Progress
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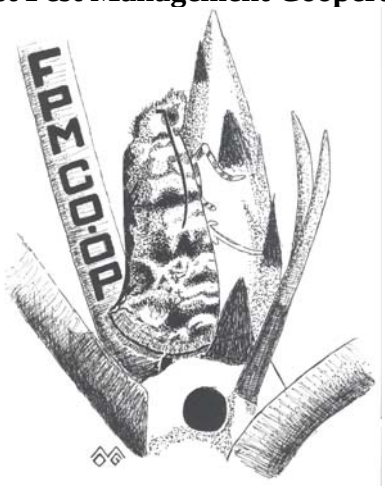
Vol. 14 No. 1 May 2009

Quarterly Newsletter on Forest Pest Management Issues

Forest Pest Management Cooperative



Nantucket Pine Tip Moth, *Rhyacionia frustrana* (Comstock)

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 related to seed orchards and plantations. The newsletter focuses on, but is not limited to, issues occurring in the South (Texas to Florida to Virginia,).

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Announcements:

Capture® 2EC Discontinued

At least one seed orchard manager recently tried to buy some Capture® 2EC (bifenthrin, FMC Corp.) for his orchard only to find that this product has been discontinued. Fortunately, however, two other bifenthrin products, Brigade® 2EC (FMC) and Fanfare® 2EC (MANA), are now approved for use in conifer seed orchards. Brigade® has received 24C (Special Local Need) approval in TX, OK, MS, GA and SC. EPA approved supplemental labeling for Fanfare® related to several new uses, including conifer seed orchards in all states except NY and CA. Both Brigade® and Fanfare® formulations appear to be nearly identical compared to Capture® and the application rates are the same.

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Summary of 2008 FPMC Research Projects

In 2008, three primary research project areas – tip moth, leaf-cutting ant, and systemic injection - were continued from 2007. 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 two *PEST* newsletters (July and Oct. 2009).

Systemic Injection

Since 1996, the FPMC has been evaluating the potential of using systemic insecticide injections to protect pine seed orchard crops from coneworms and seed bugs. Two active ingredients, emamectin benzoate (EB) (Syngenta/Arborjet) and fipronil (FIP) (BASF) have been shown in several injection trials to be highly effective in reducing coneworm damage for extended periods and effective in preventing the colonization and mortality of injected trees by *Ips* engraver beetles and aggressive *Dendroctonus* species. Trials were continued in 2008 to test the efficacy of these chemicals against bark beetles and to evaluate different injection systems and test potential insecticides for seed bug protection in pine seed orchards.

Bark Beetle Trials

Ten separate trials were established in 2005 - 2008 to evaluate EB, FIP, nemadectin or abamectin against:

1 & 2) *Ips* engraver beetles on loblolly pine in TX,
3 - 5) Southern pine beetle (SPB) on loblolly pine in AL,
6 & 7) Western pine beetle (WPB) on ponderosa pine in CA, and
8 - 10) Mountain pine beetle (MPB) on lodgepole pine in ID, BC & CO

The *Ips* trial evaluated the duration of three rates of EB, FIP or nemadectin applied at different times of the year (fall 2005 and spring 2006); and two rates of abamectin in 2008.

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Systemic Injections – Continued from Page 1

The timing and rate trial indicates that all injection treatments, particularly emamectin benzoate and nemadectin at higher rates, were highly effective in preventing the successful colonization of logs from treated trees 28 and 34 months after injection (Fig. 1).

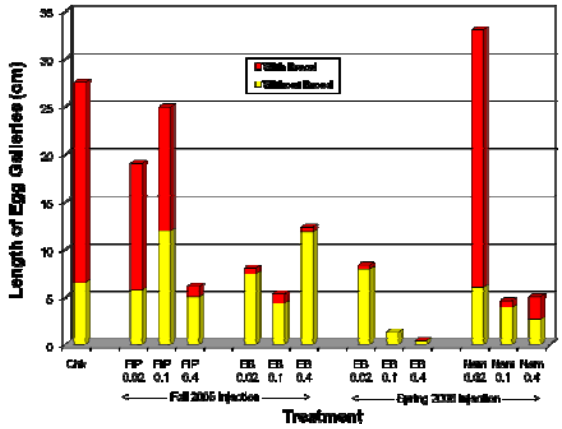

Figure 1. Effect of injection treatment in *Ips* engraver beetle attack success expressed as length of egg galleries with and without brood. EB = emamectin benzoate; FIP = fipronil; NEM = nemadectin.

Both rates of abamectin were highly and equally effective against *Ips* engraver beetles 5 months after injection (Fig. 2).

Figure 2. Effect of two abamectin injection treatments on *Ips* engraver beetle attack success expressed as length of egg galleries with and without brood.

In each of the SPB, WPB and MPB trials, trees (12 to 35) were injected using Arborjet's Tree IV. At the CA site, an additional 30 trees were sprayed with bifenthrin. Four to six weeks later, all trees (treated and untreated) in the SPB and WPB trials were baited with species-specific pheromones to induce beetle attack. SPB populations were sufficient to kill >60% of check trees in AL during the first 2 years. However, the beetle attack levels on injected trees were markedly lower than those on untreated checks (Fig. 3, 4 & 5). A new trial was initiated this April to evaluate the efficacy of trunk injections of EB and a fungicide mix alone or combined for protection of loblolly pine against SPB and blue stain fungi.

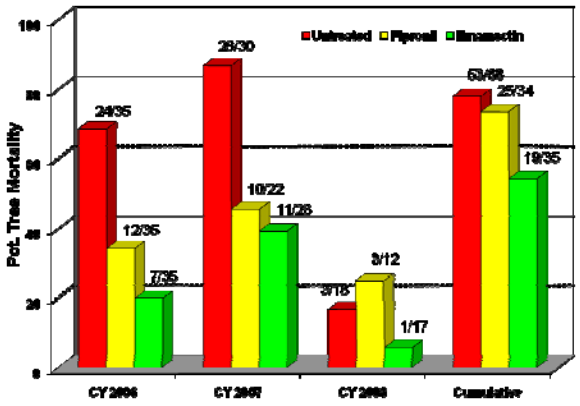

Figure 3. Effects of injection treatments on mortality of loblolly pine attacked by southern pine beetle in 2006 - 2008, Oakmulgee, R.D., Talladega N.F., AL.

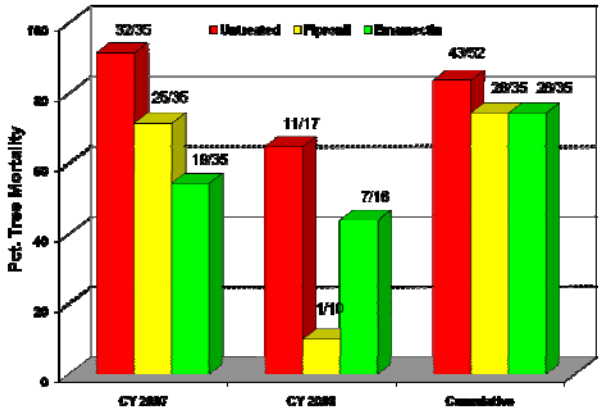

Figure 4. Effects of injection treatments on mortality of loblolly pine attacked by southern pine beetle in 2007 & 2008, Bankhead, R.D., Bankhead N.F., AL.

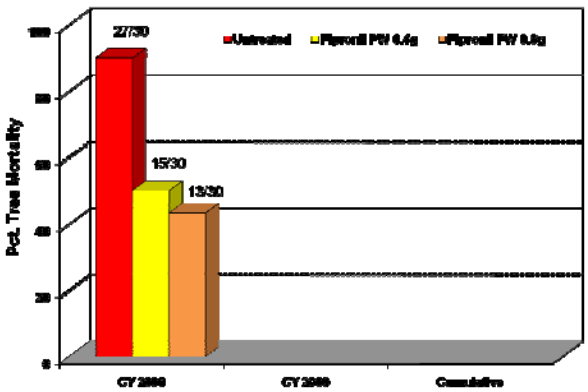

Figure 5. Effects of injection treatments on mortality of loblolly pine attacked by southern pine beetle in 2008, Oakmulgee, R.D., Talladega N.F., AL..

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Systemic Injections – Continued from Page 2

A three-year assessment of WPB attacks in CA indicates that 43%, 40% and 60% of the untreated trees died in 2005, 2006 and 2007, respectively (Fig. 6). In contrast, less than 20% of the FIP- and EB-treated trees, and only 3% of bifenthrin-sprayed trees died in 2005 and 2006. A final evaluation in 2007 indicates that the EB treatment continued to protect trees more than 24 months after a single injection. Both the FIP and bifenthrin treatments faltered in 2007. A new fipronil trial in CA was inconclusive because of low beetle pressure (Fig. 7).

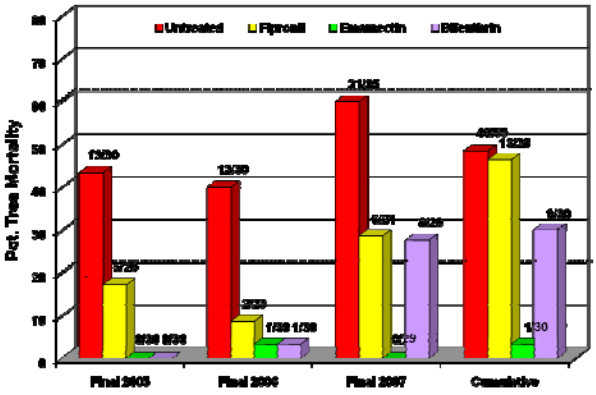

Figure 6. Effects of injection treatment on ponderosa pine mortality by western pine beetle (*Dendroctonus brevicomis*) 2005- 2007, Calaveras Co., CA.

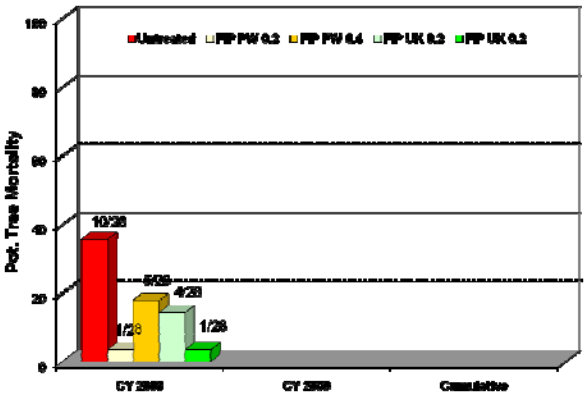

Figure 7. Effects of injection treatment on ponderosa pine mortality by western pine beetle (*Dendroctonus brevicomis*) 2008, Brownsville, CA.

Final evaluations in ID and BC indicate that insufficient time and/or cold conditions prevented the chemicals from fully circulating in the trees. Subsequently, mortality of injected trees was similar to that of check trees at all three locations. A new EB timing trial in CO showed that EB applied in the fall was capable of protecting lodgepole from MPB (Fig. 8). Final assessments will be made at the CO site in Sept. 2009.

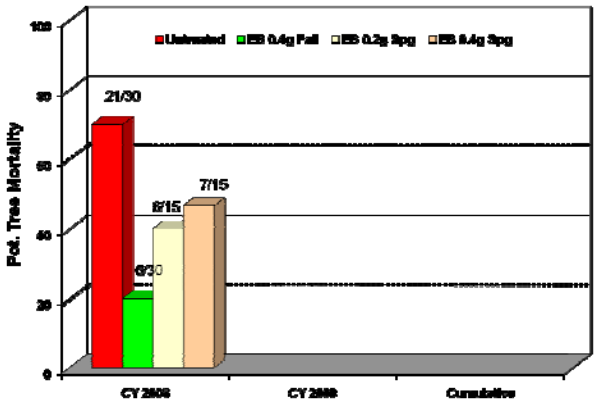

Figure 8. Effects of injection treatment on lodgepole pine mortality by mountain pine beetle (*Dendroctonus ponderosae*) 2008, the State Forest, CO.

Injection System Evaluation

Seven injection systems (Mauget's capsule, Rainbow Treecare's M3™, Arborsystem's Portal™, Arborjet's Quik-jet™ and Tree IV™ and Sidewinder's backpack and Bug Buster™) were evaluated for their ability to inject EB into pine based on 15 criteria related to loading, installing, injecting and safety. Four (Tree IV™, Quik-jet™, Portal™ and Sidewinder™ – backpack) of the seven systems were found capable of injecting the desired amount of EB into study trees and had the highest scores. The EB treatments applied by the Tree IV™, Quik-jet™ and Sidewinder™ were still very effective in preventing *Ips* engraver beetle colonization 13 months after injection (Fig. 9). However, the treatment applied by the Portal™ proved ineffective.

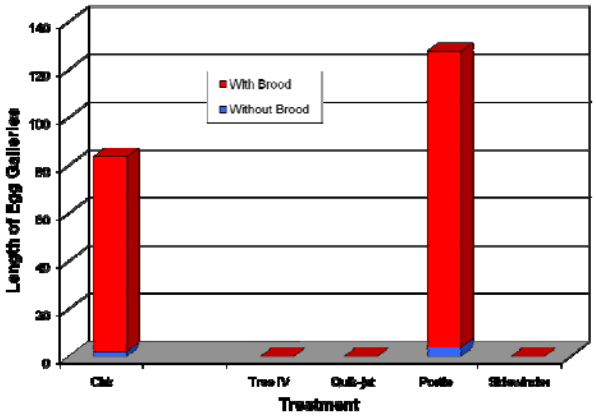

Figure 7. Effectiveness of emamectin benzoate 13 months after application with four different tree injection systems, Lufkin, TX 2008.

Seed Orchard Trials

Two separate trials were installed in 2007 to evaluate the efficacy of imidacloprid (Imid) and dinotefuran (Dino) alone or combined with EB or FIP for

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Systemic Injections – Continued from Page 3

protection against seed bugs (primarily) and coneworms. In a loblolly (AR) and slash (TX) pine seed orchard, 6 - 7 trees were injected with each chemical. At the TX site, an additional 7 trees were treated with a foliar spray in April and July. Survival was evaluated by counting cone and conelets first in April and again in August. All cones from each study tree were collected in the fall and evaluated for coneworm damage. Seeds were extracted from 10 cone samples and x-rayed to evaluate for seed bug damage. EB injections improved cone survival in 2008 but not conelet survival. Imid alone and combined with EB and FIP (at Magnolia, AR) significantly reduced seed bug damage compared to checks. Mean reductions in 2008 ranged from 9 - 39% (Fig. 8A & B).

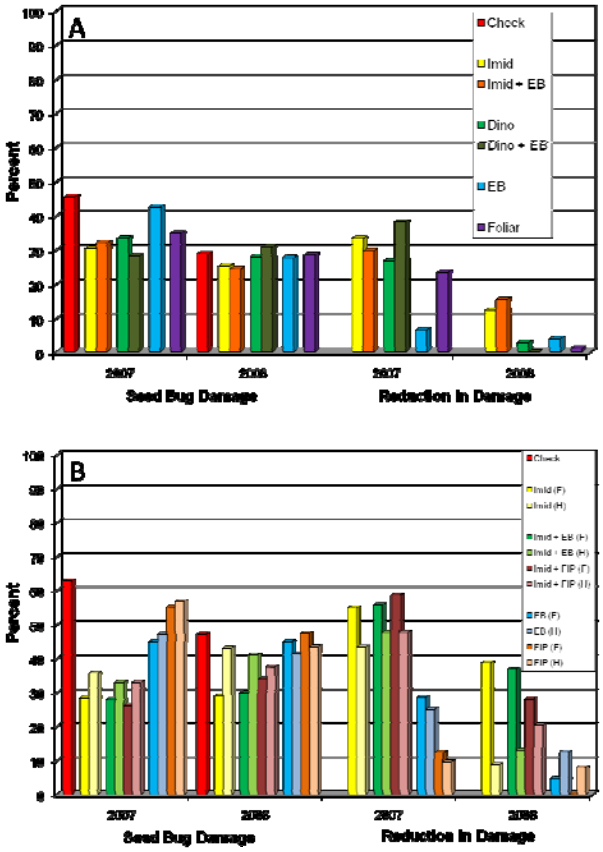

Figure 8. Percent seed bug (*Leptoglossus* and *Tetyra* spp.) damage and reduction in damage on TX slash pine (A) or AR loblolly pine (B) seed collected from trees injected with imidacloprid (Imid), dinotefuran (Dino), emamectin benzoate (EB) or fipronil (FIP) treatments, 2007 & 2008.

All treatments containing an EB component significantly reduced coneworm damage at both the TX and AR orchards in 2008; reductions ranged from 92 - 96% (Fig. 9A) and 69 - 92% (Fig. 9B), respectively.

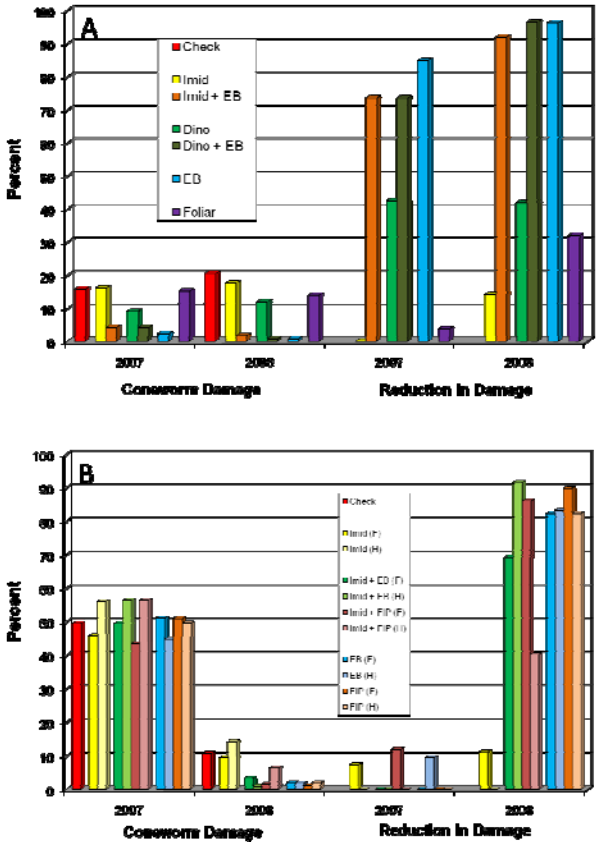

Figure 9. Percent coneworm (*Dioryctria* spp.) damage and reduction in damage on second-year TX slash pine (A) or AR loblolly pine (B) cones treated with injections of imidacloprid (Imid), dinotefuran (Dino), emamectin benzoate (EB) or fipronil (FIP) treatments, 2007 & 2008.

The FPMC and other researchers are continuing to look at other potential markets including evaluating the potential of emamectin benzoate for protection of oaks (cherrybark, burr and willow) against various forest pests including defoliators, wood borers, ambrosia beetles, and gall insects. Because the new formulations of EB appear to be effective against cone and seed insects, as well as bark beetles, the FPMC has asked Syngenta/Arborjet to also include conifer seed orchard use on any registration package submitted to EPA.

Syngenta submitted its registration package for TREE-äge™ (EB) to EPA in December 2007. EPA may approve the full (Section 3) registration of this product as early as July 2008. In the mean time, several Great Lakes and Mid-Atlantic states (IL, IN, MD, MN, MO, OH, PA, VA, WI & WV) have requested and received approval for 24c (Special Local Need) registrations for use of EB against emerald ash borer.

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Systemic Injections – Continued from Page 4

BASF appears to have lost interest in registering fipronil for bark beetles based on the relatively poor results compared to EB. However, J.J. Mauget may take up the fight for this chemical. Stay tuned.

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

Rayonier (Josh Sherrill)
American Forest Management (Dave Macher)
Texas Forest Service (Tom Byram, I.N. Brown, Jason Ellis)
U.S. Forest Service (Steve Clarke, Chris Fettig, Steve Munson, Carl Jorgensen)
Weyerhaeuser Co. (Steve Smith)
Arborjet (Joe Doccola)

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Thought You Might Be Interested to Know . . .

Several Companies Contributing to FPMC Research:

Bayer Environmental Science, Research Triangle Park, NC, will be contributing an additional $23,000 toward the evaluation of imidacloprid tablets for protection of pine seedlings against pine tip moth.

BASF Corporation, Florham Park, NJ, recently provided an additional $5,000 in research funds to the FPMC. The funds are to cover costs incurred as part of research to evaluate soil injection volumes for protection of pine seedlings against pine tip moth.

J.J. Mauget Inc., Arcadia, CA, will be contributing $8,000 toward the evaluation of abamectin for protection of pines against southern pine bark beetles.

The FPMC also received an extension and additional funds ($21,591) through the US Forest Service SRS SPB Initiative in support of research to evaluate emamectin benzoate alone or combined with a fungicide mix for protection against SPB and blue stain fungi.

Editor's Note: We thank all for their support of our projects.

PTM™ Applicators

Three applicators, the Kioritz Soil Injector, PTM™ Spot Gun and PTM Injection Probe, are now available and can be used to apply PTM™ SC Insecticide for tip moth control. The Kioritz Soil Injector (A) has a 0.8 gal capacity, is fairly heavy but quite durable and can be purchased on-line from several distributors (Amazon.com for $373, treestuff.com for $385, treecaresupplies.com for $395, or Rittenhouse for $402). The PTM™ Spot Gun (B) is a slight modification of the old Velpar Spot Gun and has a 1.2 gal backpack tank. It now has a sharpened lance to allow penetration into hard-packed soil. Unfortunately, the gun/lance junction is not very durable and the tank has a tendency to leak. Red River Specialties (318- 425-5944) is currently selling Spot Guns for $147. The PTM™ Injection Probe (C) is a new system being developed by Enviroquip Inc. (enviroquip.com, 704-753-5351) out of Monroe, NC. It has taken the best of both the Kioritz and PTM™ Spot Gun and combined them into an efficient, durable, pressurized system that has a capacity 4.0 gal. Enviroquip sells the probe assembly separately for ~$255 and the whole package (probe + backpack sprayer) for ~$425.

A. Kioritz Soil Injector

B. PTM™ Spot Gun

C. PTM™ Injection Probe

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Pest Spotlight: Coneworms (*Dioryctria* spp.)

As a group, the coneworms are the most important lepidopterous pests of cones in North America. Cone damage is internal, but often holes and frass are apparent on the cone surface. In addition to cones, these insects frequently infest buds, shoots, and galls. Four species of coneworm commonly infest loblolly, slash, longleaf, and shortleaf pines in the southern U.S.: southern pine coneworm, *Dioryctria amatella* (Hulst), webbing coneworm, *D. disclusa* Heinrich, blister coneworm, *D. clarioralis* (Walker), and loblolly pine coneworm, *D. merkeli* Mutuura & Munroe. The larval habits of these species are quite variable. From one to several generations may occur annually, depending on species and geographic location.

The **southern pine coneworm**, *D. amatella*, is considered the most destructive of the coneworms in the South and ranks among the most serious pests in pine seed orchards. It occurs throughout the Southeast from Virginia to Florida and westward to Texas. The insect infests flowers, shoots, cones, rust-infected conelets, as well as stems and branches galled by fusiform rust and mechanically-injured tree trunks. The adult (see photo to the left) has a wingspan of over 1 inch; the forewings are brown, nearly black, with white patches and zigzag lines. Mature larvae are brownish to purplish above and whitish to greenish below.

The life history of this insect is complex (see figure below). First-stage larvae overwinter under bud or bark scales; occasionally larger larvae overwinter in damaged cones. Flowers and cones of slash and longleaf pine are first infested in February. Larvae feed first in flowers and then in new shoots. They may mature in the shoots or migrate to cones. Rust-infected conelets may be attacked in May or June. In loblolly pine, larvae frequently overwinter in fusiform rust cankers. Subsequently, later overlapping generations infest cones from summer to fall.

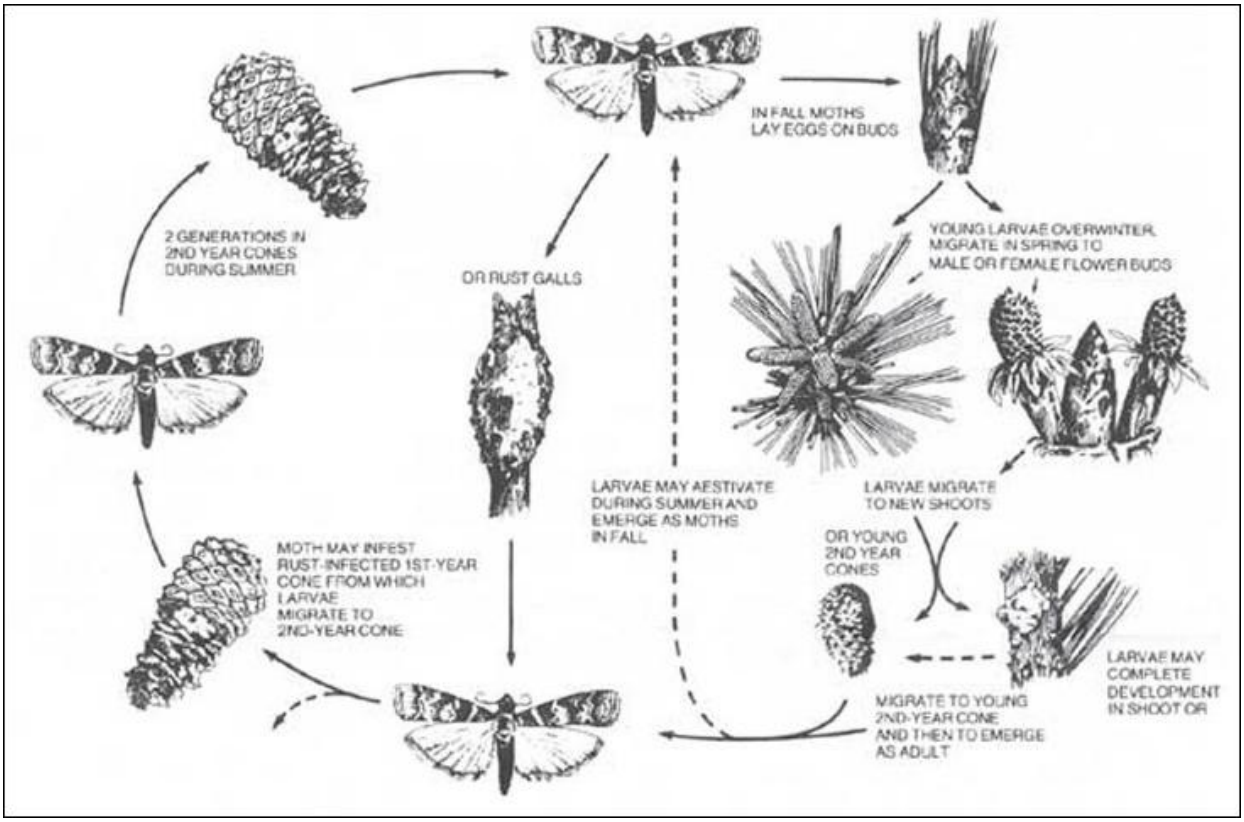

Diagram of major aspects of complete life cycle of the southern pine coneworm, *Dioryctria amatella*. On loblolly pine, the cones-to-gall cycle (left) is typical; in slash and longleaf pines, a variety of additional host plants parts may be fed upon in the spring (from Hedlin et al. 1981).

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Coneworms: Continued from page 6

The **webbing coneworm,** *D. disclusa***,** has an extensive distribution, occurring in southern Canada and throughout the eastern United States. It infests cones of red, jack, and Scotch pines in the northern states and cones of Virginia, loblolly, shortleaf, and longleaf pines in the South. The adult has bright yellow to orange forewings that are shaded red-brown with white crosslines and markings. The wingspan averages just under 1 inch. Mature larvae are olive-green to buff in color.

In the South, partially grown larvae feed and overwinter in conelets. In the spring, larvae migrate to second-year cones. Infested cones are hollowed out and have characteristic masses of tightly webbed frass over the entry holes. Pupation occurs in damaged cones and the adults emerge in late May. Damage due to the webbing coneworm is generally sporadic, however, serious outbreaks and damage have been reported in the South.

The **blister coneworm**, *D. clarioralis*, occurs throughout the South and northward to Massachusetts. It infests vegetative buds, male bud clusters, conelets, and cones of loblolly, longleaf, slash, and shortleaf pines. The forewings of adult moths are brown and black with wide transverse black bands near the base. The larvae are yellowish brown to brownish orange in color.

Immature larvae spend the winter in buds and conelets and then attack flowers, cones, and buds in the spring. Succeeding generations infest buds, shoots, conelets, and occasionally cones. On infested cones, a characteristic resin-coated silk blister often covers the entry hole. Pupation occurs outside the food material on a twig or cone stalk. This insect averages three generations per year. It is one of the less important species with regard to economic damage.

The **loblolly pine coneworm**, *D. merkeli*, occurs throughout the Southeast and northward to Maryland. It infests flowers, shoots, and cones of loblolly, slash, longleaf, and occasionally other southern pines. The adult moth is medium brown blended with rust brown and darker shading and gray zigzag stripes.

Young larvae overwinter under bark scales and in the spring bore into flowers and usually leave a small amount of frass on the flower surface. They then migrate to shoots and second-year cones. Mature larvae aestivate in dead shoots and cones where they pupate and emerge as adults in August and September. A single generation occurs annually.

See Vol. 10, No. 4 of PEST for the calendar indicating period(s) when coneworm damage can be expected during the year.

Control Options

Probably one of more obvious methods of controlling coneworms is removal of all dead and damaged cones at cone harvest. Removal of these cones eliminates a large portion of the local coneworm population, particular those of the loblolly pine coneworm and southern pine coneworm. Unfortunately, most orchard managers view the removal of these sources of coneworm as impractical due to the added time and expense.

Although methods using pheromone trapping are available to monitor the peak emergence(s) of the four coneworm species, orchard managers must also take into account the effects of seed bugs, another important pest group. Currently, no accurate method is available to predict the combined impact of coneworms and seed bugs.

In the mean time, orchard managers must rely on routine, preventative insecticide spray schedules to minimize losses to the high-value seed crop. Insecticides currently registered for use against coneworms include: *Bacillus thuringiensis* (Foray®), bifenthrin (Brigade® and Fanfare®), esfenvalerate (Asana XL®), lambda cyhalothrin (Lambda-T® and Silencer®), permethrin (Astro®, Dragnet® and Pounce®), spinosad (Conserve®), and tebufenozide

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Coneworms: Continued from page 7

(Confirm®). Pesticides are sprayed by air (plane or helicopter) or from the ground (air blast) 4-6 times per year, starting in April and finishing in August. Frequently, Asana XL® or Brigade® is alternated with Confirm® to prevent the potential build up of scale insect populations.

An alternative method to control seed orchard pests is currently being evaluated by the FPMC. This method involves injection of systemic insecticides, such as emamectin benzoate, directly into trees. This method would significantly reduce the amount of insecticide applied and at the same time reduce the potential effects on the environment, e.g., beneficial insects, wildlife, and ground water. For additional information on this project, see pages 3 & 4 of this newsletter.

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Hedlin, A. F., et al. 1981. Cone and seed insects of North American conifers. Can. For. Serv., U.S. Dept. Agric. For. Serv., Secr. Agric. Recur. Hidraul. Mexico. 122 p.

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Adult *Dioryctria* Photos by Jim Vargo

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Thought You Might Be Interested to Know . . . Continued from page 5

Southern Pine Beetle: Another Year of Low Activity Predicted in Texas, Louisiana and Arkansas for 2009.
By Ronald F. Billings, Texas Forest Service

For the eleventh 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 2008. The most recent SPB infestations detected in East Texas were reported in 1998, when the last major outbreak ended. Early spring surveys conducted with attractant-baited traps in March and April of 2008 correctly forecasted these low infestation levels. The results of this year's SPB prediction survey clearly indicate that another low year of SPB activity can be expected in 2009 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 2009, survey traps were installed and monitored in 12 counties (from Nacogdoches to Liberty) and the four National Forests in Texas. Results were very similar to those reported since 1999. Not a single SPB adult was captured, while more than 4,400 checkered beetles were caught in all traps combined. Clearly, despite damage from Hurricane Ike 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 2009 in Louisiana, Arkansas or Oklahoma pine forests either.

Historically, SPB outbreaks have occurred every 6-9 years in East Texas. Since SPB is a native and populations tend to be cyclic, 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 2010.

With SPB populations at very low levels, now would be an ideal time for private forest landowners with pine plantations to take preventive measures to avoid beetle-caused losses in the future. To reduce susceptibility to

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Thought You Might Be Interested to Know . . . Continued from page 8

SPB infestation, dense pine stands (those having stand basal areas exceeding 120 square feet per acre) should be thinned. Thinning serves to maintain vigor of the remaining trees and increases spacing between trees, which in turn reduces risks of losses to both SPB and wildfires. Healthy, rapidly-growing pines are more able to ward off initial beetle attack with copious flows of pitch or oleoresin. Thinning also pays dividends by encouraging trees to grow to a more valuable pole or sawtimber size in a shorter period of time.

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.

Since the SPB Prevention Project began offering cost shares for first thinning in 2003, a total of 1,112 cases involving over 75,000 acres in East Texas have been approved for cost shared thinning. Of these, 809 cases covering 56,214 acres have been completed and more than $3 million in cost shares have been paid to private landowners. Additional federal funds for this successful program have been provided for FY 2009, so there is still ample opportunity for more landowners to participate. For more information, contact the Texas Forest Service District office nearest you or visit the TFS web page at http://txforestservice.tamu.edu and click on Insects and Diseases, Publications, then Insects.

New Staff Assistant – We would like to welcome Mr. Larry Spivey to the FPMC as our new staff assistant. Larry was hired February 1st by the Texas Forest Service to assist with the many FPMC projects as well as SPB surveys and other TFS Pest Management projects. Larry can be contacted by phone: (936)-639-8170, or by e-mail: lspivey@tfs.tamu.edu.

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Pesticide News

Further Phase Out of Furadan

Following a public comment period, the U.S. Environmental Protection Agency (EPA) granted a request from the registrant, FMC Corporation, for voluntary cancellation of certain uses of and products containing flowable and granular carbofuran, effective March 18, 2009 (see the Product Cancellation Order, 3-18- 09 *Federal Register* notice at: http://www.epa.gov/fedrgstr/EPA-PEST/2009/March/Day-18/p5833.htm). All federally registered uses of carbofuran are being cancelled except four food crop uses (field corn, potatoes, pumpkins and sunflowers) and two non-food crop uses (**pine seedlings** and spinach grown for seed). (Source: North Carolina Pest News, April 17, 2009)

Methyl Bromide Status

Charles Luper with the Oklahoma State University Pesticide Safety Education Program attended the Southern Region IPM Center meeting. Among the updates was the status of methyl bromide. The U.S. was authorized 91% of its request for critical use allocations for 2008. This represents 21% of the nation's 1991 baseline consumption. The major users of methyl bromide in the U.S. are post harvest, food processors, cucurbits, strawberry fruit, tomatoes, **forest seedlings**, and orchard replant. Post harvest allocations are down 68%, food processors down 34%, cucurbits down 17%, strawberry fruits down 11%, tomatoes down 20%, forest seedlings down 4%, and orchard replant down 28%. The largest deceases were for ham (<77%), post harvest (<68%), and nursery stock (<60%). The overall quantity of methyl bromide available is decreasing each year and the costs of fumigations with methyl bromide are increasing due to the limited supply. (Source: OSU Pesticide Reports, Jan. 2009)

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End of the Arsenicals

The EPA has reached an agreement in principle with the major manufacturers of the organic arsenicals MSMA, DSMA, CAMA, and cacodylic acid and its sodium salt. This voluntary agreement steadily removes all organic arsenical pesticide uses, except the use of MSMA on cotton, from the market and implements new restrictions to better protect drinking water resources. Phasing out these uses is expected to accelerate the transition to new, lower risk herbicides.

Under the agreement, many uses, including use on residential lawns, will be canceled by the end of 2009. For products used on cotton and products phased out after 2009, new use restrictions and mitigation measures will be added to increase protections to water resources. By mid-March, the registrants must submit voluntary cancellation requests for all uses, other than the use of MSMA on cotton. By the end of 2009, many existing uses will be phased out and canceled including use on residential lawns, **forestry**, non-bearing fruit and nut trees, and citrus orchards. Over the next four years, uses on golf courses, sod farms, and highway rights-of-way will be phased out.

In the EPA's 2006 Reregistration Eligibility Decision (RED), EPA concluded that all uses of the organic arsenicals were ineligible for reregistration. Following application, these pesticides convert over time to a more toxic form in soil, inorganic arsenic, and potentially contaminate drinking water through soil runoff. At that time, EPA believed that inorganic arsenic also could enter the human food supply through the meat and milk of animals fed cotton by-products treated with MSMA. In completing the RED, EPA determined that the aggregate dietary risks from food and drinking water combined did not meet the food safety standard.

During the last two years, stakeholders have submitted additional data indicating that no residues of inorganic arsenic are likely to remain in the meat and milk of animals fed cotton by-products that have been grown in fields treated with MSMA, or in food crops that are rotated with cotton that has been treated with MSMA. Cotton growers also have documented the increasing spread of Palmer amaranth, a pigweed species, a glyphosate-resistant and economically significant pest, which only MSMA controls at present. In light of this new information, the agreement allows for reregistration of MSMA for use on cotton, contingent on the development of confirmatory data. If these data are not submitted by the August 2010 due date, or if they do not confirm the current scientific understanding, EPA will proceed to cancel the cotton use. The Agency is also rescheduling the Registration Review of MSMA to begin in 2013. At that time, MSMA's risks and benefits will be reevaluated considering any new toxicity information and the availability of new, lower-risk herbicides that should be entering the market. (Source: EPA, February, 2009 via. Chemically Speaking, Mar. 2009).

Imidacloprid Review

EPA is reviewing imidacloprid's registration as required by law. EPA initially finds there is little concern over dietary and drinking risk concerns. However, EPA will require an immunotoxicity study be conducted for registration approval. EPA is also concerned about residential exposure due to leaching from treated wood. All assessed residential handler and post-application exposures and risks do not exceed Health Effects Division (HED) level of concern. HED stated "Provided commercial pesticide handlers use label prescribed personal protective equipment, all assessed exposures are not of concern." There are occupational exposures that have not been tested. Some include mixer/loaders for dry flowable and/or wettable powder formulations; seed treaters using dry or Ready-to-Use formulations; mixer/loader/applicators using backpack sprayers; and others. (Source: Docket: EPA-HQ-OPP-2008-0844 via OK Coop. Ext. Serv. Pesticide Reports, April 2009)

A Little Humor Goes a Long Way

In Sargent, GA, a single-story home was set afire when the homeowner used a blow-torch to remove cobwebs from the eaves around the exterior of the house. The fire investigator responding to the fire advised against using a blow torch to rid a home of cobwebs. (Source: Newnan, GA *Times-Herald*, 11/5/08 via Potpourri in Chemically Speaking, Nov-Dec. 2008).