Trees and our Environment

By DRCSC | Aug 17, 2012

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We plant trees for many reasons: to harvest timber, fruit, medicine, oils and resin, dyestuff, etc.; to make our surroundings beautiful; to protect our houses from dust and noise; to protect a hillside or stream bank against accelerated erosion; to ensure the supply of flowers, leaves, etc., for use during festivals and ceremonies and so on.

No matter what our objective is, when we plant a few trees and start taking care of them, other benefits flow naturally to our household, to our neighbours, to wild birds, animals and insects and to the earth as a whole. As the saying goes, we can "think globally and act locally" [Look at Exhibit 1 for details - Supplementary Document].

It is good to remember that we are not the only ones who plant trees. Birds, bats, squirrels, rats, ants, and many other insects help in the dispersal of seeds.

Often, the task of protecting old trees and those in their natural habitat is even more important than planting new trees, because the multiple benefits of trees usually become available only when they are mature, and this takes time. For socio-economic benefits, short cycle firewood plantations and fruit tree orchards are necessary, but these plantations do not serve much ecological function, especially if exotic species are planted and the trees are cut after just 5-6 years. Artificially created orchards and timber plantations cannot be a substitute for natural forests or woods. We need to create multi species, multistorey plantations using a combination of trees, shrubs, climbers, creepers, and grasses.

Let us now look a little deeper into the various objectives and purposes of planting trees.

**Economic value:** Trees supply us with a valuable range of products. Mango, jack-fruit, guava, ‘ber/kul’, tamarind, jamun, papaya, custard apple, and pomelo are some of the common fruit trees of Bengal. Trees such as ‘chalta’, ‘phalsa’, ‘dahuk’, ‘aanshphal’, ‘gaab, and ‘kamranga’, were also common once, but now very few of these trees can be found in our villages.

Fruit trees not only provide nourishment and variety in our diet, but they are also an important source of income, especially in areas with low rainfall, poor soil, and sloping lands, where cultivated field crops don’t yield much.

Seeds of some trees yield oils that are used as a cooking medium (like mahua, coconut, Oil palm). Other seeds and leaves yield oils that are used as insect repellents / insecticides or as a base for making soap (neem, karanj, or pongamia, for example). The oilseed cakes of these trees are often used to improve soil fertility. Some common timber trees of Bengal are ‘sal’, ‘teak’, ‘gamar’, ‘sishu’, ‘sirs’, etc.

Timber from mature palm trees can be used in construction for doors, windows, and other furniture. Wood from jackfruit, mango, jamun trees can also be used.


Many other trees and shrubs are used to produce food, spices, fodder, firewood, gum and resin, dyestuff, fiber, washing soap or shampoo, and aromatic compounds.

Some trees provide indirect benefits or sources of income. Trees provide food and shelter to honeybees, silkworm, and the Lac insect. Fodder and leaves on consumption are transformed into milk, egg, and flesh in animals, birds, and fishes. Trees, thus, provide us with useful products and create livelihood opportunities for a large number of artisans both in the rural and urban areas.

**Ecological value:** Trees are oxygen manufacturing factories. In addition, they also work as all-in-one units, performing the functions of air conditioners, noise and dust filters, and pollutant removers. Moreover, these ‘machines’ work without consuming petrochemicals or electricity. If planted near households or farms, they also reduce the speed of dust storms and cyclonic winds, thus protecting our crops, vegetables, animals, granaries and homes from serious damage.

An acre of mixed forest can transpire more than 7,500 liters of water on a sunny day, and as a result, cool the surroundings by 5 to 10 degrees. Trees also intercept rainfall and reduce the velocity of the raindrop before it hits the soil. Soil, under a tree, has the capacity to absorb more water, especially if it is covered by a thick layer of leaf mulch. The combined cover reduces surface runoff and the consequent soil erosion. Tree root zones act as water filters by holding back dust particles and by removing excess Nitrogen and Phosphate from organic and inorganic sources.
A mature tree can remove about 25 to 30 kilos of carbon dioxide every year, convert this into stored energy and release oxygen through the process of Photosynthesis, the most important biochemical reaction ensuring the survival of all living things on earth. Tree leaves also trap suspended dust particles in air that cause TB or tuberculosis, asthma, and a wide range of respiratory infections. Tree leaves also trap nitrogen oxides, sulphur, ammonia, and other pollutants. Later, when the leaves drop, these chemicals/minerals are returned to the soil through bacterial and fungal decomposition.

Neem, fig, tamarind, flame of the forest (palash), teak, gulmohar, and jarul are especially efficient in trapping dust and removing pollutants from the air. These should be planted on roadsides in villages and cities. In urban areas, we must select trees that can survive in a dusty/polluted environment. 'Babla' or 'babul', arjun, radhachura (pepitophorum pterocarpum), siamese cassia, pongamia, casurina, ber, mulberry, guava, mango, jackfruit, etc., are suitable for ‘Urban Gardens’.

A 10 feet high, double or triple line living fence or hedgerow can reduce wind speed to about half and up to a distance of 20 feet. Such tree-shrub barriers prevent crops from falling over and also reduce evaporation losses from the soil surface.

Blocks of closely planted trees can significantly reduce noise pollution. Calculations show that a 30–40 feet high and 100 feet wide patch of forest can reduce noise by half as it passes through.

Trees also provide a valuable habitat. Many birds, insects, reptiles, and animals need trees to provide them with food and shelter, both in the urban and rural areas. Trees like neem, banyan, fig, ‘jamun’, ‘bakul’, ‘peepal’, ‘aswatha’, mahua, etc., and ‘palmyra palms’, and ‘date palms’ are valuable trees for sheltering wildlife. As trees grow older, the branches, the small cavities and hollows in the tree trunk support a wide range of living organisms. A single tree can turn into an entire ecosystem. Mature trees become like a housing colony, with food stores and playgrounds for birds, animals, and insects.

**Why plant?**

Perhaps now one can explain to everyone, in detail, the value of planting and protecting trees. You can also help others realize that trees become more valuable when they are together (in a multistory / multi-tier arrangement), and when they become mature and start yielding. Eventually, when the trees have completed their life cycle, timber can be harvested and utilized. For a long period preceding that, however, trees can provide many products, perform several ecological functions, provide us with a place for rest and recreation, fill our souls with joy and wonder, and inspire us to compose songs and poems. If a day comes when we look around and find no trees, imagine how lonely and desolate our environs will be!

**Where to plant**

Whether we live in cities or villages, there are many opportunities to plant and protect trees. In the towns and cities, trees can be planted along the roadside, lakes and ponds, in parks and school college campuses, and even on rooftops! Every high-rise building, every factory, every municipal office should be legally required and encouraged to plant trees along their perimeter.

In villages also, trees can be planted along the roadside, canal and stream banks, playgrounds, compounds of temples and other places of worship, and graveyards. There are additional opportunities to mix trees with other crops (called agro-forestry systems). Mixed orchards, fuel, and fodder trees grown along with forage crops/grasses on grazing lands, trees grown along farms and living fences around households are some examples. In most of these systems, trees need to be repeatedly pruned, coppiced, or pollarded. Trees can help convert degraded lands into productive ecosystems when they are planted in combination with grasses, creepers, and shrubs. To ensure survival in such areas, trees have to be planted at the right time of the year and protected from open grazing, burning, and repeated cutting when they are young.

**When to plant**

In West Bengal and most of North India, the best planting period (for community woodlots, roadside plantations, regenerative forestry, etc.) is usually from mid June to the end of June, when the first rains usually arrive. Tree pits must be dug in advance and a supply of compost kept ready to take advantage of this. Usually, 12 to 18 inch tall saplings are planted (for some species, it takes only 3-4 months, while for others about 10-12 months in a nursery bed or pot). For roadside planting even 3-4 feet tall saplings are transplanted (this costs a lot in terms of money and manpower). Some trees are propagated from 5-6 feet tall stumps or tree branches, and need protection only for one or two seasons (‘madar’, ‘joi’ are some examples). Trees, which have large seeds, like tamarind, raintree, arjuna, and custard apple are often planted directly. Seeds, which contain oil, such as mahua, neem, karanj, cashew, sal, and seeds, which should not be allowed to become dry, like jackfruit, mango, jamun, bael fruit are also planted directly during the rainy season.

If you and your friends want to plant a lot of trees, you should learn how to raise seedlings in a nursery and how to transplant them properly. It is really wonderful to see how fast the trees grow with a little bit of care. Do...
try it!

Conclusion

Our country is seriously threatened by desertification, soil erosion, and consequent siltation of lakes and rivers that result in floods and droughts. To combat these problems, we need to reforest fallow lands and hilltops with a wide range of trees and shrubs. While choosing trees to plant, the following factors must be taken into consideration:

a) Utility: Used as a source of food, fodder, firewood etc.; used for rearing insects for producing honey, silk, and lac; used for cultural reasons, for instance in festivals.

b) Site limitations: Quality of soil, availability of light; risk of fire, water logging, damage caused by grazing, risk of interference with overhead electrical/phone wires, etc.

c) Life cycle and characteristics of the tree: How fast it grows, how tall and wide it will grow, whether it sheds leaves and whether the tree branches break easily.

d) Functions it can perform: Shade, windbreak, bee-forage, adding beauty (foliage, flower, shape), habitat for wildlife, etc.

There are two widespread misconceptions regarding trees that we must get rid of: (1) 'Don’t cut any trees' — the goal should be to plant more and cut more, this can happen if we plant more trees in our villages, towns and cities as well as wastelands, hills and marshy areas. Old trees in forests should be left alone. (2) 'Planting any tree is beneficial' — this is not the goal. If we want economic and ecological benefits, we must carefully choose the trees we plant, as explained above. Exotic species may grow fast, but they can cause many environmental problems.

Note for group leaders/educators

DRCSC hopes this will help you explain to children the importance of planting and protecting trees. If you need more information, do get in touch.