

ICC File

Prime Minister

You asked about this at
last week's tree planting
ceremony. J.M. sf 11

CO₂ UPTAKE BY TREES

1. Forests fix carbon in the form of wood. If the wood is burned or decays the stored CO₂ is released to the atmosphere. Natural forests tend to be in equilibrium in the sense that natural decay balances wood production. In managed natural forests or man-made plantations the timber increment is harvested and as long as this is retained in the solid state, the accumulated CO₂ is permanently fixed. Rates of fixation are very different for natural as opposed to plantation forests as shown below.

AVERAGE RATES OF NET CARBON FIXATION IN TONNES PER HECTARE PER YEAR

<u>Natural Forest</u>		<u>Plantation Forestry</u>	
Tropical rain forest	ca. 0.5	Tropical commercial broadleaves	8
		Tropical commercial conifers	7
		Eucalyptus in the moist tropics and subtropics	11
Temperate forest: USA	0.7	Broadleaves) oak, beech	1.2
		in Britain) ash, poplar, sycamore	2.0
Boreal forest: Canada, Siberia	0.3	Conifers in Britain	2.2

2. Thus tropical plantations of species chosen for their high rate of growth fix more than 10 times as much CO₂ as the natural forest species. In Britain, conifers, the main species required to meet market demand and capable of growing on more difficult sites, fix nearly twice as much carbon as oak and beech. Eucalyptus is hardly a candidate species in Britain owing to its sensitivity to winter cold.

3. Forest destruction at present makes an annual contribution to the atmosphere of some 1 billion tonnes of carbon while fossil fuel combustion and industrial processes produce 6 billion tonnes. If deforestation were halted, at least an extra 800 million hectares of newly planted forest in the tropics would be needed to offset the current contribution of fossil fuels to atmospheric carbon, and this locking up would only be effective as a sink so long as any material harvested remained in solid form.

4. Eucalyptus is very efficient in fixing carbon, but, although water consumption per unit of dry matter produced is similar to that of other broadleaved trees and to tropical pines, its rapid growth leads to high water consumption. The genus as a whole has acquired a bad name in certain countries, such as India, principally owing to local ownership difficulties, and especially where high water use has depressed the growth of farm crops grown alongside. It is possible by judicious design and selection of species to limit such deleterious influences.

5. Overall the tropical rate of deforestation is massive with 11 million hectares being cut per year and planting amounting to less than 1.5 million hectares. Great efforts are being made to reduce the rate of loss of tropical forest but prudence suggests that those in the temperate zones should continue with efforts to increase their forest areas.

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