

to so-called "lost opportunity" and "mitigative costs" in the cost:benefit evaluation. But when will this end (or even slow down)?

Answers to offsetting these increasing costs of vegetation management, are found in working more closely with nature. Instead of wasteful pruning practices, misdirected removal policies, and spray over-kill, opportunities exist to relate natural methods to vegetation management. These concepts are often overlooked by the traditional engineering, forestry, or landscape architecture approach.

Natural pruning, selective removal, chemical growth inhibition, and manipulation of plant communities, reinforced where applicable by realistic local ordinances, can save substantially in budgeting and performing this work. Vegetation managers *can* manage their green world in harmony with the environment, and in harmony with ecologists, property owners, and government

agencies at each level.

We can benefit from application of nature's inherent self-healing and self-maintaining ways. Unnecessary costly expenditures can thereby be reduced. Written policy statements and manuals must be supplemented by indoctrination, training, and continual supervision in the field by competent technicians. Theoretical concepts must be applied differently for each existing situation.

So, to continue enjoying the benefits of our abundant green world, we must utilize all the applicable results of available research. Hopefully, we can then continue managing our environment — for ourselves, our children, and generations yet to come.

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## CANKER DISEASES OF TREES AND SHRUBS

by Francis W. Holmes

A canker is a dead spot on the surface of the branch or trunk, caused by an infection. One or several kinds of cankers occur on most, perhaps all, kinds of woody plants. The dead spot may enlarge until it encircles the branch or trunk, girdling it and killing all higher or outer portions for lack of water. It also may allow wood-decaying fungi to enter the interior of the branch or trunk. Sometimes the canker organism itself can cause rot; occasionally it prevents or retards rot.

**CONTROL:** Remove the diseased or infected portions of the plant during dry weather. If a small branch is infected, it is usually easiest to prune this out, cutting flush with the next larger branch or trunk to which it is attached. Burn or remove the infected parts, single spores produced on them can cause more infections. If a large branch or trunk is infected, cut back the bark to healthy wood all the way around the canker, then shape the wound to an oval, pointed in the directions of sap and water flow. Then scrape the surface of

the wound, to remove diseased tissues. Pruning tools should be sterilized frequently between cuts, for example with a 10% solution of household bleach or with 70% alcohol or with formaldehyde. Wash dry and oil these tools at the end of the day's work.

Treat the wound then like any other (healthy) wound: Swab its surface at once with an antiseptic (70% alcohol or shellac will do). As soon as the antiseptic dries, apply a tree-wound paint over the exposed wood. Avoid ordinary paints, which may be toxic to living tissues. This wound paint should be maintained as a constantly intact layer by repainting as often as needed, usually 3 or 4 times a year, until the wound has healed.

Many of the canker disease pathogens tend to attack weak trees. Make the tree vigorous, by such measures as appropriate feeding, watering, mulching, and control of other pests that afflict that tree. **EXCEPTION:** trees in the rose family (like apple, pear, mountain ash) may be attacked

more readily by the fireblight disease if they are succulent or are fed too much nitrogen. If the tree is competing with other trees, a choice may have to be made as to which tree should be allowed to survive in that general site.

Avoid wounding trees. Canker disease pathogens usually need a wound to enter, although they can enter through tiny cracks, through twigs killed by frost and sometimes through natural openings (lenticels and leaf scars) without any wound. Nevertheless, any evident wounds should receive prompt treatment, before they become infected by canker disease organisms. Wounds may be caused by hail, frost, insects, weight of snow and ice, lightning, animals, thorny branches, etc., as well as by people.

In a few special cases, special treatments are known. Black knot of cherry and plum often attacks again by spores from nearby wild trees, so infections on nearby wild cherries should be clipped off and destroyed until those trees are free of black knot. Endothia cankers on chest nut ("blight") are now known to be controllable by spraying or inoculating the canker with a low-virulence culture of the pathogen; the weaker fungus displaces the virulent strain, makes it non-virulent, and the canker may stop enlarging. Necrotic canker of beech is controlled by killing the

beech scale insect with dormant spraying of lime-sulfur and early August and September spraying of malathion. Fungicidal sprays are of doubtful practical value with canker disease control, since the season of infection runs from early spring thaw until late fall freezing; but fungicides have been found helpful on young trees in nurseries. If a fungicidal spray is being used on the property anyway, bark of trees ought also to be protected, against canker fungi. Bordeaux, fixed copper, lime-sulfur 1-50, benomyl, difolatan, and chlorothalonil have been used against various canker diseases. Some experiments are now being done with systemic fungicides.

**WARNINGS: 1. Most pesticides are poisonous! 2. Spray only when pest control is essential and when the pesticide used will not harm people or other useful forms of life in the vicinity! 3. Read and follow all directions and safety precautions on labels! 4. Handle carefully and store in original containers with complete labels, out of reach of children, pets and livestock! 5. Chemicals used to control pests of shade or ornamental trees or shrubs should be applied in a manner that precludes contamination of any agricultural commodity, food or feed product, or pollution of any water supply!**

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## ABSTRACT

Kemmerer, Harleigh. 1977. **Managing tree care: contract versus in-house.** *Grounds Maintenance* 12(1): 24, 26, 28.

In deciding whether to utilize in-house forces or contractors for tree care work, it will be necessary, for one thing, to determine the amount of use tree care equipment will receive and if that use justifies the purchase price and upkeep costs. Tree work is done differently by different institutions. Performance is the reason. Supervision is the most important cog in the performance wheel. Supervisors who plan work and know what they are talking about are on the way to gaining respect from the crew. The value of the foreman as the on-the-spot director of the work can't be overemphasized. With proper supervision and crew leadership the men will perform. The preceding gives a general idea of what is necessary to get performance from a tree crew. The information is intended as a tool to help an institution decide who should do the work. The administrative policy of the institution is the determining factor in deciding whether the work is done by in-house forces, or by contract, or a combination of in-house and contract forces.