Dutch Elm Disease Control in Illinois Municipalities

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ABSTRACT

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Twenty-one cities in the greater Chicago area in Illinois continue to monitor and report losses of elms in parkways after application of disease control techniques. Cumulative losses during 1957–1982 varied from 35 to 84%. Annual losses in cities that applied insecticides supplemental to sanitation procedures averaged 1–1.5% lower than in cities that used sanitation alone.

Additional key words: *Ceratocystis ulmi, Scolytus multistriatus*

Several municipalities in the greater Chicago area have suppressed elm tree losses from Dutch elm disease during the past 26 yr through sanitation or sanitation plus insecticide application. By 1966, this disease, caused by the fungus *Ceratocystis ulmi* (Buism.) C. Moreau, had killed more than 90% of the elms in neighboring cities that did not have control programs (3). Replies to questionnaires sent out since 1957 have been returned annually from municipal officials in 21 cities. Responses provide data on parkway elms that 1) died, 2) died and were not promptly removed, 3) were treated with soil sterilants to prevent root-graft transmission, 4) were sprayed with an insecticide to prevent feeding by elm bark beetles (primarily *Scolytus multistriatus*), and 5) remained apparently unaffected by the disease. Summaries of these reports through 1976 have been published (3–5). This paper summarizes data for 1977 through 1982.

Summary. Destruction of diseased trees before emergence of elm bark beetles from brood galleries is the essential element in disease control programs. Because there are two broods of beetles per year in northern Illinois, diseased trees found in June and July must be removed within 1 mo. All others

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Table 1. Elm losses to Dutch elm disease in 21 municipalities in the greater Chicago area with community control procedures

City	Original parkway elm population	Elm losses (% of original population)						
		1977	1978	1979	1980	1981	1982	1957 through 1982
Arlington Heights	7,300	2.1	2.2	1.4	1.0	2.2	1.7	43.9
Clarendon Hills	2,100	5.7	5.6	9.6	6.3	6.0	3.5	83.8
Elmhurst	12,000	3.3	3.4	2.9	2.2	2.8	2.1	60.4
Evanston[a]	18,000	3.4	1.5	1.7	1.7	3.5	2.4	43.9
Glencoe[a]	2,250	6.4	4.1	3.0	1.6	1.9	1.2	76.2
Glenview[b]	2,500	3.2	3.2	4.5	3.0	2.5	3.0	75.4
Highland Park[b]	5,600	1.7	2.1	0.9	0.4	0.9	0.6	79.7
Hinsdale[b]	7,000	3.8	3.8	3.2	2.5	2.2	1.2	45.7
Homewood	2,800	3.9	2.2	1.6	1.7	3.5	2.5	77.1
Kenilworth	2,600	6.6	2.8	2.7	2.0	2.7	2.2	48.2
LaGrange[a]	8,200	6.2	8.4	9.7	6.8	4.6	2.2	65.0
LaGrange Park	4,500	11.0	14.5	9.0	4.3	3.5	1.0	78.6
Lake Forest[b]	5,750	3.0	2.8	2.9	1.8	2.5	2.2	70.9
Mt. Prospect	5,200	3.3	3.3	6.3	5.0	5.9	3.6	62.3
Oak Park[b]	17,200	7.6	4.3	3.1	1.5	2.0	1.7	66.4
Park Ridge[b]	9,800	1.9	1.1	1.6	0.9	1.7	1.4	57.6
Riverside[a]	4,300	4.4	4.5	4.5	2.9	2.9	2.4	55.6
Skokie	9,000	6.3	5.5	7.8	9.8	5.5	5.3	82.4
Western Spring[b]	4,150	1.6	2.6	4.1	3.2	4.0	4.8	35.1
Wilmette	6,600	5.4	3.9	2.8	1.1	1.6	1.7	59.4
Winnetka	3,300	3.6	5.0	1.8	2.4	5.2	2.7	42.1

[a]Sprayed with methoxychlor insecticide 1977 through 1981.
[b]Sprayed with methoxychlor insecticide 1977 through 1982.

must be destroyed before 15 April of the following year. Methoxychlor is the only insecticide used in Illinois to prevent feeding by bark beetles on healthy elms. Eleven cities reported its use annually on more than 50% of parkway elms through 1981; only seven cities used the material on this percentage of trees in 1982. It is applied in almost all instances as a dormant spray in spring. No city is routinely using a soil sterilant to prevent transmission of the fungus through root grafts. Two cities have experimented extensively with injection of the systemic fungicide thiabendazole (Arbotect 20-S) to cure or prevent the disease. Two other cities have cooperated extensively with scientists from the U.S. Forest Service from Delaware, OH: one testing pheromone trapping for bark beetle control (1) and the other testing radical surgery as a therapeutic measure to remove the fungus from infected trees (2).

Annual elm losses, as a percentage of the original parkway population, in 21 reporting cities are given in Table 1. Also included are the cumulative losses from 1957 through 1982. These losses ranged from 35 to 84%, with losses in six cities less than 50% during the 26 yr. In most cities, losses in 1980–1982 were lower than in previous years because of the reduced residual elm population and the likelihood that elms remaining in the greater Chicago area are included in a disease control program, thereby reducing the total beetle population.

Many cities with control programs discontinued spraying with an insecticide when DDT was banned in Illinois in 1970. Cities continuing use of an insecticide from 1977 through 1982 are noted in Table 1. A comparison of sanitation alone versus sanitation plus methoxychlor sprays indicates that the additional control procedure reduced average annual losses by 1–1.5% during the recent 6-yr period (Fig. 1). Three of the six cities with total losses less than 50%, however, have not sprayed in recent years.

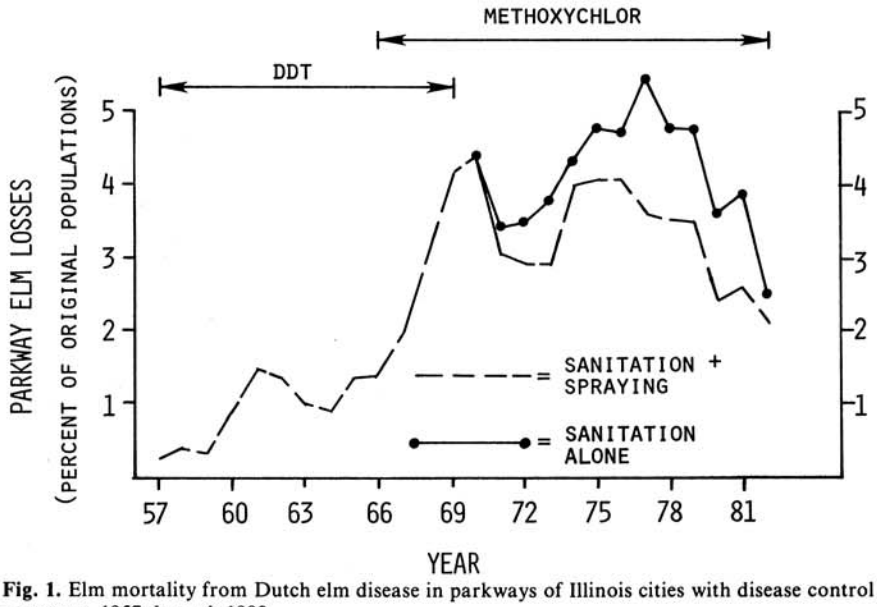

Fig. 1. Elm mortality from Dutch elm disease in parkways of Illinois cities with disease control programs, 1957 through 1982.

Conversations with city arborists indicate that residents of these communities are pleased with the control efforts. When annual losses approach or exceed 6%, a question of cost-effectiveness arises. Few cities have maintained successful programs with sustained losses exceeding this figure.

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