III) ROTECTING AND IMPROVING THE GREEN COVER

ublicity & awareness

blicity of particular event is of tmost important or its ruitful conduction. Therefore due care will be given to make public ware bout dif erent programmes & campaigns through print & electronic media. These events will include celebrating various Environment & Nature related occasions such s World Wetland Day (2nd Feb), World Forestry Day (21st Mar), World Earth Day (21st Apr), World Environment Day (5th June), V nmahotsava &Wildlife Week (1st week of Oct.) & so on so orth. All the stakeholders on these occasions will be called pon to contribute their part or the improvement of Greenery of the city & to express their concerns or the Conservation of Nature & Natural Resources.

ost lantation Care and Watering

All Government, Non-Government Agencies nd citizens should take necessary steps to maintain nd protect plantations by preparing proper maintenance nd watering schedule. Since Chandigarh is water deficit rea, particularly in summer, due care should be taken to save trees nd plants rom water stress. While prep ring watering schedule, ollowing points should be kept in mind:

- Accessibility of plantation site,
- Edaphic, topographic nd climatic conditions of site,
- eriod of water stress, Type of tree/plant

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As Chandigarh witnesses a long dry spell of around 6-8 months in a year, extra efforts should be made to water the plants at regular basis to ensure higher survival percentage and better growth. To minimize the use of drinking w ter in watering lawns & plants, Municipal Corp. and Engineering Deptt. have laid tertiary water lines to various parts of the city

rotection and conservation of existing vegetation/trees and improving its quality and density is as important as planting and maintaining new saplings. Every citizen, ll Government and non-Government organizations and local bodies have the responsibility to protect and preserve the existing flora of Chandigarh.

To protect and conserve the flora of Chandigarh, following steps would be taken on urgent basis:-

a) Replacement of dead, dying and diseased rees

It has been observed that in Chandigarh, along the roadside and in old parks some of the trees have died, whereas few others are eaten by termites nd are in the process of dying. These trees give n ugly look nd are prone to uprooting and breaking during storms nd attack/ spread of diseases etc. Therefore, as per the approval of the competent thority all such dead trees will be replaced with ornamental and pollution abating species in consonance with the planned architect of the city.

b) Maintenance of Aesthetic beauty of tree while pruning

Maintenance of Aesthetic Beauty of the tree while pruning is o utmost importance. Irregular cutting of tree branches in one direction destroy the shape of the tree canopy & presents n ugly look of the avenue. Further pruning on one side makes the tree asymmetrical & it starts leaning towards the branched side & ultimately poses serious threat of getting uprooted. Also irregular cutting of branches increases the possibility of insect and disease infections at irregular cut. Therefore Pruning and other such operations should be carried out under the direct supervision of concerned Horticultural staf and the mechanized instruments like power chain saw, etc, should be used for such works. Fresh instructions will be issued to the departments responsible for cutting/pruning of trees or voiding aforementioned damages to the trees.

c) Planting for future replacement

It is essential to create either a second row of trees or under-planting under the over mature trees well in advance to avoid treeless or vacant situation at the time when these over-mature trees will be removed or uprooted naturally. For this purpose, a replacement policy governed by the following principles will be dopted:-

1) Identification of trees which are likely to be replaced in the next ten years.

2) Replacement planting under these identified trees should be scheduled in such a manner that at the time of removal of old tree, new crop of trees is atleast 10 years old or crown of tree is developed enough to provide shade and mature enough withstand various climatic and biotic pressures.

3) Replacement should be carried outwith the superior stock of already planted species along Avenues.

4) Mixture of more than two species should be avoided in case of roadside venue plantations. While doing replacement planting, tall saplings of 6 eet nd bove should be used so as to reduce establishment period and maintenance cost.

5) At the time of replacement planting, it should be ensured that saplings of same ge group and same height are planted to provide an even look. Further, suf icient protection measures should be taken to avoid casualties, which normally results into gaps or uneven look to the avenue. In case of casualty, casualty replacement should be done with the sapling of similar height merging with that of other saplings of venue.

d) Selection of species to be planted under the overhead electric lines and telephone lines

It has been observed that the trees like Pilkhan, Chukrasia and Bahera which grows upto 40 feet height have been planted under electric lines which are hardly 15 eet bove ground level. These trees then require constant head back and heavy pruning and thereby giving non-aesthetic view to the road sides.

The species like *Putranjiva roxburghii, Millettia, Moulsari (Mimusops elengi), Lagerstroemia pecies, Cassia javanica, Cassia nodosa, Barringtonia* etc. may be planted under the electric lines running parallel to roads or in parks and green belts. These species may be given beautiful shapes by light pruning only. Moreover, the species like tranjiva, Moulsari and Lagerstroemia are having good and beautiful foliage and good capacity to absorb the air pollutants including dust.

e) Removal of Lantana, Parthenium Grass etc.

Besides being allergic, Lantana nd rthenium are obnoxious weeds which dversely fect the growth of indigenous species. They have an adverse impact on the biodiversity as it kills all kind of undergrowth. Amarbel which is a parasite has also invaded few trees in Chandigarh. It is a parasite which covers the whole foliage of tree and starves it of light and air. All greening agencies have been asked to remove these weeds at least twice year to ensure proper growth of indigenous flora.Instructions have been given to Horticulture Wings of both Municipal Corporation and Engineering Departments to keep their respective areas clear of these weed.

f) Composting/Vermicomposting to stop burning of leaves

It has generally been seen that the dried leaves and other waste materials are burnt on road sides nd lso under the trees. Burning not only causes air pollution but lso damages the live tree nd fects its growth. All greening agencies and local bodies should ensure that no burning of dry leaves and other wastes takes place in open and particularly under the tree. These leaves may be utilized to make compost/vermi compost manure by mixing cow dung with leaves and putting them into big pits.

The Departments may utilize the compost/vermi compost manure or their nurseries and plantations for better and healthy growth of saplings.

Municipal Corporation may make efforts to introduce composting in Nurseries nd various other sites. Specific allocation of these composting sites may be done by the Departments/ Municipal Corporation on roadsides for collection and dumping of dry leaves in those pits. All institutions and households are requested to make compost/vermi compost pit at their premises to convert dry leaves into compost or vermi compost which may be very seful for their kitchen garden. Municipal Corporation and Engineering Department will take strict ction against officials/ individuals responsible for burning of leaves.

g) Control of est attack on rees

Sustained & concerted efforts of various gencies under the guidance of AU advisory service have been successful in combating the epidemic status of Mango mealy bug in U.T. Chandigarh, thus preventing a serious threat to a wide range of flora. Similarly, ef orts are on to prevent stem borer attack on Arjun trees on 'Dakshin Marg' by dopting AU technology.

The plant protection work against the perennial pests as mentioned earlier will be continued and monitored from time to time. **Municipal Corporation and Engineering Department should complete the process of wrapping alkathene around ree runk by 15^{h} of December every year as this is he time for mealy bug nymphs to crawl up he ree.** Similarly for stem borer, (particularly for Arjun avenues) the solution of methyl parathion (4 ml. to a liter of water) should be injected into the holes (made by insects in the tree trunk) with the help of syringe and the holes be plugged with mud.

This will ensure the killing of stem borer (Inderbela sp.) Reg rding trees infested with termites the ollowing treatment method suggested by the scientists of Forests Research Institute should be ollowed to ensure growth & vitality of the tree.

1. **Control of termites attacking standing trees (bark feeding termites)**

In the areas of high termite activity, where the dam ge is very extensive and is likely to af ect the growth, chemical treatment may be carried out as follows:-

I) **Soil treatment:** One liter of insecticidal solution of 0.2% Chlorpyriphos 20 EC may be applied by digging a trench encircling the base of the tree.

ii) **Bark treatment:** To prevent the termite attack on the bark or the outer portion of the tree trunk, brush painting with the insecticide may be done after scrapping of the earthen plaster or galleries.

Formula for preparation of the insecticidal solution:

$$\text{Actual insecticide required} = \frac{\text{Solution required X \% (Percent ge)}}{\text{Formulation}}$$

Ready Reckoner for making upto 100 liters of diluted spray of desired strength:

% of actual dose required	Chlorpyriphos 20EC	Chlorpyriphos50EC
0.01	50 ml	20 ml
0.02	100 ml	40 ml
0.05	250 ml	100 ml
0.1	500 ml	200 ml
0.2	1000 ml	400 ml

Note: For example, if we require 0.2% solution of Chlorpyriphos 20 EC, then mix one liter of the insecticide in 100 liters.

The quantity required varies with the size of the mound. The following height dosage relationship for effective control of mound building termites has been given by Roonwal, 1985.

Mound height	Dosage of insecticide solution
90 centimeter	4.5 liters
1.20 meter	23 liters
1.50 meter	45 liters
1.80 meter	82 liters
2.10 meter	123 liters

It takes bout a week for the complete killing of the entire mound colony. Make 2 or 3 large holes in the mound and pour in the liquid by means of a b cket nd a large mouthed nnel.

Another most effective method is by poisoning the mounds with Aluminum Phosphoric tables. Two tablets should be placed in 1 meter mound and close all the openings with wet mud. The termites will die due to migant action (Mound poisoning) (Thakur, 1990).

h) Removal of concreting/tiling around he ree runk

Compaction of soil, concreting and tiling around tree trunk adversely fects its growth and life. It also reduces/ stops percolation of rain water into the sub soil and stops proper soil aeration of roots of the trees. This leads to tremendous damage to the trees. All greening agencies should leave a space of 6 ft. x 6 t. around the tree trunk to ensure proper growth and long life in addition to recharging of underground w ter aquifer. It has been decided to leave sufficient breathing space around tree trunks while doing pavements on road berms, parking areas etc.

i) Recharging of Ground Water Aquifers

It has been observed that the water table is going down in Chandigarh. This is primarily due to reduction in percolation of rain water. Rain water is lost due to surface run of s most of rea is tiled or concreted in the form of parking, pavements, road berms etc. To recharge underground water aquifers, it is essential to reduce/ minimize surface run off. To achieve this, perforated tiles should be sed in rking areas & road berms wherever possible.

j) Mulching of leaves for protection of saplings

Dry & wet straw grasses and leaves should be sed for mulching over the soil round tree/sapling stem to protect the roots & or conservation of moisture.

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