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EC57-1579 Insect Pests of American Elms

Bob Roselle

University of Nebraska-Lincoln, rroselle1@unl.edu

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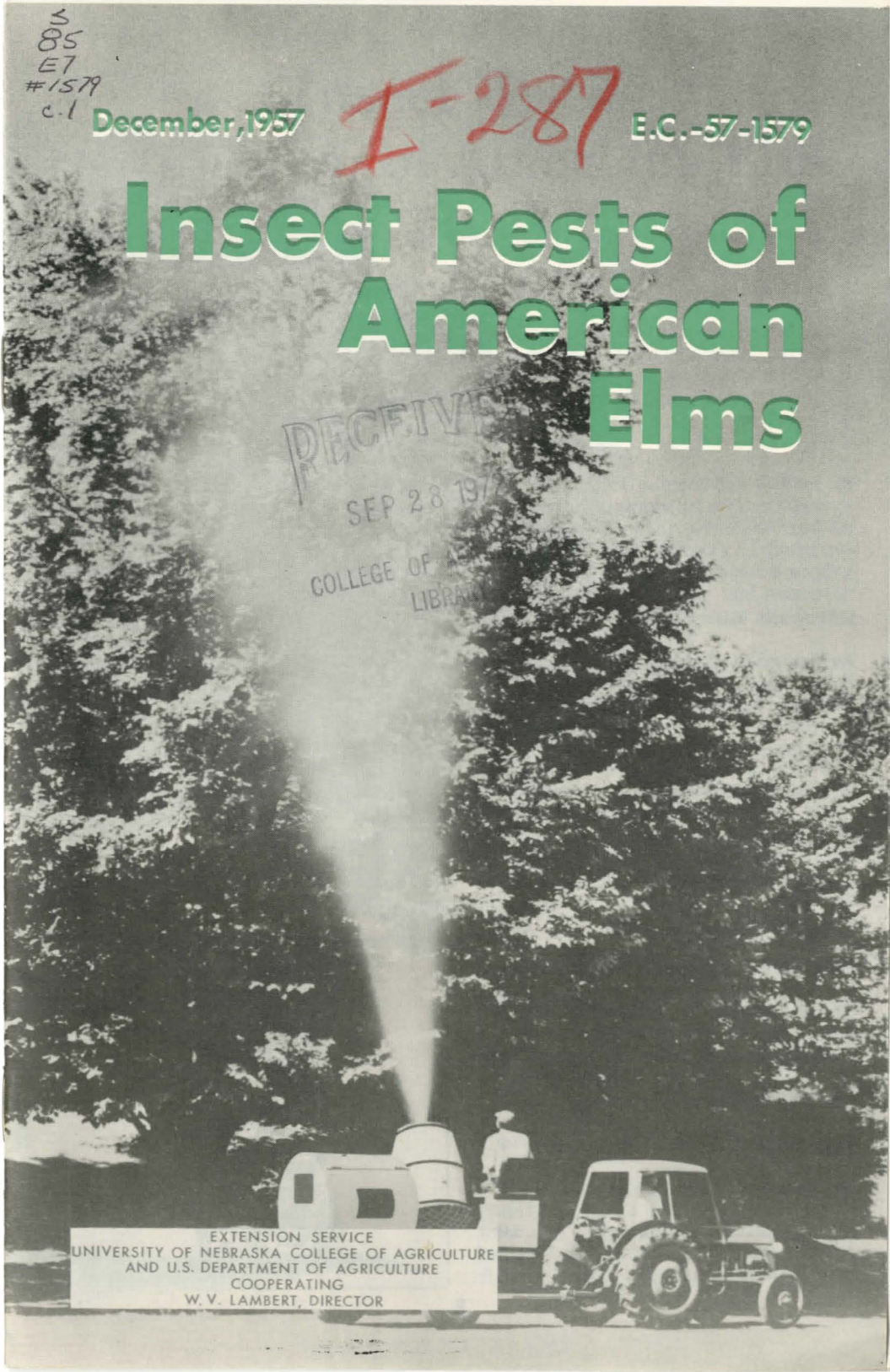
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Insect Pests of American Elms

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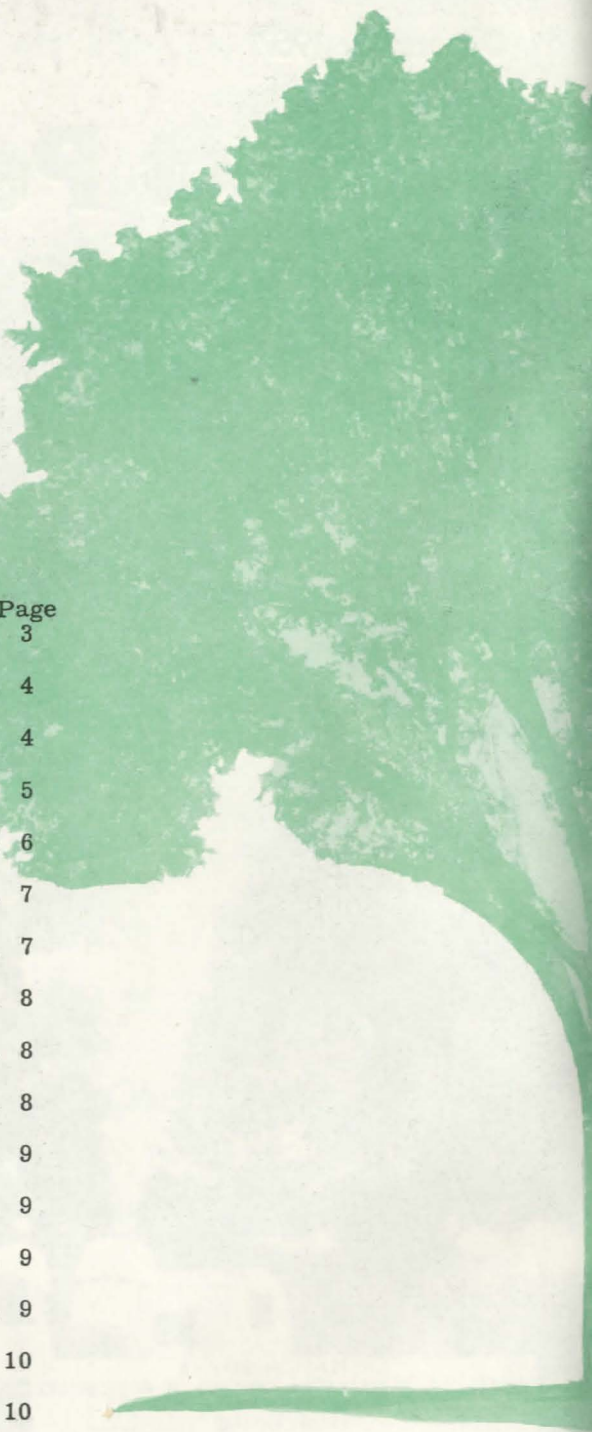
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Insect Pests of American Elms

By Bob Roselle, Extension Entomologist

EUROPEAN ELM SCALE

This soft scale is one of the most important insects of American elms in Nebraska. It weakens and may kill trees by sucking sap.

Description:

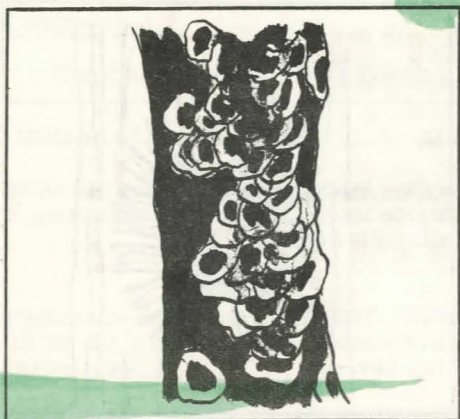
The insect passes the winter in an immature stage at which time it is about the color of bark and is usually found on the bark of the branches and trunks. It can be easily detected in the spring and summer by a white fringe around the body.

The females mature from May until June and produce eggs which are deposited under the scale covering. The eggs hatch into small, yellow crawlers which migrate to the undersides of leaves and terminals of branches where they feed during the summer and fall. Most of them migrate back to the branches and trunks of trees in the late fall to continue feeding and to spend the winter. There is one brood per year.

Outward indications of infestations are the presence of a sticky excretion called honeydew, and a black mold which grows upon the the honeydew. Other insects, especially ants, flies, and bees which feed on honeydew are often present.

Control:

Control measures should be applied in March and during the summer. A dormant oil spray should be applied in March before leaf or flower buds begin to swell. Ad



three gallons of a miscible oil to 100 gallons of water and apply with a hydraulic sprayer until all branches and the trunk are covered.

After the eggs hatch in summer a spray of DDT and malathion may be applied to kill the young scales as they are feeding on the undersides of leaves. Use four pounds of 25% wettable powder plus three pounds of 50% DDT wettable powder to 100 gallons of water. Spray with high pressure in order to cover the undersides of leaves. 25 to 30 gallons of spray material are required for a large elm tree. Sprays for crawlers are usually applied in late July or early August.

ARMORED SCALES

Description:

Small trees may be damaged by armored or hard shelled scales. Scurfy and oystershell scales are the most important ones in Nebraska. Infested trees have a scurfy appearance caused by the encrusting of scales. Individual scales are small, whitish or dark grey colored, and oystershell or teardrop shaped.

Small sucking insects live under the scales during the spring and summer sucking sap from branches. They overwinter in the egg stage

under the scales. In the spring they hatch into small crawlers which migrate to new locations on the branches, start feeding, and form new armored coverings.

Control:

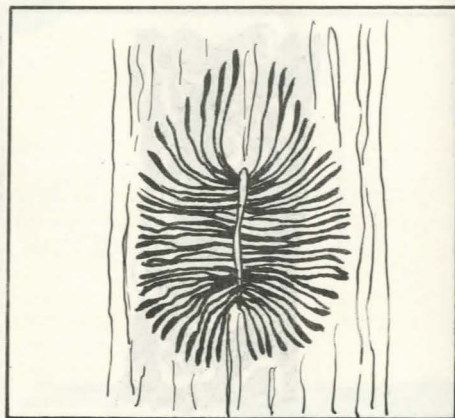
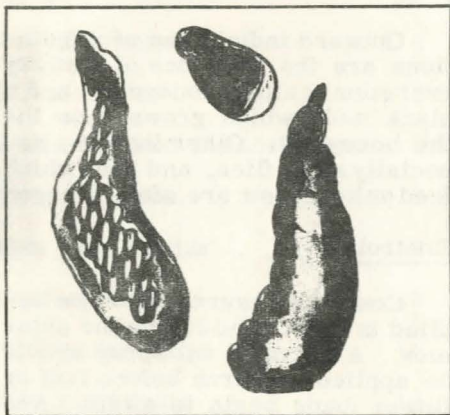
Control with dormant oil sprays as described for European elm scale. Spring applications of malathion, two pints of 57% emulsifiable concentrate to 100 gallons of water, at the time eggs hatch are also helpful. Spring sprays should be applied about the first week of June and repeated in 14 days.

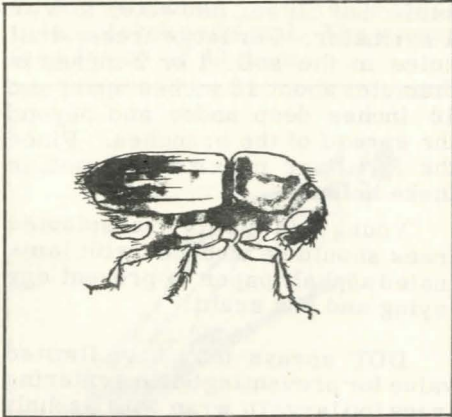
ELM BARK BEETLES

Description:

The smaller European elm bark beetle is widely distributed in Nebraska. This insect is the principal carrier of the fungus organism causing Dutch elm disease. This disease is not known to be in Nebraska at the present time, but could be introduced in the future.

Female beetles construct egg chambers under the bark of dead elm trees or those weakened by drought or disease. The egg chambers appear as vertical grooves on the surface of the trunk wood just under the bark.





The young larvae make smaller galleries which radiate away from the egg chamber. After emerging as adult beetles, they migrate to healthy elms where they feed in the crotches of twigs. It is at this time that the insect may transmit the fungus causing Dutch elm disease.

If the tree from which the adult beetles emerge was killed by the Dutch elm disease, the body of the adult beetle becomes contaminated with the disease organism. Their feeding on the twigs of healthy trees produces wounds in which the disease organism is accidentally deposited. After feeding, the adults return to dead or dying elms to deposit eggs. Normally there are two broods each year. In Nebraska all stages of the beetle may be present at a given time.

Control:

Control consists of (1) keeping

the trees in a healthy, vigorous growing condition, (2) free of mechanical injuries, (3) removal and burning of dying and dead trees, (4) pruning of dead branches, and (5) applications of insecticides.

Trees should be watered and fed, especially if they are crowded by other trees, buildings, walks, or streets. Heavy watering is recommended during drought periods, both summer and winter.

Spraying with DDT is useful for valuable shade trees when the disease is known to be present, but is usually too expensive for effective community control. Sanitation and maintaining a healthy growing condition is an important community program. A suggested dormant spray is shown below.

Hydraulic equipment is preferred since more effective coverage can be obtained. Also, trees away from parking areas can be readily sprayed. Fog generators are not recommended.

DDT emulsion concentrates should have a xylene type solvent to reduce the possibility of injury to elm and other trees.

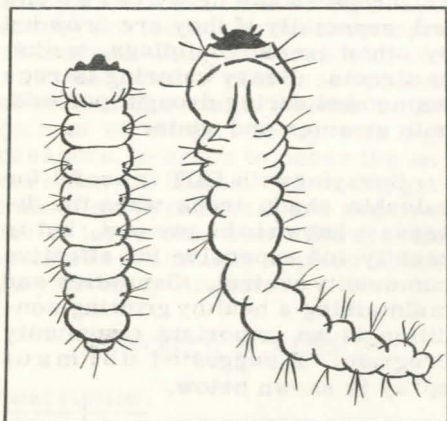
ELM BORERS

Description:

American elms are subject to damage by round headed and flat headed borers. Heavy borer infestations usually follow periods of

Method of Application	Material	Time
Mist blowers. Use 2 to 3 gallons per tree.	DDT, 25% emulsifiable concentrate, 25 gallons to 25 gallons water.	As late as possible in spring before leaf buds open. Usually in early April.
Hydraulic sprayers. Use 20 to 30 gallons per large tree.	DDT, 25% emulsifiable concentrate, 8 gallons to 100 gallons of water.	As late as possible in spring before buds open. Usually in early April.

drought, or occur in association with diseases or injuries which tend to weaken trees. Healthy, vigorous trees normally are not seriously injured by borers. It is easier to prevent borer infestations than to control them.



Control:

Trees should be watered heavily during dry periods. Irrigate with a lance or for a prolonged period of time on the soil surface. Give each tree all the water the soil will absorb in a period of 8 to 12 hours, longer if the soil will still absorb water, or a shorter period if it will not. Obviously the water must be applied slowly in order to allow the soil to absorb it without excessive run-off.

Repeat irrigation every two weeks during prolonged dry periods, or if the trees are surrounded by pavement, walks, or buildings. Irrigate an area the size of the extended branches of the tree.

Stimulate growth and vigor by fertilizing in the early spring. For trees under six inches in diameter use 2 1/2 pounds of a 10-6-4 or similar complete fertilizer per inch of trunk diameter. For trees larger than six inches in diameter use five pounds of a 10-6-4 fertilizer per inch of trunk diameter. For small trees, apply the fertilizer to the

surface of the soil and water in with a sprinkler. For large trees, drill holes in the soil, 1 or 2 inches in diameter about 18 inches apart and 18 inches deep under and beyond the spread of the branches. Place the fertilizer mixed with soil in these holes.

Young and newly transplanted trees should be wrapped with laminated asphalt paper to prevent egg laying and sun scald.

DDT sprays may have limited value for preventing borers entering trees too large to wrap with asphalt laminated paper. Prepare the spray solution by mixing eight pounds of 50% wettable DDT powder in 100 gallons of water. Apply the first spray about the first of May and repeat every 14 days for four applications. Make applications to the entire trunk and larger branches. It is not necessary to spray the foliage.

Borers established in trees can be controlled only by removal with a sharp knife, crushing with a stiff wire, or fumigating by injecting carbon tetrachloride or borer paste into the burrows and closing the opening.

Prune out all dead or dying branches of trees. Paint all wounds with shellac followed by an asphalt tree paint or a house paint.

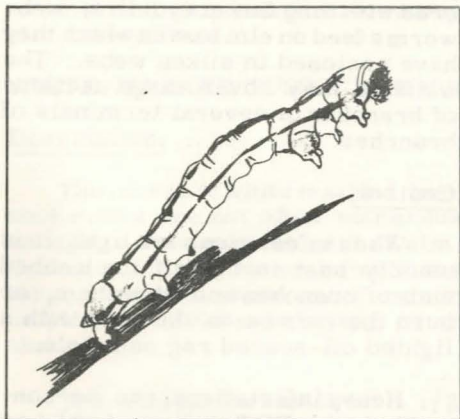
SPRING CANKERWORMS

Description:

Cankerworms are small, dark colored "measuring" worms that may completely defoliate elm, hackberry, and other trees if not controlled. They may hang on slender strands of silk in large numbers, becoming a nuisance by falling on pedestrians and crawling on sidewalks.

Wingless females climb trees early in the spring and deposit eggs

on the branches. The eggs hatch in late March and April. The worms feed for 30 or 40 days.



Control:

Infestations can be prevented by applying tree tanglefoot bands to trap the females as they climb the trees. A strip of building paper eight inches wide should be wrapped around the tree and tied securely with heavy twine. Stuff cotton batting under the lower edge of the paper band to prevent females from crawling under the paper. Smear a 4 inch band of tanglefoot on the building paper.

To be effective, the bands must be placed on trees in February.

Cankerworms are easily controlled with DDT sprays. When infestations are first noticed spray with a suspension containing three pounds of 50% wettable DDT powder in 100 gallons of water. For smaller amounts use three tablespoons per gallon of water.

Practical control on large trees can be obtained only with high pressure hydraulic sprayers or with mist blowers. Many pest control operators are equipped to spray large shade trees in Nebraska.

Over a period of years it is more practical to control cankerworms

with sprays than with tanglefoot bands.

SPANWORMS OR LOOPERS

Description:

These are large "measuring" worms, whose greyish or brownish colors blend with the twigs. Spanworms resemble small twigs, and are difficult to detect. They feed on leaves much like cankerworms. They rarely are of importance in Nebraska.

Control:

When numbers are large enough to cause defoliation, they should be controlled with a combination of DDT and malathion as described for spiny elm caterpillars.

ELM LEAF BEETLES

Description:

Elm leaf beetle larvae and adults occasionally are important leaf feeding insects of the American elm in western and central Nebraska. They are capable of completely defoliating trees in those seasons when there is an outbreak.

The adult beetle is about 3/8 inch long, robust, cream colored with an irregular black stripe down the middle of the back and irregular black spots on each side of the back.

The larva is shaped like a Colorado potato beetle larva; has a yellowish color with a single row of small black spots along each side.

Control:

Elm leaf beetles skeletonize the leaves, producing a lace-like appearance. Control measures should be taken when skeletonization is first noticed.

Spray with a suspension of three

pounds of DDT, 50% wettable powder in 100 gallons of water. Large trees must be thoroughly covered with the insecticide.

The addition of four pounds of 25% malathion wettable powder is desirable to prevent a build-up of spider mites which often follows DDT sprays.

SPINY ELM CATERPILLARS

Description:

Spiny elm caterpillars are black, speckled with small white dots and have a row of reddish spots along the back. They are covered with rows of branched black spines. The adult is the mourning-cloak butterfly.



Control:

Often elms become heavily infested and control measures are feasible. Spray with a combination of two or three pounds of 50% wettable DDT powder and four pounds of 25% wettable malathion powder added to 100 gallons of water.

For small trees, use three tablespoons of DDT powder and four tablespoons of 25% wettable malathion powder to one gallon of water.

FALL WEBWORMS

Description:

Green or yellow caterpillars with a dark stripe down the back and yellow stripes along each side, covered with long fine grey hairs, webworms feed on elm leaves which they have enclosed in silken webs. The webbing may cover large sections of branches or several terminals of branches.

Control:

When infestations are light, it is usually best to cut off the webbed ends of branches and burn them, or burn the nests in the tree with a lighted oil-soaked rag on a pole.

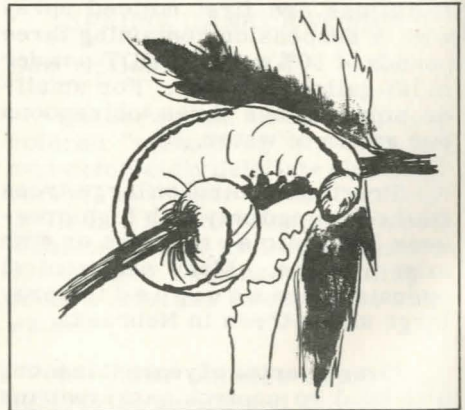
Heavy infestations can be controlled with DDT and malathion sprays as suggested for spiny elm caterpillars.

ELM SAWFLIES

Description:

The larva is pale cream to greenish color with a black stripe along the center of the back. Small black dots are present in a line along the side of the body.

Usually they feed and rest with the tail coiled about twigs or stems. Rarely are they important pests of elm trees, but can cause damage by eating leaves when occurring in large numbers.



Control:

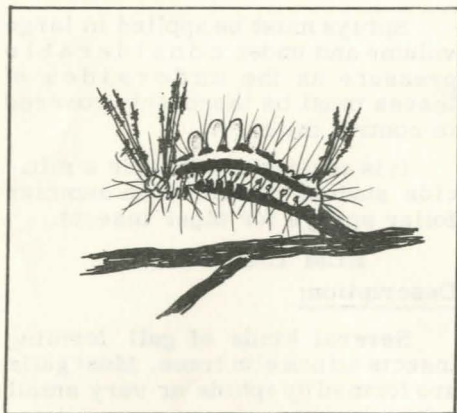
They can be controlled with DDT and malathion as described for spiny elm caterpillars.

WHITE-MARKED TUSSOCK MOTH

Description:

The larvae of white marked tussock moths are not often numerous enough to be a serious pest of elm. Occasionally they occur in numbers large enough to cause some minor defoliation of elms and many other shade trees.

The caterpillar is about 1 1/2 inches long, hairy, has four white brushes of hair on the back, a red head, two tufts of long black hairs like horns, a third black tuft at the rear, and a dark stripe down the middle of the back.



Control:

Usually parasites keep this insect under control. In the absence of parasites, control with DDT and malathion sprays as described for spiny elm caterpillars.

TWIG GIRDLERS

Description:

Twig girdlers are beetles which girdle the terminal branches of

elms causing them to drop to the ground, or hang loosely. Eggs are deposited in the portion which falls.

The beetles are rarely observed. The damage is the first indication of their presence.

Control:

There are no adequate controls except to collect and burn the fallen twigs.

ELM LEAF APHIDS

Description:

Several kinds of aphids suck sap from elm leaves. Some are very small, greenish colored and feed on the undersides of leaves, but do not cause leaves to curl. Others are relatively large aphids, covered with a white wax-like secretion, and cause leaves to curl around colonies.

Most elm aphids do not cause serious damage to trees under normal growing conditions. They do, however, excrete a sticky material which may drop on automobiles, porches, walks, and become a nuisance.

Control:

When controls are desired, use malathion 57% emulsifiable concentrate at the rate of two pints per 100 gallons of water. Large trees must be thoroughly sprayed with high pressure equipment or mist blowers. Small trees can be sprayed with knapsack sprayers, using two teaspoons of malathion to one gallon of water.

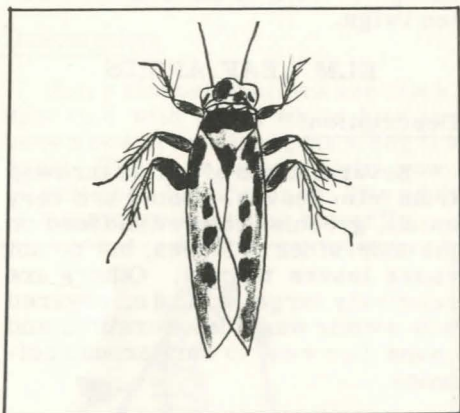
LEAFHOPPERS

Description:

Most leafhoppers which attack elm are small, greenish or greyish colored, active insects.

They feed on the underside of leaves, jumping or flying readily when disturbed. They suck sap from the leaves, and heavy infestations may leave a bleached, yellowish appearance in the leaves.

At least one species, the elm leafhopper, is an important carrier of phloem necrosis, a virus disease fatal to American elms.



Control:

Control of leafhoppers is probably justified only when phloem necrosis is known to be well established, and then it is no assurance the elms will not contract the disease. Use three gallons of 25% DDT emulsifiable concentrate in xylene to 100 gallons of water as a foliar spray in early June and again in mid-August.

Two pints of 57% malathion emulsifiable concentrate should be added to each 100 gallons of spray to prevent a build-up of mites. The insecticide must cover all leaf surfaces.

RED SPIDER MITES

Description:

Red spider mites are not spiders and not all of them are red. They are small pale yellow to black mites which suck juices from the undersides of leaves.

Heavily infested leaves have a bleached appearance and may turn brown if infestations are extremely heavy. It is difficult to detect them because of their small size. If leaves are bleached, a close examination of the underside of leaves with a small magnifying glass will reveal them if present. They range from the size of a pin point to a small pin head.

Infestations may increase following foliage applications of DDT. DDT will kill the natural enemies of red spider mites, but does not kill the mites.

Control:

It is not feasible to attempt to control light to moderate infestations, and heavy infestations are difficult to control. If serious damage is obvious, use a miticide such as aramite, malathion, dimite, chlorobenzelate, ovotran or others.

Sprays must be applied in large volume and under considerable pressure as the undersides of leaves must be thoroughly covered to control mites.

It is advisable to include a miticide such as malathion in summer foliar sprays for other insects.

ELM LEAF GALLS

Description:

Several kinds of gall forming insects attack elm trees. Most galls are formed by aphids or very small mites.

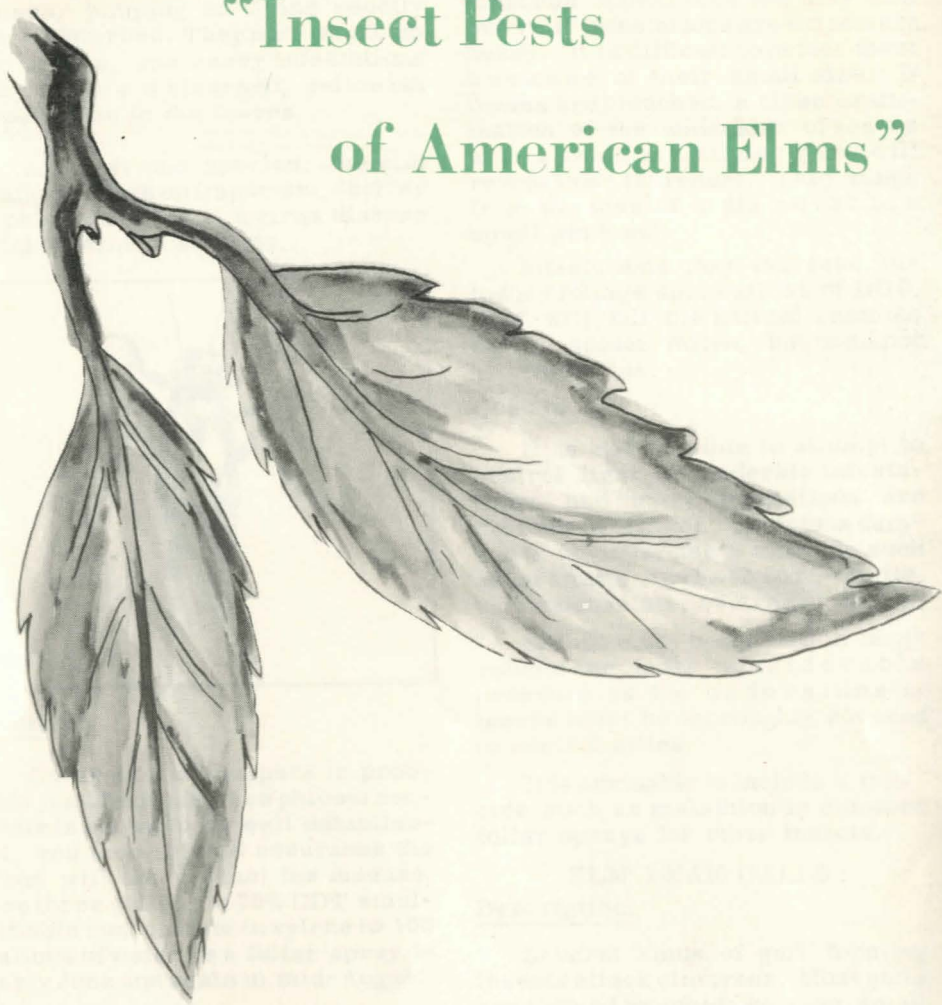
The cockscomb gall, which is very common, is a green or reddish cockscomb-shaped ridge between leaf veins on the upper surface of leaves. It is formed by aphids.

Small globular galls on the upper surface of leaves are caused by microscopic mites.

Control:

Normally leaf galls are not of importance. There is no effective method of control.

"Insect Pests of American Elms"



Description and Control of Pests

That Attack Our Elm Trees