

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.