ONTARIO TREES—INDOOR AND OUT[1]

by P.J. Tucker

The ISA theme "78 Crusade for the Preservation of Trees" has been our concern for a number of years; in fact, the purpose of the Ontario Shade Tree Council is "To support and assist the efforts of all groups concerned with the propagation and preservation of shade trees."

In 1961 representatives from the parks and forestry departments of the municipalities, which form Metropolitan Toronto, and the Universities of Toronto and York, formed the Metropolitan Toronto and Region Dutch Elm Disease (DED) Committee. This committee was primarily concerned with DED and functioned until 1964, when a provincial-wide organization, the Ontario Shade Tree Council (OSTC) was formed, providing a forum for environmentally concerned citizens.

The basic difference between ISA (Canada) and OSTC is that, OSTC fills a provincial need and can if necessary influence the provincial legislature. Today we have a membership of approximately 250, encompassing all facets of the industry, including landscape architects, horticulturists, foresters, and lay persons.

Initially the council supported the efforts of the Shade Tree Research Laboratory, of the University of Toronto, and organized by a OSTC charter member, Prof. Erik Jorgensen. The main thrust at that time was the prevention and cure of DED. The council still actively supports Dr. Peter Rice who runs the training program for DED control via root flare injections. This program, centered on Ottawa, is also supported by the Canadian Forestry Service, and the National Capital Commission. Patent rights for the process is held by The Canadian Patents and Development Limited, however, OSTC has control over the application in Ontario.

Legislation involving trees has been our prime concern during the short life of the council, we succeeded in adding DED to the Ministry of Agriculture Plant Disease Act. Subsequently municipalities were able to pass bylaws to remove dead and/or dying elms from private property.

Other projects supported by the council include a superior shade tree selection program, highway beautification guidelines, topsoil conservation and municipal surveys involving arboriculture. Also a shade tree evaluation booklet for Ontario was developed in conjunction with ISA (Canada). More recent projects cover such items as arboricultural standards, metrification, nutrition studies and an information source brochure.

During its short life, the Council has initiated many programs to preserve Ontario's trees for future generations, and it is hoped that future councils will make even more progress in view of the many pressures on our environment today.

A year ago at the Philadelphia Conference, Mr. Everett Conklin presented a lecture on the interior landscape, as a sequel, I would like to discuss some of the maintenance problems encountered with Ontario's indoor trees.

Today, modern building complexes are climatically controlled. There is adequate temperatures for tropical plants, less than adequate humidity, and often inadequate light levels. The latter is the most important factor governing the success or failure of the interior landscape. The Eaton Centre (Fig. 1) utilizing natural light, is an example of a successful interior landscape, whereas, the Royal Bank building (Fig. 2) is the reverse. The large trees in the latter building appear to be in trouble. The limbs have been pruned back hard, the lower branches exhibit necrosis, and there is a deterioration of the planting in general.

In Ontario, as in many northern states, day length influences the amount of light an interior plant receives. The short days of November, December and January combined with low light intensities encountered during the winter months, in fact, compound interior plant problems.

Yellowing and dropping of leaves, particularly on the older growth, will occur in step with the low light conditions. Where management practices are

[1]Presented at the annual conference of the International Society of Arboriculture in Toronto, Ontario in August 1978.

Fig. 1. Eaton Centre

less than adequate other symptoms such as leaf tip necrosis, stem rot, and root rot may be prevalent.

What can be done to minimize interior plant deterioration? First, one can increase light duration and intensity with supplementary lighting; secondly, one can select plants that tolerate existing light levels, e.g. Ficus spp. and Norfolk Island Pine, *Araucara excelsa* generally require more light than they will receive in the Royal Bank landscape; thirdly, one can adapt maintenance practices to accommodate varying environmental conditions.

The third item is probably the most misunderstood factor involving interior vegetation. Three major problems evolve; too much water, too much fertilizer and too many insects.

Over watering symptoms (Fig. 3) such as, leaf tip necrosis and wilt, followed by stem and root rot are more common than drought symptoms. As a rule of thumb, the lower the light intensity, the lower the photosynthetic activity, the lower the water requirement of the plant. Other factors such as, the species, the volume of the soil ball and the plant location also influence water requirements.

The above axiom holds true for fertilizer uptake. Too many interior plants are over-fertilized; the following is an abstract from a letter to the diagnostic lab, University of Guelph, outlining a program for indoor plant maintenance.

Fertilizer: Osmocote once every three months, a soluble material (20:20:20?) every second month

Pesticides: Diazanon, malathion and Isotox weekly in combination with an oil spray or separately. Fungicide every two weeks.

Cleaning agent: one to three times per month.

Why did the above mentioned program produce such poor results?

Osmocote, a slow release fertilizer is controlled

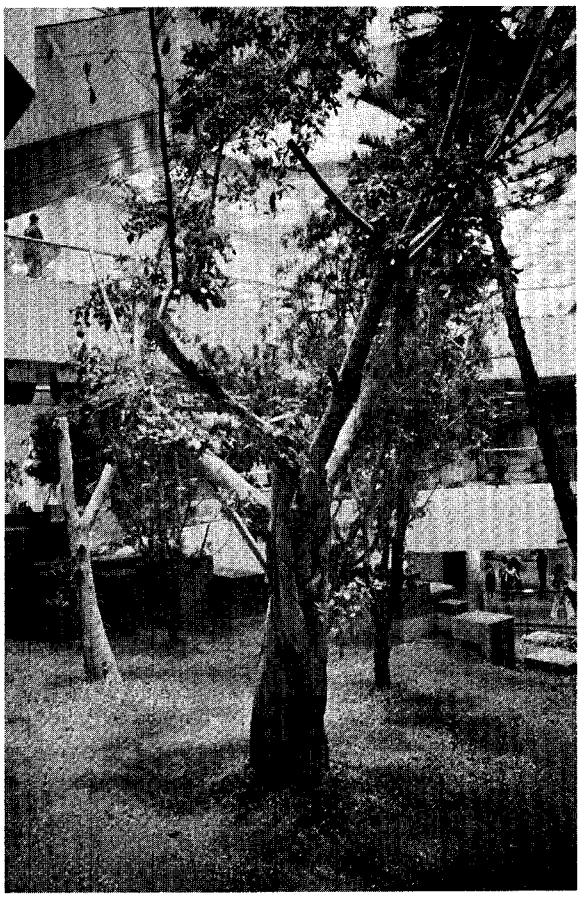

Fig. 2. Royal Bank

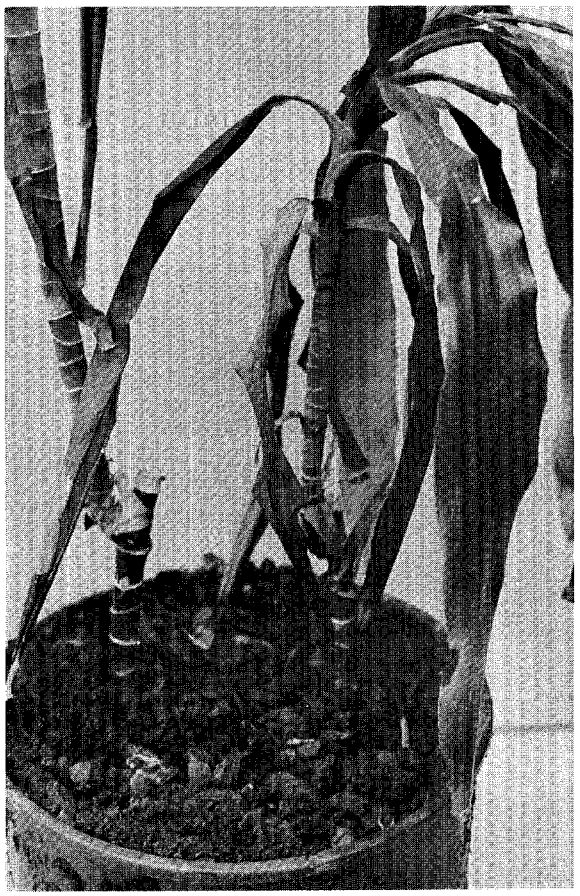

Fig. 3. Overwatered Dracaena 'Janet Craig'

by soil moisture, and in my opinion, should be eliminated from all indoor media. It is virtually impossible to control release during periods of low light and little growth; subsequently, a rapid buildup of salt levels occur, compounded in this case by additions of a soluble fertilizer. Visual symptoms such as leaf necrosis in new growth, stem rot, etc., are similar to those of overwatering; therefore a soil test for total salts is the best confirmation of the visual diagnosis.

Similarly with the insect control program, excessive use of insecticides does not necessarily control the infestation and may even precipitate problems. Malathion, for instance, is phytotoxic to the umbrella tree *Schefflera actinifolia.*

Spider mites (Fig. 4), mealy bugs and scale are insects commonly found on interior plants and must be controlled in the early stage of detection. However, the preventative spray program as listed above, is time consuming and expensive. Early observation and spot control should be adequate.

Finally the use of a fungicide and frequent use of a cleaning agent is unnecessary. Diseases are uncommon on indoor foliage, and if present are generally the result of poor management practices. Also, cleaning agents are phytotoxic to many interior plants, and should be used with care.

Minor nutrient deficiencies are uncommon but can occur. A high pH medium may result in manganese and iron deficiency, which is easily corrected by repotting in a medium of pH 6.0-6.5, or by the addition of chelates.

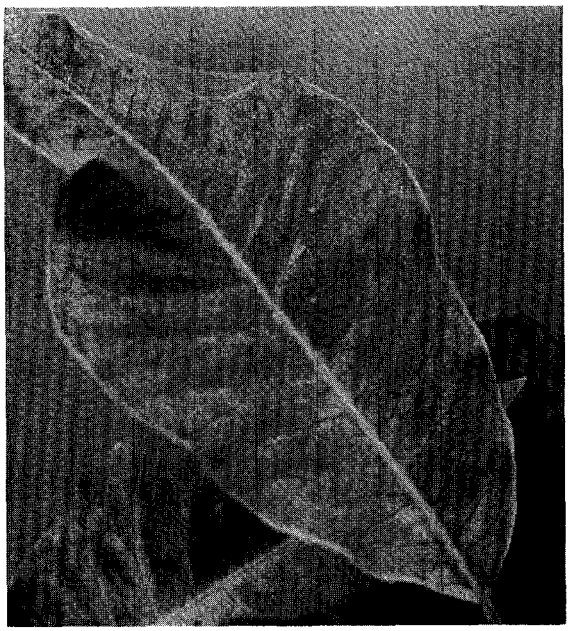

Fig. 4. Spider mite webs

Interior garden spaces in shopping malls, corporate headquarters, and banks are a part of modern living. Better use of natural light and spot lighting, better selection of plant material, and a better understanding of the plants requirements in a critical environment will inevitably produce a better landscape for both client image and employee morale.

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ABSTRACT

Flower, F.B. and I.A. Leone. 1977. **Damage to vegetation by landfill gases.** The Shade Tree 50(6&7): 61-72.

This study, which includes examination of the problems in New Jersey and other parts of this country, has enabled us to develop some criteria for on-site evaluation of the potential for a landfill gas vegetation growth problem. Modern practice dictates that the refuse be spread and compacted before being covered with a 6-inch layer of soil daily. Refuse spreading is necessary to insure efficient compaction, and compaction is required to save space and to reduce the amount of settlement which will take place in the area after the landfill is completed. The final soil cover for the refuse is supposed to be at least 2 feet deep. It is in this top layer of soil cover that the vegetative cover will be planted. The modern landfill does not permit open burning, therefore, it provides much more food for microorganisms. It is these microorganisms which generate the gases, mainly carbon dioxide and methane, which present problems for growing vegetation. The initial decomposition takes place aerobically, resulting mostly in the generation of water vapor and carbon dioxide. Since the refuse is deposited with compaction and covered with soil, there is minimal opportunity for new air to move into the refuse. This results in anaerobic degradation of the refuse, whereby methane and carbon dioxide are produced.