STREET TREES IN TROPICAL COUNTRIES

Street trees play a significant beneficial role in urban environments of tropical countries. Street trees are publicly owned capital assets that apart from their obvious aesthetic benefit, improve the quality of the air, save energy and provide many other economic and lifestyle benefits to the community where they are planted.

A scientific study in the US demonstrated that over a 50-year lifetime, one street tree generates $31,250 worth of oxygen and provides $62,000 worth of air pollution control.[1]

Various studies into the value of street trees in cities around the world have produced benefit to cost ratios (i.e. the value of benefits received by the community divided by the cost of planting and maintenance) of between 3:1 and 14:1.

There are some drawbacks to planting street trees, but these are more than outweighed by their benefits. The pros and cons of street trees are:

BENEFICIAL ATTRIBUTES OF STREET TREES:

1. Street trees provide shade to pedestrians, thus making walking more comfortable and reducing the risk of skin cancer.

2. Street trees trap dust particles and absorb many gaseous pollutants such as carbon monoxide, sulphur dioxide and nitrogen oxides.

3. Street trees remove from the air dangerous particulates (from smoke and diesel exhausts) that can cause serious respiratory problems.

4. Street tree roots take-up elements like nitrogen, phosphorus and potassium which are nutrients for trees but harmful to water ecology and quality.

5. By shading roads and pavements, street trees reduce maintenance costs and extend the life of these structures.

6. Street trees lower the ambient temperature in a street by one or two degrees, thus increasing comfort levels as well as helping to save energy costs in cooling homes.

7. Larger street trees may also directly shade some houses along the street (depending on their orientation), providing even greater cooling effects and increasing the savings in electricity costs for individual householders.

[1] USDA Forest Service Pamphlet #R1-92-100

8. Street trees improve the aesthetics of the urban landscape and enhance property values in the area.

9. By breaking the fall of rainwater, street trees reduce surface runoff and soil erosion.

10. Street trees improve traffic safety through their calming effect and by creating the impression that the street is narrower, resulting in lower average traffic speeds.

11. Street trees reduce traffic noise by absorbing some of the sound from engines and road noise.

12. Street trees help combat global warming through the oxygen that they produce and the carbon dioxide that they absorb.

Although the part that urban street trees play in reversing the adverse effects of global warming is a small one, it becomes increasingly important as rural areas become deforested and natural rainforests disappear through logging or clearing for agriculture. (A single mature tree absorbs about 20 kg of carbon dioxide a year and releases enough oxygen back into the atmosphere to support two human beings).

DRAWBACKS OF STREET TREES:

1. Branches can break off in high winds causing a danger to pedestrians and vehicles.

This drawback can be minimised by ensuring that only suitable species are planted as street trees (i.e. not species known to have brittle limbs and susceptible to dropping branches in high winds) and the trees are professionally pruned every one or two years.

2. Leaves from street trees can clog gutters on houses.

This drawback can be overcome by installing plastic mesh over gutters to prevent leaves from entering the box section. Gutters in some countries can be purchased with these 'Leaf Guard' meshes already installed.

3. It is inconvenient having to sweep fallen leaves and dispose of them.

'*Non-gardeners' sometimes raise this as an objection to street trees, but gardeners use fallen leaves to produce leaf mold or compost. Leaf mold makes an ideal garden mulch, and compost is a valuable organic fertiliser that helps to negate the need to buy costly chemical fertilisers. There are thus probably as many people who would classify this as a benefit rather than a drawback.*

SELECTION OF SPECIES FOR STREET TREE PLANTING:

The major drawback of street trees is the danger of falling branches in high winds. Therefore it is important to ensure that suitable species are planted in the first place, to ensure that the beneficial attributes of street trees clearly outweigh their drawbacks.

There has been a tendency in new urban developments in some countries to plant fast-growing street trees in order to make the area more attractive to potential buyers. However, often it is the fast growing street trees that have the most brittle branches when mature. Generally speaking, the slower growing the tree, the more sturdy the mature specimen will be (although there are some exceptions to this).

The Angsana tree (*Pterocarpus indicus*) is one species is that has been widely planted as a street tree in tropical regions because of its fast growth and spreading canopy (in the Philippines it is known as the Narra tree). However, the Angsana tree's branches can be quite brittle and therefore it needs regular pruning to strengthen its form. Singapore has successfully used the Angsana tree to shade major highways because it has allocated sufficient budget for regular pruning and has the necessary equipment to carry out the pruning properly. However, poorer countries in south-east Asia do not have the funds to maintain these trees properly despite their benefits to the community.

The African Tulip tree (*Spathodea campanulata*) is another fast-growing tree that has been used in street plantings (its spectacular flowers are another reason it is a popular choice) but it's branches are also brittle and it has quite a superficial root system making it susceptible to being blown over in heavy storms.

Large palms (and especially coconut palms) should not be used in street tree plantings where there is pedestrian traffic underneath because falling fronds (and coconuts) can injure – and on rare occasions even kill – persons below.

Species with overly vigorous root systems (like most of the *Ficus* species) should not be planted as street trees because they may lift pavements and damage drainage pipes.

Generally speaking, single trunk trees with an upright form and a spreading canopy, that have a long life and non-suckering roots, make the best street trees.

On streets where there are power lines, smaller trees should be planted so as not to interfere with the power lines. These will not provide the same benefits as shade trees, but flowering varieties may be chosen to enhance the aesthetic benefit.

Falling branches can also be a problem if street trees are not maintained properly and they become diseased or if they are attacked by termites or borers. Therefore local authorities need to regard the maintenance of street trees as an ongoing responsibility, just as they are required to maintain other capital assets such as roads, pavements, street lighting and public buildings.