

## Eucalyptus Trees in India

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The genus *Eucalyptus* was introduced into Indian silvicultural systems in the 1960s via the "Fast Growing Species Scheme". It was first planted in Karnataka, Southern India on degraded lands and now covers a vast acreage throughout the country. The genus produces much biomass because of efficient use of water and nutrients. It has been the centre of world-wide debate as scientists claim the eucalypt can help solve the fuelwood crisis. On the other hand environmentalists claim that the eucalypt is causing environmental and socio-economic collapse among the rural poor communities.

The eucalypt is a member of the family Myrtaceae with a natural range extending from 7°N to 43°S in Australasia. The eucalypt owes its dominance in Australia, in part, to its ability to colonise bare ground, and the growth of lignotubers, indefinite shoots, naked buds and epicormic shoots that enable rapid growth. When planted outside Australia in localities that do not have insects that defoliate them their productivity is remarkable. In favourable conditions eucalypts such as *E. grandis* can grow 10 m in the space of 2 years. Yields per ha per yr can reach 10 m<sup>3</sup> on severe sites and up to 40 - 50 m<sup>3</sup> in very favourable conditions.

Due to the production of epicormic shoots the eucalypt is mainly grown on short rotational coppice systems, ranging from 6 to 8 years. As a forestry tree the eucalypt is used for paper, pulp, charcoal and in the rayon industry. Its use for fuelwood is somewhat debatable. The controversy that surrounds the extensive monoculture include claims by scientists that the eucalypt can replace indigenous forests to produce fuelwood for the benefit of the poor and bridge the gap between demand and supply. Environmentalists believe that the eucalypt, planted extensively, is degrading land, leading to desertification and destruction of farming practices. The main areas of controversy include:

- 1) Eucalyptus consumes too much water disturbing the hydrological balance.
- 2) Impoverishment of the soil due to efficient use of nutrients.
- 3) Eucalyptus farming is robbing good agricultural land of food production.
- 4) Fewer agricultural crops are produced due to incentives from the government to grow eucalyptus.
- 5) Rich farmers become richer and the small farmers are being squeezed out.
- 6) Large plantations are disturbing the ecological balance of the country.
- 7) Extensive plantations leads to socio-economic collapse among the rural poor.
- 8) Eucalyptus intercropping adversely affects agricultural production.
- 9) Eucalyptus discourages ground flora and wildlife.

The Indian government appears to be very keen to afforest India with large plantations of eucalyptus often replacing indigenous lands, with no current proposals to replant with native species. Much research has been undertaken to prove the positive attributes of eucalyptus but the wider issues have been largely left out. This may be due to the fact that over 90% of research grants emanate

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directly from government institutions. It seems unlikely that scientists will undertake experiments that will prove the species to be detrimental, especially for a country that is trying to become self-reliant. The eucalypt may hold the key to increasing the country's finances, as eucalyptus products fetch high prices, which bring about economic benefits.

However, most scientific papers reviewed seem to be of the opinion that the eucalypt does not degrade the soil of water and nutrients and can compare well with another forestry tree, *Shorea robusta* of the family Dipterocarpaceae. It must be mentioned at this stage that most experiments undertaken by the Forestry Research Institutes (F R I.) have been very short, ranging from 2 to 6 years. The results gained from these experiments cannot be long enough to gain an accurate assessment of the situation.

To conclude, the view that eucalyptus monocultures drain the soil of water and nutrients, is in my view true. However, the same could be said for any "efficient" crop especially agricultural crops.

I think what must be understood is that eucalyptus monocultures are perceived to some as a substitute for forest cover, replacing indigenous forests. In fact they are a crop producing biomass in a short period of time and as in any crop this depends on many factors—site, age of plantation, fertilizer application, plantation spacing and geometry. The plantations therefore must be perceived as a "long-term crop". An introduced exotic cannot replace native forest or be as rich in flora and fauna. The eucalypt is being exploited to bulk up India's economy and feed the huge industries that will pay a high price for the wood and other byproducts. The planting of eucalyptus on private and government land has enough justification provided that it does not prove harmful to surrounding village economies.

To the forester it is good because it produces quick biomass at low prices. To the farmer it is good because it produces high biomass with low investments. It is therefore necessary to have the right approach backed by balanced studies and research to understand the site, species and silvicultural systems used.

The major points raised by environmentalists against the plantations of eucalyptus are socio-economically based. It is thought that western advisors from governments, World Bank and the FAO have played an aggressive role by framing development programmes for forests, often with little thought to their long-term effects or on the social impact of the schemes. On forest management these bodies are thought to be, scientifically ill-equipped to understand the management of the tropical forests.

A positive approach is required by government officials, as clear-felling should not be allowed to continue. More co-operation between rural people and government bodies is required to sustain the people who depend on native lands for their survival. It must be understood that a tribal people's well-being cannot be assured by monoculture plantations. The existing eucalypt plantations must be managed more efficiently by improving existing silvicultural practices, in order to meet the demand of the industry rather than extending clearfelling practices. In reaction to the loss of indigenous lands rural communities view eucalyptus as detrimental/ because they are losing out and in some cases becoming poorer. Much more research is needed in this area before reckless expansion of any exotic is taken up on a large scale. Recognition that rural communities need basic essentials of fuelwood for cooking and, in some areas of the Himalayas, to burn for warmth must

be understood. Removal of natural forests disrupts these people's lives, usually resulting in the ill health of the women and children. They spend longer time looking for fuelwood and sometimes travel greater distances to gather small wood products and scavenge for material to burn. The continued burning of dung in these areas also disrupts the recycling of nutrients to the land. Rural people still make up a vast majority of India's population, but with the depletion of natural resources more and more people flee to the cities and expect to find a better life. This causes even more social problems and ill health.

India is an extremely large country with many states that all vary enormously in climate, topography and communities of people. Individual areas should be thoroughly examined for the correct use of species and silvicultural systems used. More of the 600 or so species within the genus *Eucalyptus* require closer examination especially for reclamation practices. Improving existing silvicultural systems require further research. Economic well being of rural communities balanced against commercial forest plantations is essential. Ecological balance and economic uplift must be weighed up before large expanses of monoculture are established.

The collecting of firewood is an important factor that contributes to forest degradation. This could be avoided if fuel was made available at reasonably cheaper rates. To save forests from depletion it is necessary to meet fuelwood demands, so that local people are not forced to go into forests for clandestine collection.

The needs of the industry as well as that of the rural poor must be met in a balanced manner, so that requirements of one section are not deprived to benefit the other. This involves socio-economic considerations necessitating political decisions.