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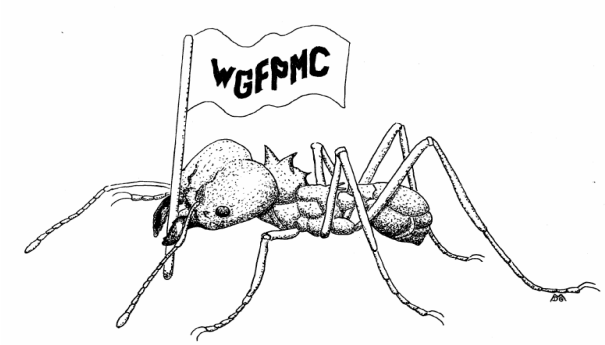
Quarterly Newsletter on Western Gulf Forest Pest Management Issues

Western Gulf Forest Pest Management Cooperative



Texas Forest Service, Forest Pest Management,
P.O. Box 310, Lufkin, Texas 75902-0310

PEST is a quarterly newsletter that provides up-to-date information on existing forest pest problems, exotic pests, new pest management technology, and current pesticide registrations in pine seed orchards and plantations. The newsletter focuses on, but is not limited to, issues occurring in the Western Gulf Region (including, Arkansas, Louisiana, Mississippi, Oklahoma, and Texas).

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Cool Bug Facts

- It's hard to imagine, but 95% of all the animal species on the earth are insects!
- There are between 10 million and 30 million species of insects in the world, of which only one million are known to science.
- A cockroach can live for nine days without its head.
- Dragonflies can fly at speeds up to 30 miles per hour.

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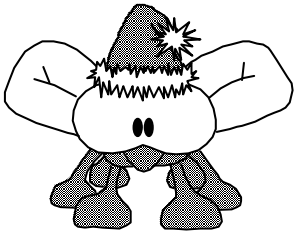

Santa Bug says
"Pest Wishes for the Holidays!!!"

Pest Spotlight: Pine Regeneration Weevils

Adult pine regeneration weevils, primarily pales weevil (*Hylobius pales* Herbst.) and pitch-eating weevil (*Pachylobius picivorus* Germar), can cause serious damage in the southern United States by feeding on the stems and roots of pine seedlings. This pest highlight is a review of the biology, impact, and currently recommended pest management options for these two weevil species.

Pales Weevil

The pales weevil is a robust, reddish brown to black weevil about 1/4 to 3/8 inch in length. The adults are covered with small, scattered patches of yellowish scales. This weevil infests young coniferous trees, particularly pines. Preferred hosts include white, loblolly, shortleaf, and pitch pines. The insect is distributed throughout the eastern United States from Maine to Florida and westward to Texas and the Great Lakes states.

Injury caused by the pales weevil is most severe on seedlings. The first evidence of attack is a series of small holes or pits on the stem resulting from feeding by adults. If weevil feeding is light, the holes fill in with oleoresin and eventually the wounds heal. Heavy feeding results in girdling of the stem above and/or below the ground which often kills the seedling. In some cases, adults feed on the terminals, twigs, or buds of sapling-size trees.

The life history varies to a certain extent depending on the region. In the North, winter is spent as adults beneath litter or as larvae in roots. In the South, adults may be active throughout the winter (or most of it) but are in reproductive diapause. Depending on the location, adults emerge from hibernation from March to June and fly to sites which have been recently harvested or where the hosts have been damaged or disturbed. The weevils are attracted to oleoresin and ethanol emanating from the host material. Adults are active at night or on cloudy days. On sunny days they hide in the soil and litter around seedlings and saplings on which they

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Regeneration Weevils (Continued from Page 1)

have fed. After feeding briefly, the adults mate and the females oviposit in roots of cut stumps, weakened trees, or pine slash buried during site preparation. Adult weevils may burrow 12 inches into the soil to find oviposition sites. After the eggs hatch, the larvae tunnel and feed in the phloem region beneath the bark and pupate in individual "chip" cocoons in the outer sapwood. Pupation and emergence of adults may take place in the late summer or fall; or the larvae may overwinter with pupation and emergence occurring in early summer the following year. In the North, there is one generation a year, although some adults may live for 2 years. In the South, there may be a partial second generation if weevils emerging in late summer or fall oviposit before winter. Adult populations peak in March through May and again in July and August.

Pitch-eating Weevil

The pitch-eating weevil is very similar in appearance to the pales weevil, being dark brown or black, robust, and covered with small patches of yellow to reddish scales. The insect is distributed throughout the eastern United States, but is most common in the South. It is commonly found with pales weevil and attacks the same pine hosts.

The life history of the pitch-eating weevil follows the general pattern described for the pales weevil. Two population peaks have been reported in Georgia. In east Texas, 6-11 months are required for brood development, depending on the season in which the broods were established. It also has been reported that damage by the pitch-eating weevil is indistinguishable from that of the pales weevil.

Impact of Pine Regeneration Weevils

Pine regeneration weevils are rarely pests in naturally-regenerated stands, although they are commonly found in these stands. The problem centers on seedling mortality following harvest and site preparation. Factors that contribute to the problem are as follows: (1) weevils are attracted to freshly cut areas where there are abundant sites for brood establishment in pine stumps, weakened trees, and in buried slash; (2) site preparation to remove slash and brush frequently prolongs attractiveness to the harvested area; and (3) forest owners are usually interested in planting new seedlings in harvested areas soon after site preparation. These factors often result in a large number of both parent and brood adult weevils being present at the same time there are many seedlings that are favored for host material.

In the South it has been found that the amount of seedling mortality resulting from weevil feeding is related to timing of planting following harvest. In general, areas logged in the winter and spring can be safely planted the following winter because weevils are no longer present in great abundance. Areas logged in the summer are moderately vulnerable to attack. Severe seedling mortality can occur in plantations established in the winter after logging in the fall (Doggett et al. 1977, Grosman et al. 1999). Surveys of forest land in Arkansas and eastern Oklahoma indicated that seedling mortality in plantations established during the winter was 6% for sites prepared during the previous spring, 20% for sites prepared in the summer, and 58% for sites prepared during the fall (Cade et al. 1981). Similar mortality levels and trends were observed in Texas in 1998 (Grosman et al. 1999).

Several strategies have been proposed for reducing losses caused by seedling debarking weevils, including: (1) dispersing harvest areas; (2) restricting harvest to spring months; (3) delaying planting after harvest, and (4) using seedling protective treatments. Most emphasis has been placed on the use of insecticide treatments because economic constraints make the other options difficult to justify. Currently, Pounce® 3.2 EC (permethrin), applied in nurseries prior to lifting, has 24C (special local need) registrations in most southern states (TX, AL, GA, FL, SC, NC, VA, & MD). A 2EE supplemental label also allows the application of this Pounce® after seedling planting. However, recently Pounce® has not been readily available for purchase. In response, 24C registration has been approved for Waylay® 3.2AG (permethrin) in TX, AR, LA, MS, AL, VA and SC. Note: Approval is pending in GA.

References

Cade, S.C., et al. 1981. Seedling debarking weevils: A site hazard-rating system case history. pp. In Hedden, R.L., et al. (eds*) Hazard-Rating Systems in Forest Insect Pest Management*. USFS Gen. Tech. Rep. WO-27.

Doggett, C.A., et al. 1977. Seedling debarking weevils in North Carolina. NC For. Serv. Res. Note 31.

Grosman, D.M., et al. 1999. Influence of harvest date and silvicultural practices on the abundance and impact of pine reproduction weevils in western gulf loblolly pine plantations. Proceeding 10th Biennial Southern Silvicultural Research Conference Shreveport, LA. Feb. 15-18, 1999. p. 565 – 568.

Texas Leaf-Cutting Ant Control with Amdro®: A Reminder

With the recent loss of Volcano™ and phase out of methyl bromide from the market, many foresters (pesticide applicators) are being forced to rely on Amdro® Ant Block to control Texas leaf-cutting ants (TLCA) during the fall and winter of 2005/2006. Unfortunately, past experience with the old Amdro® Leafcutter Ant Bait and a recent trial conducted by the WGFPMC to test the "new" Amdro® Ant Block bait (see "Summary of 2004 WGFPMC Research Projects: LCA Control" in PEST 10.3) indicates the effectiveness of Amdro® is moderate to poor. However, the efficacy of Amdro® can be maximized if pesticide applicators treating TLCA colonies are aware of the Do's and Don'ts of application. Good luck!

When to Apply

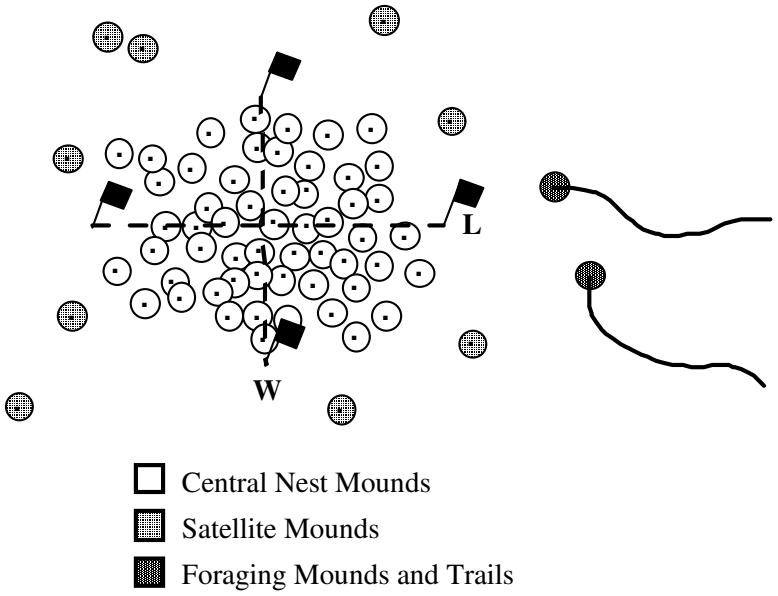
* Treat colonies at least 4 weeks prior to tree planting.
* Apply bait when ants are active (late afternoon in the summer; mid-day in the winter).
* Do not apply when rain is expected within 24 hrs and avoid applying to wet soil and vegetation.
* Avoid prolonged exposure of bait to direct sunlight.
* Do not apply during prolonged cold weather, below 50˚ F.

How Much to Apply

* USE ONLY FRESH BAIT (STORE IN A COOL, DRY, SECURE PLACE AND KEEP CONTAINER TIGHTLY CLOSED. Amdro® is formulated in an oil bait that functions as an attractant to ants. Prolonged exposure to air or high temperatures may cause the bait to go stale or turn oil rancid and reduce the attractiveness of the bait. USE BAIT WITHIN 3 MONTHS AFTER OPENING CONTAINER)
* Apply 3/4 pound of bait (= 12 oz.) per colony.
* For single-mound nests or widely-scattered holes, apply 1 oz. of bait (approx. 1 capful) per individual mound (scatter the bait on and around each mound; DO NOT pour it into the hole)
* Do not exceed 2.0 lbs of bait per acre.

How to Apply

* Broadcast the bait uniformly over the central nest area.
* Portions of the measured dose can be distributed outside the central nest area to treat nearby mounds (1/3 oz. to each satellite mound and 1 oz. to each foraging mound and trail) with heavy ant activity.
* Check treated colonies and surrounding areas for ant activity about 30-40 days after treatment, repeat treatments as necessary (hopefully it won't be necessary).



Chinese Tallow: A Threat to Texas and Southern Forests

by

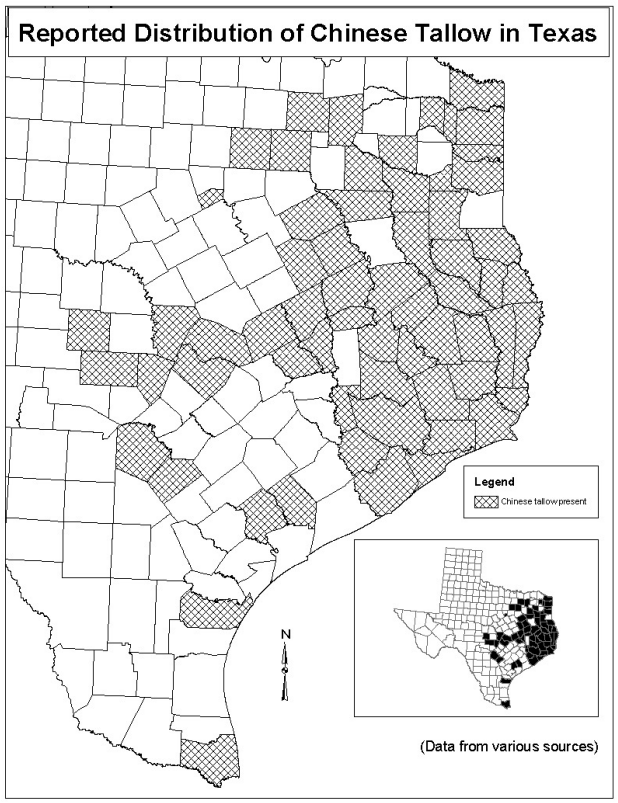
H. A. (Joe) Pase III

It is estimated that 100 million acres in the United States are already affected by invasive exotic plants. This acreage increases annually by an area twice the size of Delaware. Although the acreage of exotic plants in in the Western Gulf region is not known, foreign invasive species are having an increasingly negative impact on native plants and animals in this area. The Chinese tallow is a well-known exotic plant that has become widely distributed in the southern United States. Interestingly, Chinese tallow was reportedly introduced to the United States by Benjamin Franklin in 1772. A few years later it was taken to South Carolina and has since spread to every coastal state from North Carolina to Texas, inland to Arkansas and Oklahoma, and now is reported in California.

One statistic shows that since 1970, woodlands containing monocultures of the highly invasive Chinese tallow have increased in area from 5 to 30,000 acres in Galveston County. Chinese tallow has been cultivated as a seed-oil crop in China for at least 14 centuries where candles, soap, cloth dressing, and fuel are made from the tallow. On an historical note, oil from Chinese tallow trees was used successfully as an emergency source of fuel for diesel equipment operated by Allied forces during World War II.

Chinese tallow (*Triadica sebifera*, formerly known as *Sapium sebiferum*) represents a significant invasive species problem in many areas across the South. It adversely affects the diversity of native plants by invading and eventually dominating habitats ranging from marshes, to coastal prairies, to river bottoms, to upland forests, as well as disturbed sites and abandoned agricultural fields. The tree prefers wet soils, but is very adaptable.

Chinese tallow has become a serious problem on private lands and federal lands like the Big Thicket National Preserve and the National Forests in Texas. Chinese tallow can turn areas into a single-species forest. It has been widely planted as an ornamental tree in many parts of Texas, but this practice should be discouraged. The rapid forestation of Chinese tallow has contributed significantly to the degradation of wetlands along the Gulf Coast. It is believed that Chinese tallow may alter soil chemistry, allowing the species to self-perpetuate once established. The accompanying map shows counties



where Chinese tallow has been reported. Undoubtedly, it is present in more counties.

Chinese tallow is a fast-growing weedy tree with milky sap (the sap has been known to cause skin irritation and diarrhea in humans) and may reach heights of 50 feet or more. It spreads by root sprouts and seeds, with birds and water commonly disbursing the seeds. The leaves are heart-shaped, have smooth margins, and turn brilliant red, orange, and yellow in the fall. The flowers, which form in early summer, are drooping spikes 4-8 inches long and are attractive to honey bees and other insects. Green berries begin forming by mid summer and, when mature in the fall, consist of a cluster of white, wax-coated seeds which may remain on the tree through the winter. In time, the white seeds will be covered with a black fungus. Seeds may develop on trees as young as three years old. The photo collage (page 6) shows leaves, flowers, and seeds.

Insects, diseases, and other natural enemies have little if any impact on Chinese tallow. Cattle and horses will not graze on it. However, it is subject to freeze

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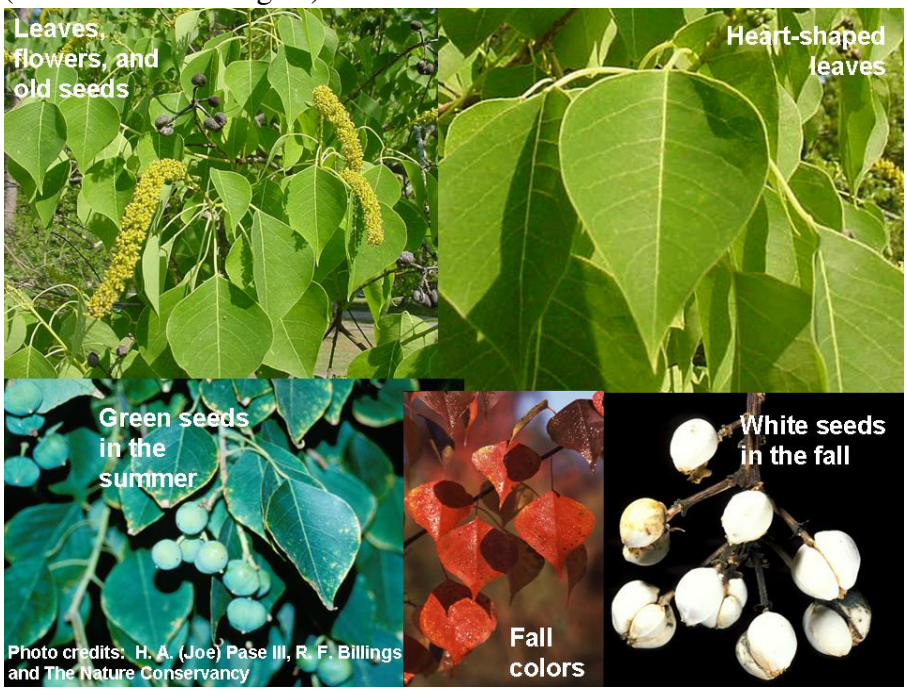
Chinese Tallow (Continued from Page 4)



damage, but it is rare that cold kills the roots. Cold temperatures will prevent this tree from becoming a significant problem in northern portions of its range in the United States.

Research is being conducted to find ways to effectively control tallow trees without causing environmental harm. Knocking down the trees with a bulldozer or other equipment is not effective because it results in prolific sprouting from roots. Fire has been used to successfully eliminate small trees, but large trees tend to resprout. For fire to be effective, there must be sufficient fuel and it must be used repeatedly. Herbicides will provide temporary control, but, like fire, repeated applications are necessary. It has been estimated that it costs about $250 per acre to control an exotic plant species.

Texas, for example, has no single authority that addresses invasive species policy. The Texas Parks and Wildlife Department (TPWD) and the Texas Department of Agriculture (TDA) are the primary state agencies working with invasive species. The Texas Forest Service (TFS) has a great interest and is becoming more involved in the problem, as well. Recently, TFS, in cooperation with various partners, has developed an Internet web page (http://www.texasinvasives.org) devoted to invasive pests in Texas, primarily non-native plants. This new web page contains distribution maps, publications, links to related web pages, and other information on nonnative invasive plants found in the state. TPWD is responsible for restricting importation and possession of potentially harmful fish, shellfish, and aquatic plants. TDA regulates the movement of agricultural seed and plant material and enforces quarantine regulations to control the spread of the worst agricultural invaders. To my knowledge, Chinese tallow is not regulated in Texas.

The Natural Resource Conservation Service (under the United Stated Department of Agriculture) has established a program called Environmental Quality Incentives Program (EQIP) to provide financial cost-share assistance in fields where Chinese tallow invasion has changed or has the potential to change the land use and significantly reduce the diversity of native plants. Cost-share rates can be as high as 90%, and most East Texas counties as far north as Shelby County qualify for assistance. Additional information can be found at the following web site: http://www.programs.tx.nrcs.usda.gov/eqip2005/stateconcerns/Chinese%20Tallow.html.

If you detect Chinese tallow in a county not shown on the distribution map or another plant or insect in Texas that you think might be an invasive exotic pest, contact the Texas Forest Service Forest Pest Management office in Lufkin (Phone: 936-639-8170) or e-mail Joe Pase at jpase@tfs.tamu.edu, Ron Billings at rbillings@tfs.tamu.edu, or Kim Camilli at kcamilli@tfs.tamu.edu.

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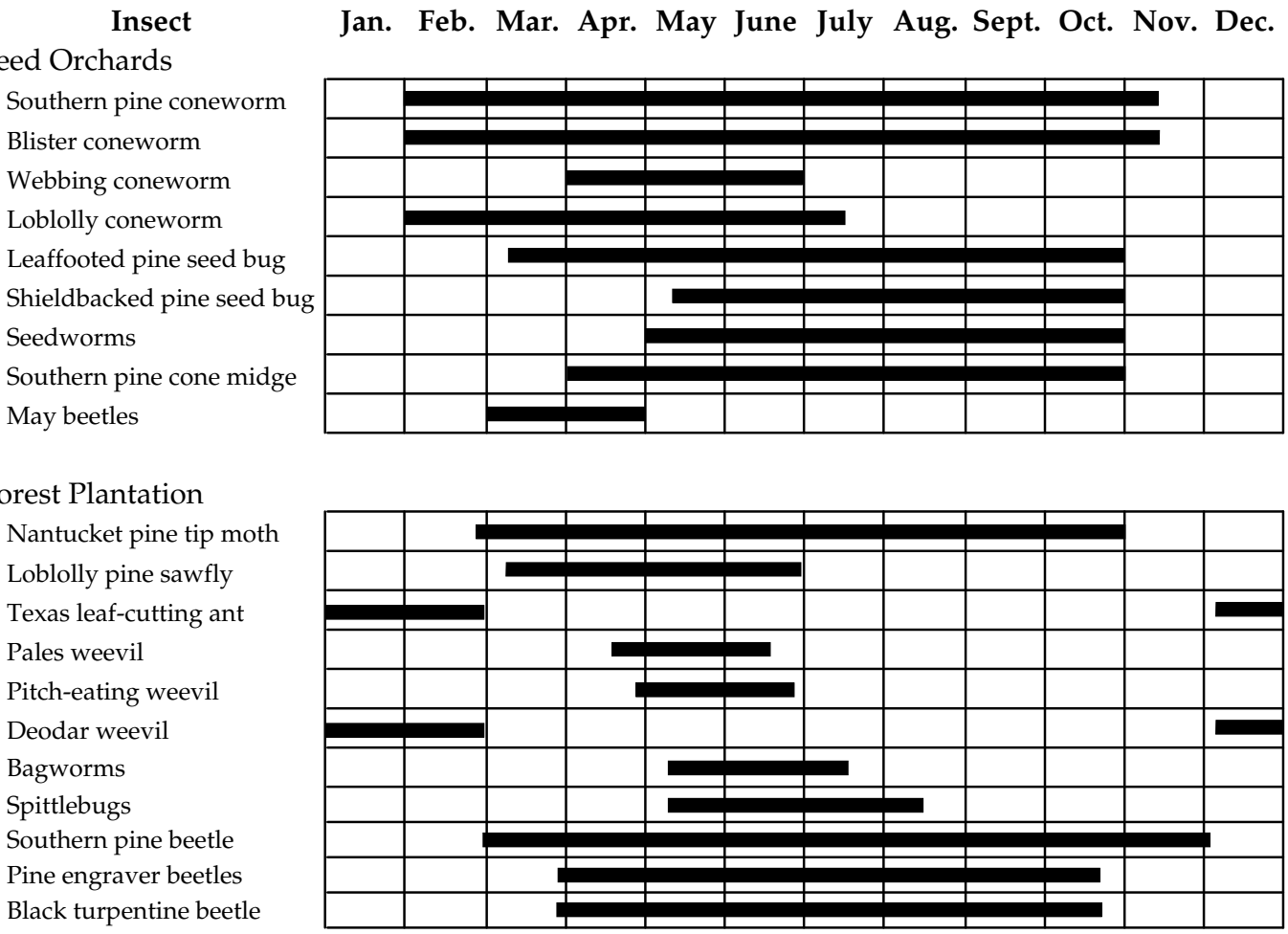
Insect Damage Periods

It is often of interest to know when certain forest insect pest species can be expected to cause damage during the year. This should allow foresters to prepare in the event of an outbreak. With this in mind, the table below was constructed to show the period during the year in which insect-caused damage is most likely to be observed. It is important to note that for some species (coneworm spp., seedworm spp., tip moth, sawfly, bagworm), damage is caused by larval stage feeding; for others (May beetles, leaf-cutting ants, pales, pitch-eating and deodar weevils, and bark beetle spp.) damage is caused by the adults; and for the remainder (seed bug spp. and spittlebug) damage is caused by both nymphs (or larvae) and adults.

Periods of Major Insect Damage



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Cool Bug Facts (Continued from Page 1)

- The color a head louse will be as an adult can depend on the color of the person's hair in which it lives.
- In the 1960s, animal behavior researchers studied the effects of various substances on spiders. When spiders were fed flies that had been injected with caffeine, they spun very "nervous" webs. When spiders ate flies injected with LSD, they spun webs with wild, abstract patterns. Spiders that were given sedatives fell asleep before completing their webs.
- The female yellow jacket wasp lays both fertilized and unfertilized eggs. Female workers develop from the fertilized eggs and male drones develop from the unfertilized eggs.
- Praying mantids are among the few insects that can rotate their heads so they can literally look over their shoulders, making them extremely effective predators.

On The Lighter Side . . .

In a mailing list, which I (not the editor) subscribe to, there has recently been much debate about non-toxic methods of repelling ant invasions. The Ma Kettle type remedies that were offered usually involved barriers of coffee grounds or baking soda to repel the advancing ant hordes. I feel that these quaint approaches lacked the spirit of violence that is a necessary part of dealing with these insect invaders.

So, here's my contribution to the ant genocide debate.

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Method A: AARDVARKS

Application: Sprinkle Aardvarks liberally around ant nests and known ant hang-outs (seedy ant-bars, and the like).

Pros: 100% Natural, little supervision required.

Cons: Once having consumed their fill of ants aardvarks tend to lose motivation. Should they gain control of the TV remote they will waste entire afternoons idly lounging on your furniture, flicking between game shows and forgetting to close the fridge door when they've raided it for yet another six-pack.

Method B: LARGE BOOTS

Application: Obtain a large pair of boots (hobnailed preferably), obtain a friend and arm them with the boots. Apply boots vigorously to the ants.

Pros: Cheap, 100% natural, good course of exercise for boot operator.

Cons: Requires continual application, this necessitates the instilling of a "Holy War Against Ants" attitude in your boot wielding friend. Show them videos of "Them" and "The Hellstrom Chronicles".

Method C: NAPALM

Application: Low level saturation bombing runs by F-111's or similar fighter-bomber military aircraft.

Pros: Immense emotional satisfaction, guaranteed ant genocide, visually spectacular.

Cons: Low level saturation bombing runs tend to lower local property values. Misses can instill ill-feelings in your neighbors should you incinerate schools or houses.

Method D: TECHNO

Application: Arrange Net access for the ants, ensure that they subscribe to Alternative Ant and Social Insect. Infiltrate these newsgroups and make frequent posts along the lines of: "My pheromone operating system is better than yours", "Evil drug companies are withholding antennae rot cures" and "Green Cards for Worker Ants Spam" - encourage flamewars to erupt. After a few days ant society will collapse in a sea of internecine warfare, ant neuroses and mass hysteria.

Pros: Emotional satisfaction of toying with their little minds.

Cons: Expense and difficulty of obtaining thousands of teeny-tiny-terminals.

(Source: http://www.bugyman.com/ListoBugStories.htm)

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