

ELM YELLOWS (= ELM PHLOEM NECROSIS)

by F.W. Holmes

Cause. A mycoplasma-like organism, for convenience called "MLO." This is something between virus and bacterium—protoplasm in membranes, not cell walls.

Spread. The MLO is carried between elm trees by the white-branded leafhopper, *Scaphoideus luteolus*.

Distribution. Known since the 1940's in the Ohio River Valley. Now in 16 states. In NY it moves east about 4 miles/year. But a leafhopper can ride from Oneida to eastern Mass. in one day in a car. So, in Massachusetts it's been found (and wiped out) at least 3 times.

Hosts. American elm, including all its horticultural selections. EY is known also to infect the winged elm, but it's not clear how what other elm species are susceptible.

Symptoms. Leaves droop, curl, then yellow, finally brown and may drop. From first symptoms to death may take only a few weeks in mid-summer. May resemble other wilt diseases of elms.

Diagnosis. MLO's don't grow in culture, so there's no use sending samples to laboratories. Diagnosis is in the field. (1) Peel and **immediately** look at the inner **bark** surface of still-living twig, branch, or trunk. Instead of being cream-colored when first peeled (it darkens very quickly anyway, from contact with air), it's yellow to *butterscotch* to brown, sometimes mottled. This may be patchy, so take samples from several locations. Infected inner bark also has a *wintergreen* odor. This may be strong or very faint; if you don't smell it, put a bit into a small collecting tube, warm that in an inner pocket for a few minutes, then cautiously smell it just as you unstopper it.

Damage. Fatal. Above-ground symptoms may first appear a year after infection. During that time it can spread to another tree. Creates conve-

nient places for elm bark beetles to breed, thus increasing spread of Dutch elm disease in the vicinity, too!

Life-cycle. The MLO moves to the roots where it kills root tips and root hairs, so in effect the tree starves to death. Meanwhile it is picked up by the sucking of leafhoppers and carried to another elm.

Control. On healthy elms, thorough sprays of methoxychlor emulsifiable concentrate can control the leafhoppers, if applied: (1) as the first leaves become mature (during June, which also controls elm leaf beetles) and (2) immediately after the second leaf growth (mid-July). To include Dutch elm disease in the control program it is only necessary to have a single additional spray, earlier—about bud-break. Sanitation must include trees killed by BOTH diseases, as well as parts of elms killed by anything else.

Cautions. We can mention chemicals that are known to have some useful effect, but we can't say what may legally be used since regulations and/or labels change at any time. It is up to *you* to be sure that the container of any material *you* use names on its label this disease and your kind of tree!

Warnings. 1. Most pesticides are poisonous. 2. Spray only when pest control is essential & when the pesticide will not harm people or useful forms of life. 3. Read & follow all directions & safety precautions on labels. 4. Handle carefully: store in original containers with complete labels, out of reach of children, pets & livestock. 5. Chemicals for control of pests of shade or ornamental trees or shrubs should be used in a way that precludes contaminating agricultural commodity, food or feed products, or polluting water supplies.

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