

## SAVING YOUR VALUED ELMS

Dutch elm disease continues to do its destructive work in Connecticut and in the nation. It has spread to approximately 17 states in the short space of 18 years. It has almost covered Connecticut in 15, and has caused the loss of thousands of valuable elms in this State. Often knowing these statistics but not aware of the facts which make the future of the elms look bright, Connecticut residents wonder if Connecticut is going to lose her elms.

Some have even compared Dutch elm disease to the chestnut blight which, striking suddenly 30 years ago, wiped out the chestnut trees in this region with startling rapidity. Fear has sometimes been expressed that the elms will meet the same fate.

### Why the Elms Are Not Doomed

The natural behavior of the disease and recent findings of science show that there is little basis for this point of view. Dutch elm disease has already been with us for 15 years, the time it took chestnut blight to complete its almost total destruction. The damage done to elms by Dutch elm disease in this period is in no way comparable. It is estimated that less than 1 per cent of Connecticut's elms, which number approximately 6½ million, have been attacked, although this percentage is higher in the southwestern part of the State where the disease is longest established. During these 15 years, no effective control of the disease was known and it spread almost unchecked.

Science has already uncovered methods that offer considerable hope of protecting healthy trees from Dutch elm disease. The chances that further research will supply a definite answer are excellent. Considering these factors, it seems unlikely that Connecticut will lose her elms.

### The Race Against Time

Dutch elm disease is spreading slowly enough to leave a small margin of time. Since we do not yet have the answer to practical control, the research scientists must find it before time runs out. Individuals and groups of individuals can buy more time by taking certain steps, in line with what is already known about the disease.

### WHAT CAN WE DO ABOUT IT?

Individuals and small groups are best fitted to wage the war against the Dutch elm disease. Large

scale programs, which have attempted to take in great numbers of elms, have been tried in the past and have failed. Moreover, the cost of such programs is prohibitive.

The best approach to combating the disease seems to be selective treatment: bending our efforts toward protecting our most valuable elms. By spending available time and money in giving the best possible care and treatment to our choicest elms, we can accomplish much more than by giving sketchy treatments to many elms of all degrees of value.

Several methods are now known that are helpful in protecting individual healthy elms. Some of these can be carried out by the elm-owner himself; others require the services of a tree expert.

### **A Healthy Tree Is Less Prone to Disease**

Healthy, vigorous elms are less apt to "come down" with Dutch elm disease if exposed to it than are elms in poor condition. Elms need a good supply of water and food if they are to thrive so they should be watered and fertilized as needed.

Attacks by foliage diseases and leaf-eating insects weaken elms. Protection against these pests by proper spraying pays off. The healthier the tree, the less apt it is to catch Dutch elm disease.

### **Control of the Carrier**

Dutch elm disease is carried from tree to tree by tiny insects called elm bark beetles. Female beetles use the bark of elm trees for egg-laying. They favor sickly and dying elms for this purpose and bore holes and tunnels in the bark of such elms to lay their eggs. The young grubs of the beetles hatch from these eggs and spend their larval life beneath the bark. When they become adult beetles, they leave the bark, often carrying Dutch elm disease spores with them. They immediately start to feed in the twig crotches of elms and, for this purpose, they prefer healthy, vigorous trees. It is easy to see, then, how they carry Dutch elm disease from sick trees to healthy ones.

Control of the elm bark beetle would obviously be a long step towards controlling the Dutch elm disease. Preliminary tests at this Station show that careful and thorough spraying with the proper DDT formulation will kill elm bark beetles before they are able to feed on and infect trees. Thus far, small and medium-sized trees have been best protected, since they can be more easily covered with sprays than large trees. There is danger of damage to the foliage of elms or near-by plants

from careless or over-spraying or from drifting spray. Further testing is necessary to perfect the method.

### **Control of the Fungus**

Dutch elm disease is caused by a microscopic fungus which grows in the water system of the tree. It produces toxins which are harmful to elms and cause wilting and dying of foliage. Growth of the fungus also results in stoppage of the water vessels of the tree and gives symptoms very similar to those of water shortage.

The water vessels where the fungus lives and grows are deep within the tree where they cannot be reached by conventional spray methods. To get directly at the heart of the trouble, the Connecticut Station is developing a method of applying chemicals around the base of elms whereby they are taken up by the roots and carried to the water-conducting parts of the trees. Oxyquinoline benzoate is the most successful material discovered thus far. It will not cure sick trees but, applied to healthy elms, may prevent them from contracting Dutch elm disease. Research on this method is continuing.

### **Will Cutting Down Trees Help?**

It is a well-known fact that Dutch elm disease travels readily from diseased trees to healthy ones. It seems logical, therefore, that removal of infected trees would answer the control problem. Many advocate such a program.

Some years ago quarantine for measles was the common practice. Now doctors no longer recommend this. By the time it is discovered that a child has measles, he has already passed the infection along to other youngsters and his removal from circulation does no real good. The same principle applies to Dutch elm disease.

From 1933 to 1943, the federal and certain state governments spent \$25,000,000 for the removal of diseased elms in the infected areas in the East. During this period, the spread of Dutch elm disease increased steadily. This would seem to prove that wholesale removal of trees does not pay.

It is true that destroying infected elms is useful in some cases. If, for example, a single diseased elm is located near several healthy valuable street trees, it should undoubtedly be removed. Once removed, such a tree should be destroyed or so treated that it will no longer be a source of danger. This may be done either by burning or spraying

to kill the elm bark beetles which breed in the bark and spread the disease. Quick action in destroying or treating the tree is important.

### **What About Resistant Elms?**

At the present time, there is no variety of elm, resistant to the Dutch elm disease, which is suitable for planting in New England. The Siberian elm is immune to the disease and is grown in some sections of the country. It does not bear up well under New England winters, however, and suffers badly from ice storms. It also gives less shade and is less attractive than the American elm, and has a very rank growth.

The Buisman elm shows some promise but is not yet available commercially. It has the disadvantage of slow growth for the first 10 or 12 years of its life and has a less attractive shape than the American elm. Some research institutions, notably the U. S. Department of Agriculture and Cornell University, have discovered resistant varieties of American elm, but these are not yet available.

### **A COMBINATION OF METHODS IS BEST**

The measures, then, which have proved helpful in keeping down the Dutch elm disease, are: (1) good general care of elms, (2) control of the elm bark beetle, carrier of the disease, with DDT, (3) control with oxyquinoline benzoate of the fungus that causes the disease, and (4) destruction or treatment of diseased or dead elms in cases where this seems advisable.

If most or all of these methods are combined, the chances of protecting individual healthy trees improve.

Applying them indiscriminately to large numbers of elms is expensive and ineffective. Thorough care of choice elms by individuals and small groups gives best results.

Further research is needed to give a definite answer to the Dutch elm disease control problem. In the meantime, the methods outlined above may help to slow down the spread of the disease and give scientists time to work out the solution.

A companion leaflet, "Combating the Dutch Elm Disease", gives details for using all of the methods known at present, including spray formulations. It is available without charge to any resident of Connecticut upon request to the Connecticut Agricultural Experiment Station, Box 1106, New Haven 4, Connecticut.