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TEXAS AGRICULTURAL  
EXTENSION SERVICE

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# Texas Pecan Pest Management Newsletter



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This is the first issue of the **Texas Pecan Pest Management Newsletter** for 1993. This letter will resume on a regular basis from April through September. The **Texas Pecan Pest Management Newsletter** will contain current insect and disease summaries, upcoming events, short summaries of county situations and progress reports of result demonstrations. I will also continue the series on beneficial insects associated with pecans.

From mid-April through mid-June a pecan nut casebearer prediction model will accompany each newsletter. The prediction model is an aid to assist you in determining when to anticipate casebearer activity. It is not intended as an automatic spray date.

Also, the author welcomes your comments or suggestions on topics you would like to see discussed. I can be reached at P.O, Box 2150, Bryan, Texas 77806-2150.

possible but before budbreak. Dormant oil effectiveness increases as temperatures increase and insect metabolism increases. All oils labeled for pecan are for dormant application.

**Summer oils** are lighter than dormant oils and are formulated for use during the spring and summer on some plants.

**Superior oils** are the most highly refined of all horticultural oils. These oils are used primarily during the growing season, however they may be used as a dormant oil by changing the rates.

All too often the label of a horticultural oil is limited. There is information on the label, but you must know what to look for. The following information should be listed on a label and will assist you in determining the quality.

**Unulfonated residue (UR)** is a measure of purity or degree of refinement. This number is listed as a percent with 92 percent being a minimum.

**Viscosity** is a property used to define oil heaviness and is expressed in seconds. Spray oils fall into the 60 to 200 second

## Horticultural Oils

Petroleum or horticultural oils have been used in agriculture as a pesticide for over 100 years. Technology in the refinement of these oils has come along way since the use of engine oil emulsions. Today, horticultural oils are refined to certain specifications and can be used on a wide range of plants. In pecans, oils are used during the dormant season for the control of obscure scale and phylloxera. Recommended rates are 4 gallons per 100 gallons or 4 ounces per gallon.

Pecan and hickories are considered oil sensitive plants and all oil use should be restricted to the dormant season.

There are several types of horticultural oils on the market today which may cause some confusion. The following is a brief description of the different types of horticultural oils that are on the market and an explanation of information that may be present on the label.

**Dormant oils** are the heaviest of the horticultural oils and are formulated for use on dormant plants only. Apply these oils as late in the dormant season as

range with heavier oils rating 100 or higher. The higher the rating the more persistent the oil on the plant. Dormant or semidormant trees will tolerate heavier deposits than trees in leaf.

**Distillation** temperature range is a measure of the volatility of an oil. Horticultural oils have a narrow distillation range of (400 to 488 F) . The lower the distillation temperature the quicker the evaporation. Dormant oils will have a distillation range of around 438 F, while superior oils will be around 412 F.

**Gravity** is another method of weighing oil. When related to viscosity and unsulfonated residue it can provide an index to oil paraffinicity. Spray oils must be largely paraffinic to be safe for plants. Gravity is measured in degrees and the higher the number the more paraffinic the oil. Thirty degrees is the minimum standard.

Before a horticultural oil is applied always read the label for mixing instructions, rates and plants that can be treated.

## Insects

### Phylloxera Control

During May and June many producers will begin to notice swellings on pecan stems and foliage. These galls, warts, growths, knots and bumps are cause by an insect called the phylloxera.

There are five species of phylloxera that attack pecan, four of which are known to reduce yields.

Of the four damaging species, the pecan phylloxera *Phylloxera devastatrix* Pergande is the most damaging. Heavy infestations of this species will cause defoliation and crop loss.

Phylloxera overwinter as an egg in the rough bark of the tree. During March and April around the time of budbreak, the eggs hatch and the crawlers migrate to the new growth. Once a crawler settles on the new growth and begins to feed it does not move. Within a week after feeding plant tissue begins to surround the crawler and gall formation is initiated.

Phylloxera infestations can be controlled to some degree with dormant oil or controlled with insecticide treatments at budbreak. The control provided by dormant oil will depend on application. Because dormant oil is a contact insecticide, enough pressure will be needed to force the oil into the bark crevices where the insect is over-wintering.

For insecticides to be effective they will need to be applied before the insect is embedded in the tissue. Insecticides should be applied before new growth is 2 inches.

Insecticides and rates per 100 gallons recommended for phylloxera control in commercial orchards are: chlorpyrifos (Lorsban® 4E @ 1 pint, Lorsban® 50W @ 1 pound; endosulfan (Thiodan® 3EC @ 0.66-1.0 quarts, Thiodan® 50W @ 1-1.5 pounds) Lindane® E-1 @ 1.5 pints and malathion 57%EC @ 1.2 pints. Home-owners may use malathion at 2 tsp. per gallon.

Some varieties of pecan are more susceptible to phylloxera than others, so spot applications can be made to varieties or sections of an orchard which had galls the previous season.

Controlling phylloxera infestations is not only important in reducing mid season defoliation and reducing crop loss, but it indirectly affects hickory shuckworm populations.

Phylloxera galls, especially the stem phylloxera, are early season feeding sites for the hickory shuckworm. In a 1973 study in Oklahoma hickory shuckworm or evidence of shuckworm activity was present in 88.5% of stem phylloxera galls and 21.6% of leaf phylloxera galls from a native tree.

### Asian Ambrosia Beetle

The Asian ambrosia beetle is a relatively new pest in east Texas and where found has caused some serious problems in young pecan orchards.

This insect is not particular about its host and in the tropics over 120 different plants have been recorded as hosts. In the United States some known hosts include pecan, peach, cherry, plum, persimmon, golden rain tree, sweet gum, Shumard oak Chinese elm, sweet potato and magnolia.

The Asian ambrosia beetle is a minute bark beetle that was first detected in the U.S. in Charleston County, S.C. in 1974. It has since spread to North Carolina, Florida, Louisiana and Texas. It was first identified in east Texas in 1985, Figure 1.

The adult beetles are minute with the females being 2.1-2.9 mm long and males around 1.5 mm long. Males are also flightless and rare.

Despite their small size infestations by this insect can be very obvious. As female beetles bore into a host plant and excavate galleries they push out stings of boring material. These protrusions will be about one to one and a half inches in length and resemble small toothpicks, Figure 2. A heavily infested tree may have several dozen to a hundred or more entries.

Galleries excavated by the adult female will extend into the heartwood of the tree rather than just under the bark. The size of the host material can range from 0.8 inch to 11.5 inches.

Unlike most bark beetles that attack trees under stress, the Asian ambrosia beetle seems to also attack healthy trees.

After females have excavated the galleries, a brood is produced and the galleries are inoculated with a fungus from spores the female beetle has carried with her. Both the adult and larvae feed on the fungus that lines their galleries rather than feeding on the host plant.

The female beetle stays with the brood until maturity. Upon maturity, females mate with their brothers and all progeny exit via the single parental entrance hole. Trapping of adult beetles in Tyler County indicates peak activity during March.

Control measures for this insect are limited. Since the beetles spent most of their life inside a host plant, an insecticide with a

long residual would be most effective. In a laboratory insecticide study conducted in South Carolina against a related species of ambrosia beetle, chlorpyrifos (Lorsban 4E) and parathion 15WP provided the most effective control. In the test pyrethroid insecticides were not effective only providing 18% control after 24 hours.

If any one experiences an infestation outside the area indicated on the map I would like to be contacted.

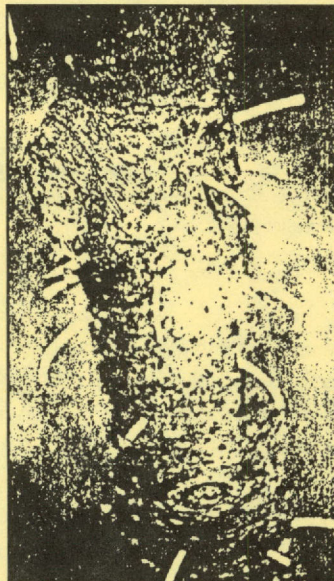


Figure 2 Boring material from infested tree.

## Beneficial Insects

### Convergent Lady Beetle

Lady beetles, sometimes referred to as lady bugs or ladybird beetles are some of the most common or well known beneficial insects. There are many different species of lady beetles with approximately 475 species having been described in

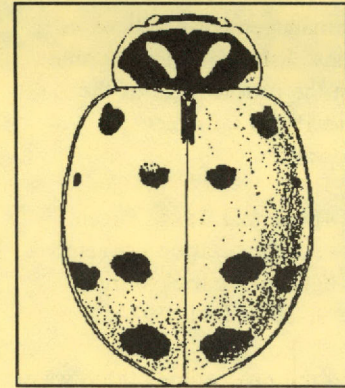


Figure 3 Convergent lady beetle adult

American north of Mexico. One of the most common species is the convergent lady beetle *Hippodamia convergens* Guerin-Meneville, Figure 3. The convergent lady beetle adult is generally orange to reddish orange with varying numbers of black spots on the wing covers. This species can be distinguished by the two converging white lines over the head area.

Nearly all lady beetles are predaceous as adults and larvae. Although lady beetles will feed on a variety of small soft bodied arthropods, aphids seem to be the preferred prey.

All stages of lady beetles can be found in the presence of aphids. Eggs are brightly colored and are laid in groups on the plant tissue. Eggs are often compared to footballs standing on end. Larvae are alligator shaped and black with orange or reddish orange spots.

## Yesterday

When space allows I will try and include a section on historical information relating to

pest management practices in pecans. Information will come from the proceedings of the Texas Pecan Growers Association.

The 4th annual Texas Pecan Growers Association convention was held in Fredricksburg on June 9, 10 and 11, 1924.

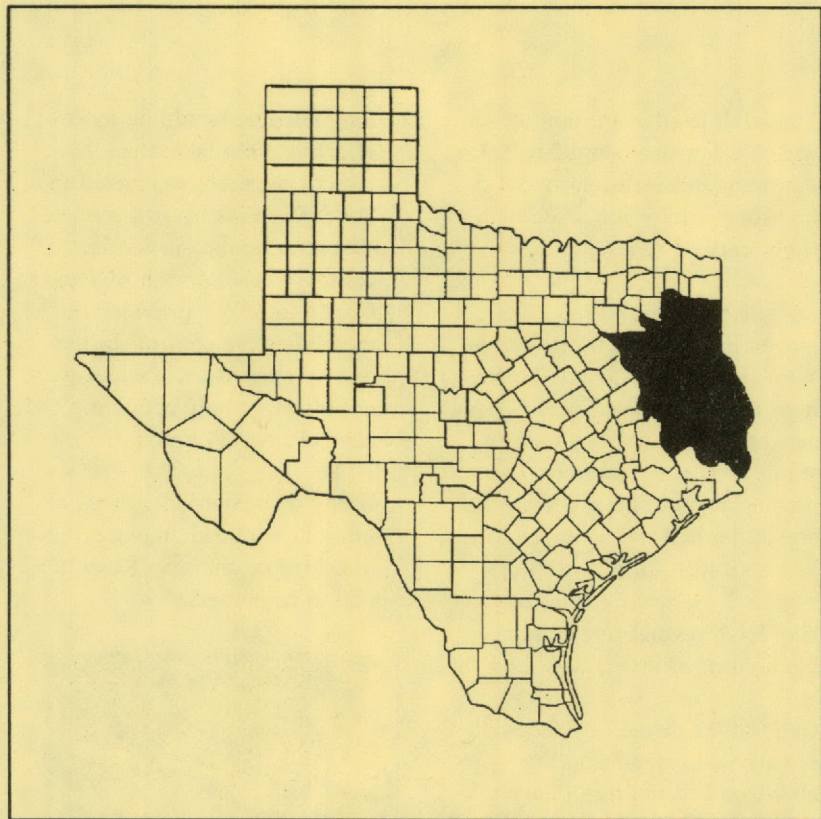
From the proceedings there was one small section on insect control practices. An exhibit of pecan insects or possibly a list of injurious insects was displayed by A.I. Fabis who was in charge of the Pecan Insect Laboratory USDA, Brownwood, TX.

Twenty-one injurious insects were listed or exhibited. In the list or exhibit were many of todays common pests. Insects exhibited were: pecan nut casebearer, obscure scale, pecan shuckworm, pecan leaf casebearer, little hickory aphid, walnut caterpillar, pecan weevil, walnut curculio, flat headed apple tree borer, wood lice, hickory trig girdler, fall webworm, hickory phylloxera, catocala caterpillars, pecan sawfly, southern green stink bug, pecan sprout webworm, pecan cigar casebearer, pecan bud moth differential grasshopper and hickory cossid.

Insect control recommendations during 1924 were:

March (or during dormant season) - Spray with Engine Oil emulsion for scale, aphids and phylloxera.

May 20th - Make two or three applications with lead arsenate for pecan nut casebearer and leaf feeding caterpillars.



**Figure 1** Known distribution of the Asian ambrosia beetle in Texas, 1992.

Plow and cultivate orchards for weevil, curculio, datanas, sawflies and other soil hibernating insects.

Burn shucks, dead twigs and limbs during the winter for shuckworm and twig girdler.

### Upcoming Meetings

**February 27 - March 3**  
Southeastern Pecan Growers Conference. The Broadwater Beach Hotel and Resort. P.O. Box 127, Biloxi, MS  
Info. - Sally Beshears  
904-997-3458

**March 7-9**  
Western Pecan Conference  
Hilton Inn  
Las Cruces, NM  
Dr. Estaban Herrera  
505-646-2921

**March 18**  
Grimes County Texas  
Pecan Field Day  
Larry Hysmith  
409-825-3495

**March 29**  
Central Texas Pecan Shortcourse  
Mills Co. Civic Center  
Goldthwait, TX  
Danny Long 915-648-2650  
Bob Whitney 915-356-2539

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