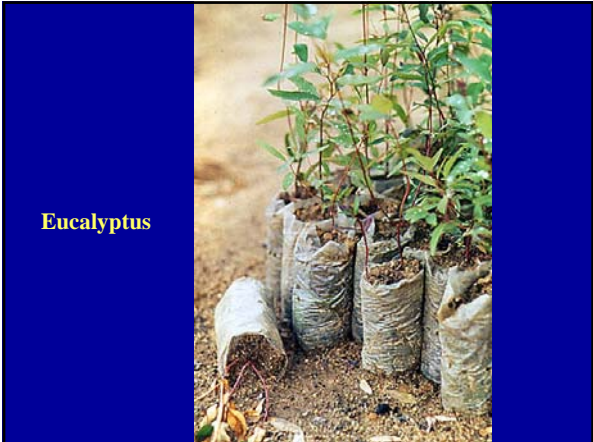
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Tree planting, Eucalyptus

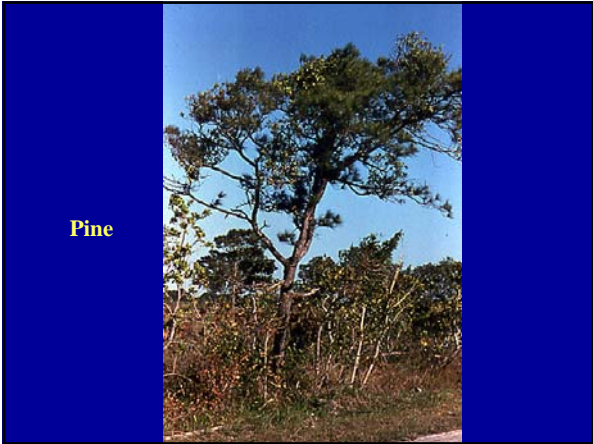


Eucalyptus, 3 months

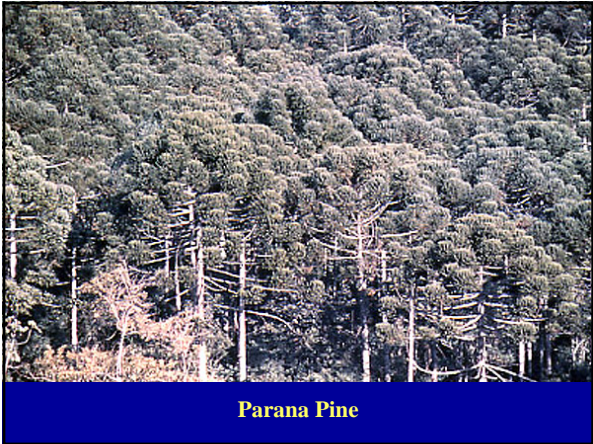


Cerrado, Brazil

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Agroforestry: A Silvicultural System

The name given in the late 1970s to a set of ancient techniques that in its broadest sense includes any mixing of trees and crops (or livestock) in the same field. Many are convinced agroforestry is the correct approach to manage tropical forests.

At the present time agroforestry is defined as a system that involves a deliberate mixing of agricultural crops and/or animals with woody perennials.

The system must produce two or more products on a multiyear cycle.

The system is more complex ecologically and economically than a monocrop system.

A significant beneficial interaction is claimed between inputs.

Agro-silvicultural: mixture of woody perennials plus traditional agricultural crops

Silvo-pastoral: woody perennials plus animals

Agro-silvo-pastoral: Combination of woody perennials, crops, and animals.



Forests and Grazing



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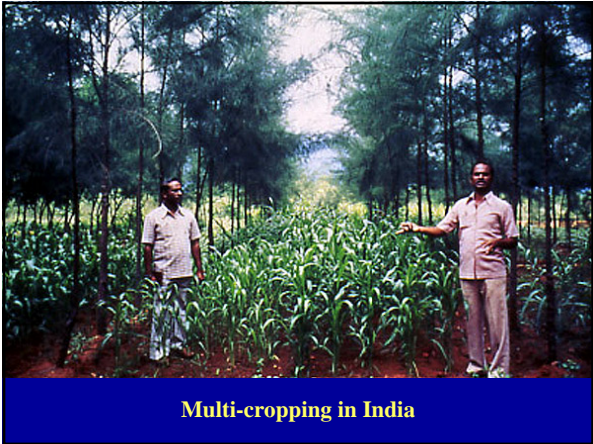
Intercropping



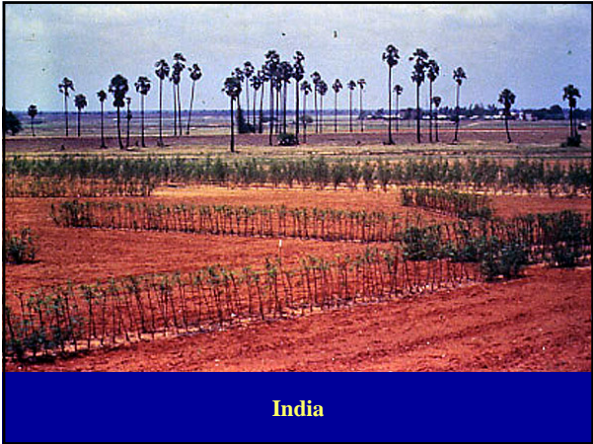
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