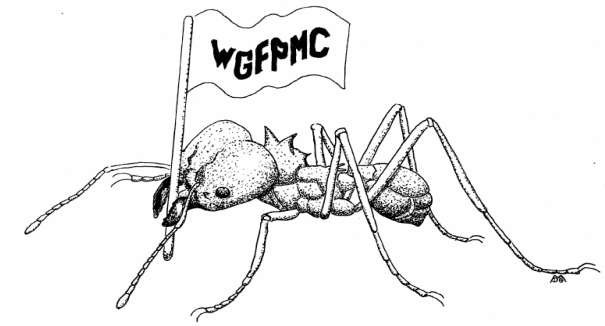
Progress Education Science Technology

Vol. 10 No. 1 May 2005

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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WGFPMC Contact Meeting - All WGFPMC executive and contact representatives, industry, and TFS foresters are invited to attend the 2005 WGFPMC Contact Meeting tentatively scheduled for Tuesday, August 16, 2005. The meeting will begin at 9:00 AM at the Texas Forest Service Training Building at the Cudlipp Forestry Center in Lufkin. Lunch will be provided. SAF and Pesticide recertification credits likely will be made available for meeting participants. The meeting agenda will be sent out in early July.

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New Research Specialist – We would like to welcome Mr. Jason Helvey to the WGFPMC. He was hired April 1 by the Texas Forest Service to provide assistance with some of the many WGFPMC research projects, particularly those related to tip moth. Jason can be contacted by ph: (936)-639-8170 or by e-mail: jhelvey@tfs.tamu.edu.

Summary of 2004 WGFPMC Research Projects

In 2004, three research project areas – tip moth, leaf-cutting ant, and systemic injection - were continued from 2003. Summaries of the results from the systemic injection studies are presented below. Results from leaf-cutting ant control and tip moth impact, hazard-rating and control studies will be presented in the next PEST newsletters (June 2005).

Systemic Injection

Since 1996, the WGFPMC has been evaluating the potential of using systemic insecticide injections to protect pine seed orchard crops from coneworms and seed bugs. One particular active ingredient, emamectin benzoate (Syngenta Crop Protection), has been shown in three separate injection trials to be highly effective in reducing coneworm damage for extended periods. In one trial, emamectin benzoate has reduced coneworm damage during a six-year period by an average of 80% (Fig. 1). In a more recent trial, fipronil (BASF) also showed good efficacy against coneworm (Fig 2).

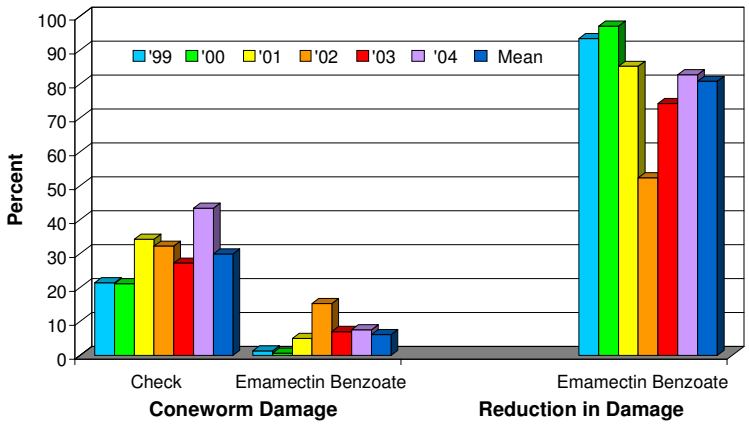

Figure 1. Coneworm infestation in picked cones from Magnolia Springs Seed Orchard, Texas from 1999 to 2004.

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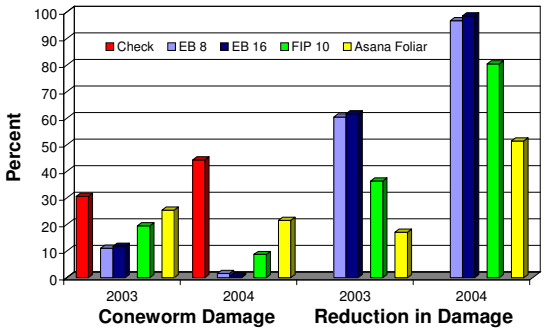

Figure 2. Percent coneworm damage and reduction in damage in picked cones from 2003 and 2004 Denim/Fipronil Study at Magnolia Springs Seed Orchard, Texas.

Unfortunately, the seed orchard market is small and thus the chemical industries have been reluctant to support the registration of emamectin benzoate or fipronil for seed orchard use. The WGFPMC has been looking to expand the potential market of these chemicals by evaluating their efficacy against other forest pests. A breakthrough came in 2004 while testing these and other chemicals against bark beetles. Both emamectin benzoate and fipronil proved to be highly effective in preventing the colonization and mortality of injected trees by *Ips* engraver beetles in two separate trials (Figs. 3 & 4). NOW the industries have become interested! They see a large, profitable market in protecting high-value residential trees from bark beetles.

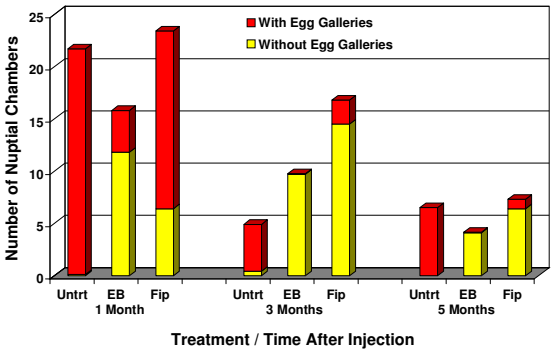

Figure 3. Effect of injection treatment in *Ips* engraver beetle attack success expressed as number of nuptial chambers with and without egg galleries. EB = emamectin benzoate; FIP = fipronil.

The formulations tested in 2004 and earlier were not designed for injection use – they tended to be difficult to inject and one product (Denim®) was found to be somewhat phytotoxic to the trees. Both companies decided to develop new formulations last winter and have asked the WGFPMC to test their efficacy against bark beetles and seed orchard pests in 2005.

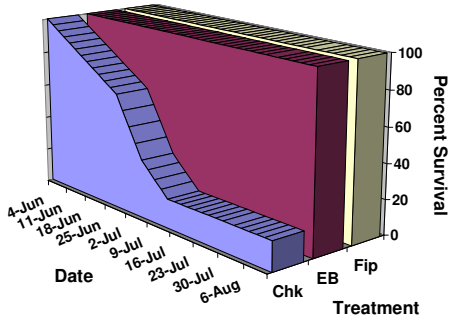

Figure 4. Effect of injection treatment on tree survival following attacks by *Ips* engraver beetles. EB = emamectin benzoate; FIP = fipronil.

Bark Beetle Trials

At least five separate trials are planned for 2005 to evaluate EB and FIP against:

1) ***Ips* engraver beetles** on **loblolly pine** in **Texas** (already installed),
2) **Southern pine beetle** on **loblolly pine** in **Mississippi** (already installed),
3) **Western pine beetle** on **ponderosa pine** in **California** (pending),
4) **Mountain pine beetle** on **lodgepole pine** in **Idaho** (pending),
5) **Spruce beetle** on **Engelmann spruce** in **Utah** (pending), and possibly,
6) **Mountain pine beetle and spruce beetle** in **British Columbia**.

Seed Orchard Trials

Six separate trials already have been installed in 2005 to evaluate the efficacy of EB and FIP against:

1) **Coneworms and seed bugs** on **loblolly pine** (Plum Creek's Hebron orchard, LA).
2) **Coneworms and seed bugs** on **loblolly pine** (International Paper's Bellamy orchard, FL).
3) **Coneworms and seed bugs** on **slash pine** (Temple-Inland's Forest Lake orchard, TX).
4) **Slash pine flower thrip, coneworms and seed bugs** on **slash pine** (Smurfit-Stone's Brewton orchard, AL).
5) **Cone gall midge, coneworms and seed bugs** on **Douglas fir** (Plum Creek's Cottage Grove orchard, OR).
6) **Acorn weevil** on **cherrybark oak** (Texas Forest Service Hudson orchard, TX)

The WGFPMC is continuing to look at other potential markets including evaluating the effects of emamectin benzoate and fipronil on acorn weevil in hardwood seed orchards and the potential for protection of wood against termites. Assuming that the new formulations of EB and FIP are effective against both bark beetles and cone and seed insects,

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Systemic Injections – Continued from Page 2

the WGFPMC is asking Syngenta and BASF to also include conifer seed orchard use on any registration package submitted to EPA in the future (hopefully, near future). Stay tuned.

Acknowledgements - We greatly appreciate the effort and support provided by:

International Paper (Tim Slichter)
Plum Creek (Gerry Watkins, Tim Smith (OR), Doug Sharp)
Temple-Inland (Jim Tule, Emily Goodwin)
Texas Forest Service (Joe Hernandez, Tom Byram, I.N. Brown)
U.S. Forest Service (Alex Mangini, Steve Clarke, Chris Fettig, Steve Munson, Carl Jorgensen)
Smurfit-Stone (Chris Rosier)

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Southern Pine Beetle: Low Infestation Levels Predicted in Texas, Louisiana and Arkansas

by Ronald Billings and William Upton, Texas Forest Service, Forest Pest Management

For the sixth year in a row, no infestations of the South's most destructive forest pest, the southern pine beetle (SPB), were detected in East Texas, Louisiana or Arkansas in 2004. Early spring surveys conducted with attractant-baited traps in March of 2004 correctly forecasted these low infestation levels. The results of the 2005 SPB prediction survey clearly indicate that another low year of SPB activity can be expected for Texas and other southern states located west of the Mississippi River.

The Texas Forest Service (TFS) has developed an effective system for predicting SPB infestation trends and levels. The system, implemented by cooperating state and federal forestry agencies across the South since 1986, uses attractant-baited traps placed in pine forests in early spring. The traps sample dispersing populations of two insects: SPB and one of its natural predators, the checkered or clerid beetle. The average numbers of SPB per day, coupled with the ratio of SPB to predators, provide information required to predict whether SPB trends will be increasing, static or declining from the year before.

In March 2005, survey traps were installed and monitored for four weeks in 19 counties (from New Boston to Conroe) and the four National Forests in Texas. Results were very similar to those reported since 1998. Only a single SPB adult was captured (Sabine County), while almost 5,000 checkered beetles were caught in all traps combined. Numbers of checkered beetles in survey traps continued to decline, after reaching a peak in 2002 (19,000). This decline in predators probably reflects the fact that there are fewer bark beetle hosts, particularly *Ips* engraver beetles, to feed on now that drought conditions have subsided in East Texas.

Clearly, despite above average rainfall and another mild winter, there are no indications that SPB populations have begun to rebound from the low levels experienced since 1998. Continued low SPB levels are expected throughout the year. Based on similar trap catches, no SPB problems are anticipated during 2005 in Louisiana, Arkansas or Oklahoma pine forests either.

Historically, SPB outbreaks have occurred every 6-9 years in East Texas, and the last outbreak subsided in 1994. Since SPB is a native and cyclic insect, another outbreak of this native insect pest eventually is anticipated in Western Gulf states. In a continuing effort to monitor the SPB population cycle and predict pending outbreaks, the trapping survey will be repeated throughout the southern United States in the spring of 2006.

With SPB populations at very low levels, now would be an ideal time to take preventive measures to avoid beetle-caused losses in the future. To reduce susceptibility to SPB infestation, dense pine stands (those having stand basal areas exceeding 120 square feet per acre) should be thinned to maintain vigor of the remaining trees. Healthy, rapidly-growing pines are more able to ward off initial beetle attack with copious flows of pitch or oleoresin. Dense stands in need of a first thinning may qualify for federal cost shares, under the Southern Pine Beetle Prevention Project. This is a cooperative project administered by the Texas Forest Service with cost-share funds provided by the USDA Forest Service, Forest Health Protection.

For more information on the SPB Prevention Project, visit the TFS web page at http://texasforestservice.tamu.edu and click on Forest Management, then Forest Pest Management. Or contact the TFS office nearest you or Dr. Ronald F. Billings at (979) 458-6650 or by e-mail at rbillings@tfs.tamu.edu.

Thought You Might Be Interested to Know . . .

Possible Guthion® Cancellation. EPA has issued a Federal Register notice to cancel certain uses of azinphos-methyl (Guthion®). These uses include cotton, peaches, potatoes and southern pine seed orchards. The cancellation will become effective March 30, 2005 unless substantial comments are received to persuade EPA not to cancel these uses. The companies that produce azinphos-methyl are supportive of this cancellation. Use and sale of existing stock is permitted until August 31, 2005 (Federal Register February 28, 2005 via OSU Pesticide Safety Education Program Pesticide Report, March 2005).
Editor's Note: Guthion® use in pine seed orchard has not been officially canceled. A number of organizations (WGTIP, NCSTIP, USFS and others) have submitted numerous comments and data to support the retention of Guthion® for use in southern pine seed orchards. EPA is currently evaluating these comments and a final decision on Guthion® is pending.

Chontrol® paste (*Chonodrostereum purpureum*) is a new biological herbicide that has been registered for inhibiting spouting and regrowth in cut stumps of certain deciduous tree species in rights-of-way and **forests.** Applied to fresh cut stumps in summer or autumn, it prevents sprouting by colonizing and decaying the stump. (*Wildland Weeds,* Winter 2004 via Chemically Speaking, Jan. 2005).

WESTAR (hexazinone/sulfometuron-methyl)—*DuPont*—A new combination herbicide to control various weeds in **forests,** noncrop sites, airports, uncultivated agricultural areas, and industrial sites. (Illinois Pesticide Review, Jan. 2005)

Here are some web sites with useful information about spray technology.

CP Products: **http://www.cpproductsinc.com/**
Greenleaf Technologies: **http://www.turbodrop.com/**
Hypro: **http://www.hypropumps.com**
Micron Sprayers Limited: **http://www.micron.co.uk/index.html**
Spraying Systems: **http://www.teejet.com/ms/teejet/**
Wilger, Inc: **http://www.wilger.net/**
(Source: GA Pest Management Newsletter, Feb. & Mar., 2005)

Genetically modified trees will soon help meet our demand for wood and wood products. China has already planted a million poplar trees with a gene from *Bacillus thuringiensis* that directs the tree to make a toxic protein that kills caterpillars. Brazilian growers are expected to begin commercial planting of genetically altered eucalyptus within the next few years. In the United States, commercial papaya is engineered with a gene to help the tree resist ring spot virus.

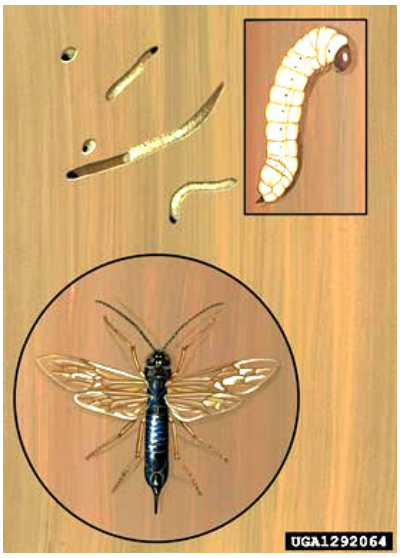
The pulp and paper industry anticipates big returns from genetic engineering. They would like trees that grow more quickly and resist pests and herbicides. Scientists are also changing the tree itself. Some genetically altered aspens produce less lignin (natural tree glue) and more cellulose that can be used to make paper. Low lignin trees could save the paper industry billions of dollars each year.

Genetic engineering could reap benefits in other areas as well. Thanks to a gene from wheat, transgenic chestnuts are resistant to the blight that virtually eliminated chestnuts from the forest. Researchers hope to find a similar solution to make elm resistant to Dutch elm disease. Cottonwoods that carry a bacterial gene can absorb and detoxify mercury from contaminated soils.

Concerns about the genetic modification of trees go beyond the qualms about modified row crops. Trees live for decades, and the pollen can be prodigious. Is it possible to prevent modified trees from interbreeding with naturally occurring trees? Additionally, perennial crops become permanent habitat for a large number of plant and animal species. How would genetically modified tree crops change ecosystems?

Some activist groups have been taking it to the streets. Two deliberate fires have caused $350,000 in damage to facilities that conduct transgenic tree research. Other groups are less radical but just as adamant. The Forest Stewardship Council certifies about 100 million acres of forests worldwide as "sustainable;" the organization refuses to accept transgenic trees on any land it oversees. (*Atlanta-Journal Constitution,* 4-25-05 vi Georgia pest Management Newsletter, April, 2005)

New Invasive Pest: The European Wood Wasp



Yet another invasive forest pest has entered and may have become established in North America. A National Exotic Wood Borer and Bark Beetle Survey trap detected a single female specimen of *Sirex noctilio* Fabricius (European wood wasp), near Fulton, New York (Oswego Co. near Lake Ontario) in September of 2004.

European wood wasp is native to Europe, northern Africa, and Asia and has been introduced into South Africa, Australia, New Zealand, and South America. The wasp attacks mainly pine trees, but has been reported from fir and spruce as well. In areas where introduced, this pest has caused significant mortality in pine stands and plantations. A parasitic nematode, *Deladenus siricidicola* Bedding, has been effective in suppressing populations of European wood wasp. It is uncertain if this nematode will be viable in North America.

Signs of infestation include discoloration of the crown, resin emanating from oviposition wounds, dark fungal stains in the cambium layer, larval galleries packed with fine frass, and 1/4-inch emergence holes.

The adults (above), which belong to the hymenopteran family Siricidae, are about an inch in length, and wasp-like, with clear, multi-celled wings, but do not have a thread-like waist. Males are blue-black, with an orange band on the mid-abdominal segments, red-brown forelegs and mid legs, and black, flattened hind legs. Females are all blue-black, with all legs red-brown and have a prominent ovipositor. They are similar in appearance to native *Sirex* species and must be confirmed by a specialist. Larvae are yellow-white, with a dark, round head and a prominent black spine on the last abdominal segment. They are nearly indistinguishable from native *Sirex* larvae.

Female European wood wasps seek out suitable pine hosts, and drill holes in the tree with their ovipositors. The wasps inject a symbiotic fungus, *Amylostereum areolatum*, and toxic mucus, which act together to kill the host tree. Eggs are laid in the sapwood, and generally hatch within two weeks. Larvae feed on the fungus as they tunnel through the tree (see right), and the number of instars ranges from 6 to 12, as they mature in about 10 months, although development can take two years in cooler climates. Mature larvae pupate close to the bark surface and emerge around three weeks later. There are generally more male adults (with sex ratios of 4:1 to 7:1) because unfertilized eggs can survive, but only as males. Females can only come from fertilized eggs. European wood wasp can spread several miles annually through natural dispersion, but can be aided by the transportation of infested timber and solid-wood packing material.

(Source: Forest Pest Management News, January – March, 2005; www.forestryimages.org)

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One more tidbit . . . a new fire ant control option. In a recent article regarding community gardening, a low-cost pest control method was revealed. Organic farmer Rachel Tseng was quoted as saying when she wants fire ants to leave, she communicates with them telepathically. "I don't want to hurt you, please move - and they always leave." (*Gainesville Sun*, 2/26/05 via Chemically Speaking, Mar. 2005).

Editor's Note: If only it was that simple for the rest of us.