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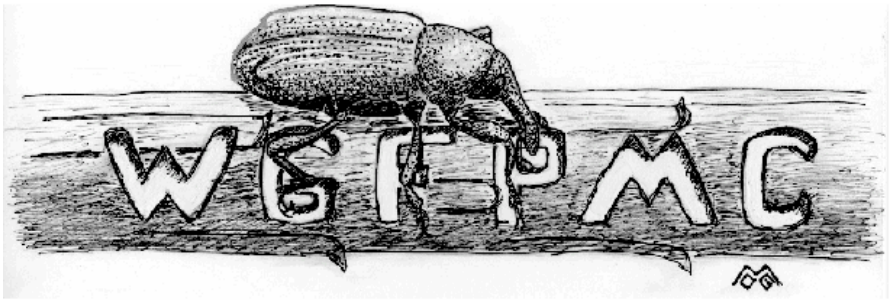
Quarterly Newsletter on Western Gulf Forest Pest Management Issues

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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Announcement:

Entomology Seminar - All WGFPMC executive and contact representatives, industry, and TFS foresters are invited to attend the spring session of the East Texas Forest Entomology Seminar scheduled for April 18-19, 2001. The meeting will begin at 1:00 PM on Thursday at Kurth Lake Lodge, north of Lufkin, and continue until noon on Friday at the Arthur Temple College of Forestry (Room 117) at SFASU in Nacogdoches. Registration is $20, which includes an evening meal. For additional information and/or an agenda, contact Ron Billings at 936/639-8170 or rbillings@tfs.tamu.edu.

Summary of 2001 WGFPMC Research Projects

In 2001, two research projects - the leaf-cutting ant control and systemic injection - were continued from 2000. Summaries of the results from the leaf-cutting ant and systemic injection studies are presented below. Results from two new studies, tip moth impact and tip moth control, will be presented in the next PEST newsletter (June 2002).

Texas Leaf-cutting Ant

The Texas leaf-cutting ant (TLCA), *Atta texana* (Buckley), is a serious pest in first- and second-year pine plantations in east Texas and west-central Louisiana. Research conducted by the WGFPMC (1996-99) showed that a bait containing sulfluramid was highly effective in halting leaf-cutting ant activity. This research was instrumental in obtaining 24C (Special Local Need) registrations for Volcano® Leafcutter Ant Bait in Texas (1999) and Louisiana (2000). However, environmental concerns about the sulfluramid class of chemicals have lead to the scheduled phase out of Volcano® in 7-10 years (2008-11). Trials were conducted during the winter and summer in 2001 to evaluate the attractiveness and effectiveness of a new fipronil bait (Blitz®) compared to Volcano® bait.

Thirty-four (winter of 2000-01) and 30 (summer of 2001) TLCA colonies were treated and monitored in central east Texas on land managed by Temple-Inland, Louisiana-Pacific, and International Paper. The level of TLCA activity was evaluated 2, 8, and 16 weeks post-treatment for each colony and compared to activity prior to treatment.

During the winter trials, both the fipronil and sulfluramid treatments significantly reduced ant activity after 2 weeks compared to the check colonies. Both baits were successful in completely halting ant activity in 100% of the treated colonies after 16 weeks. However, the fipronil bait was quicker at halting ant activity at 2 weeks post treatment than was the sulfluramid bait (Fig. 1).

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Research Projects (Continued from Page 1)

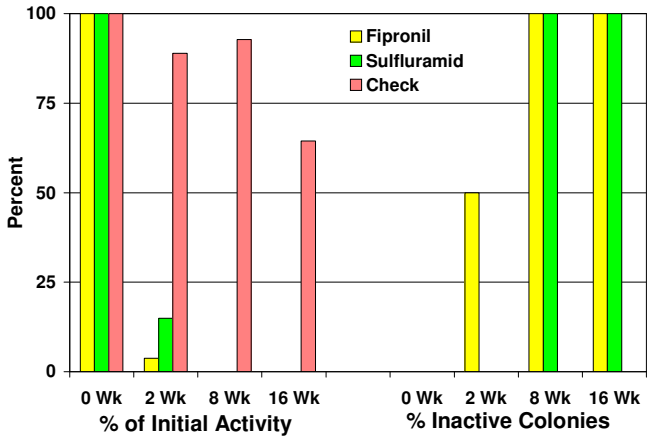

Figure 1. Percent of Texas Leaf-cutting ant activity reduced and colonies inactive 2, 8 & 16 weeks after treatment with fipronil and sulfluramid (winter 2000 / 2001).

During the summer trials, both bait treatments (fipronil and sulfluramid) significantly reduced ant activity after 2 weeks compared to the check colonies. However, the fipronil bait was again faster at halting ant activity and was the only treatment that was 100% effective after 16 weeks (Fig. 2).

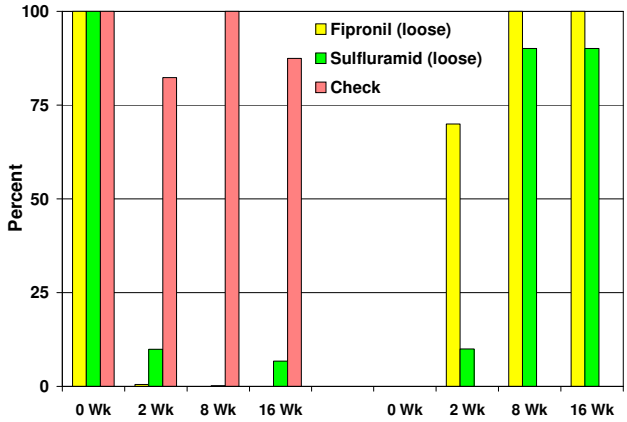

Figure 2. Percent of Texas Leaf-cutting ant activity reduced and colonies inactive 2, 8 & 16 weeks after treatment with fipronil and sulfluramid (summer 2001).

Observations were made to determine how long it would take Texas leaf-cutting ants to retrieve bait applied (10 g/m^2) to the central nest area. Field observations indicate that all the bait was retrieved within 3-5 hours.

Aventis has tentatively agreed to pursue registration of the fipronil bait in the United States. I will keep you informed as to progress of this registration as information becomes available.

Systemic Injection

Trials conducted by the WGFPMC in 1999 and 2000 showed that injection of systemic insecticides using the high volume STIT injector (Helson 2001) could significantly reduce coneworm and seed bug damage compared to checks. Field tests were continued in 2001 to further evaluate the residual activity of high volume trunk injections of emamectin benzoate and thiamethoxam in reducing losses to coneworms and seed bugs, and to evaluate the efficacy of different application rates of emamectin benzoate and thiamethoxam applied in 2001.

The field trials were conducted at the Texas Forest Service Magnolia Springs Seed Orchard in two blocks containing drought-hardy loblolly pine. For the duration trial, 5 ramets from 6 clones were selected. The 5 treatments consisted of:

1) Check
2) Emamectin benzoate (EB) 4% by STIT Injector in April '99, Group 1
3) EB 4% by STIT Injector in April '99 & '00, Group 2
4) EB 4% + Thiamethoxam (Thia.) 5% by STIT in April, '99, Group 1
5) EB 4% + Thia. 5% by STIT in April, '99 & '00, Group 2

For the rate study, 7 ramets from 10 clones were selected. The 7 treatments consisted of:

1) Check
2) 20 ml emamectin benzoate (EB) 4% by STIT injector in April '01
3) 20 ml each of EB 4% + Thiamethoxam (Thia.) 5% by STIT
4) 10 ml each of EB 4% + Thia. 5% by STIT
5) 3 ml each of EB 4% + Thia. 5% by STIT
6) 20 ml Thia. 5% by STIT
7) Asana XL (foliar hydraulic) 5 times per year at 5 week intervals

For both studies, the effects of treatments on 2nd-year cones were checked by evaluating damage on picked cones from each tree. Seed lots, from a subsample of apparently healthy cones, were radiographed to measure the extent of seed bug damage.

Duration Study: Evaluations of picked cones showed moderate coneworm damage (21%) on check trees in 1999 and 2000, but more extensive damage (34%) in 2001. Treatments that included emamectin benzoate consistently provided the best overall protection against coneworm attack (Fig. 3). Both emamectin benzoate alone and emamectin benzoate + thiamethoxam reduced overall coneworm damage by 96+% in 2000 and 84+% in 2001, compared to the

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check. Two-injection treatments containing emamectin benzoate did not differ from single-injection treatments. Therefore, a single injection of emamectin benzoate is sufficient to protect trees against coneworm for at least three full years.

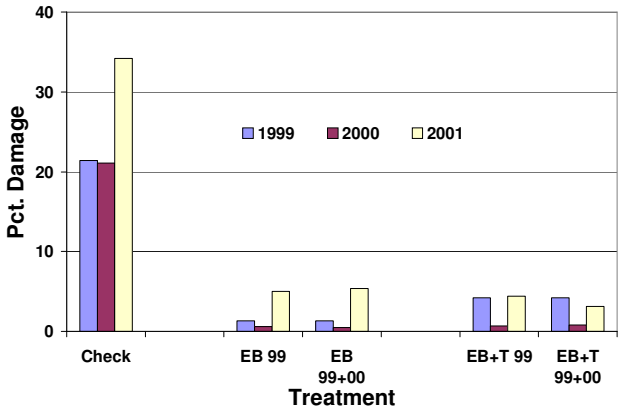

Figure 3. Coneworm infestation in picked cones from Magnolia Springs Seed Orchard, Texas from 1999 to 2001. EB = Emamectin benzoate; T = Thiamethoxam.

Treatments that included thiamethoxam consistently provided the best overall protection against seed bug attack (Fig. 4). Emamectin benzoate + thiamethoxam reduced overall seed bug damage by 52.9%, compared to the check in 1999, and by 69% in 2000. However, both single and double injections of these chemicals did not continue to provide significant protection against seed bugs through the 2001 growing season. This indicates that yearly treatments of thiamethoxam are necessary to maintain adequate protection against seed bugs.

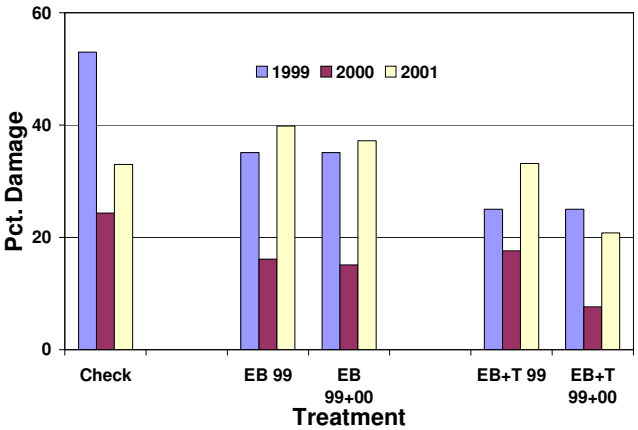

Figure 4. Seed bug damage in loblolly pine seed from Magnolia Springs Seed Orchard, Texas from 1999 to 2001. EB = Emamectin benzoate; T = Thiamethoxam.

Rate Study: Evaluations of picked cones showed extensive coneworm damage (46%) on check trees in 2001. All injection treatments provided excellent protection against coneworm attack (Fig. 5). In particular, emamectin benzoate alone and the higher rates (10 and 20 ml) of emamectin benzoate + thiamethoxam reduced coneworm damage by >94% compared to the check.

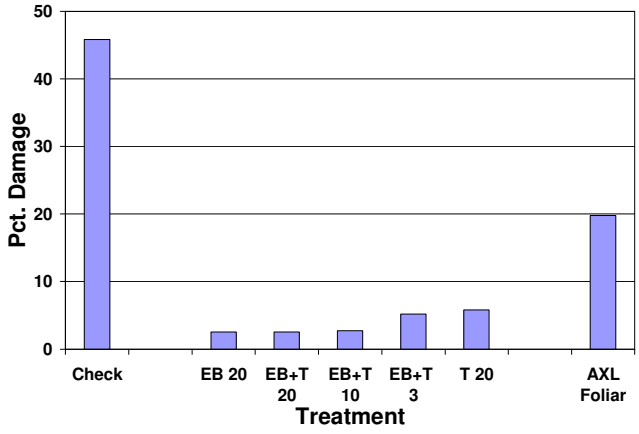

Figure 5. Coneworm infestation in picked cones from 2001 Rate Study at Magnolia Springs Seed Orchard, Texas. EB = Emamectin benzoate; T = Thiamethoxam; AXL = Asana XL.

As expected, the higher rates (10 and 20 ml) of emamectin benzoate + thiamethoxam also provided the best protection against seed bugs (Fig. 6).

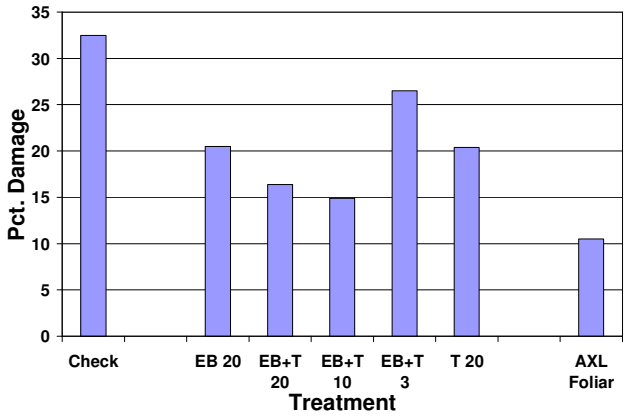

Figure 6. Seed bug damage in loblolly pine seed from 2001 Rate Study at Magnolia Springs Seed Orchard, Texas. EB = Emamectin benzoate; T = Thiamethoxam; AXL = Asana XL.

The duration and rate studies will be continued into 2002 to evaluate the duration of residual activity of these products.

Western Gulf Forest Pest Conditions - 2001

During 2001, weather conditions in the Western Gulf Region returned to more normal patterns and pine engraver beetle activity diminished from 2000 levels. Two ice storms in northeast Texas in December of 2000 increased the risk of pine engraver beetle (*Ips*) activity in that area during the summer of 2001. However, significant pine bark beetle activity did not develop. Low populations of the dreaded southern pine beetle continued into 2001. The red oak borer epidemic and associated oak decline and mortality in north central Arkansas astonished entomologists and alarmed the general public with its intensity and severity. The information below summarizes forest insect and disease activity in the Western Gulf Region for 2001.

PINE ENGRAVER BEETLES

Populations of *Ips* engravers declined somewhat in Louisiana, with 48 large multiple-tree spots detected. In addition, hundreds of single-tree or small spots were scattered across the state. Very low levels of engraver beetle activity were reported in Mississippi, and levels in Arkansas and Texas dropped dramatically from 2000 with a return to more normal rainfall. In contrast, drought conditions contributed to high populations of *Ips* beetles in the eastern part of the South. The heaviest impact was in Florida, Southeast Georgia, and South Carolina.

BLACK TURPENTINE BEETLE

Again in 2001, summer drought throughout the eastern South resulted in higher-than-normal black turpentine beetle activity. Areas of exception were Mississippi, Tennessee and Texas. In West Tennessee, populations were notably lower than last year. In Georgia, some of the most intense activity was noted in thinned loblolly plantations. This insect is most evident in trees stressed by drought, logging injury, root compaction, and similar disturbance. These bark beetles usually attack the lower six to eight feet of a pine tree. Of the five pine bark beetles in East Texas, the turpentine beetle is usually the least damaging.

SOUTHERN PINE BEETLE

In 2001, southern pine beetle (SPB) populations continued at very high levels in eastern part of the South. The extended drought exacerbated the SPB situation by providing optimum habitat for this native forest pest. The outbreak covered portions of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia on federal, State and private ownerships. It will be recorded as one of the largest outbreaks in history. On the contrary there was not even a single SPB infestation reported from the states of Louisiana, Texas, Arkansas and Oklahoma. Compared to 2000, the number of SPB infestations in the Southern Region (8) remained virtually constant (60,628 spots to 58,839 spots) as did the number outbreak acres (12,342,415 acres to 12,342,415 acres).

RED OAK BORER

Red oak borer attacks continued at extremely high levels in 2001 in north central Arkansas in association with oak decline initiated by severe drought in 1998-2000. Populations are now at unprecedented levels. Damage contributed to drought-related mortality in red oaks, and degrades in lumber from attacked trees sharply reduced product values. Mortality, especially in red oaks, is now at unprecedented levels, and there is great concern about the impacts on oak forests across the state. Red oak borer adults emerged in 2001, and with a two-year life cycle will infest trees until re-emerging in 2003. In central Louisiana, some red oak borer activity was noted in conjunction with oak decline in bottomland hardwoods.

FOREST TENT CATERPILLAR

Defoliation occurred on 112,000 acres of forested wetlands in Ascention, Livingston, St. James and St. John Parishes in southeastern Louisiana. This defoliation was severe (50%) on 38,000 acres. Localized activity by this defoliator occurred in Texas in 2000, but no outbreak areas were reported. This defoliator does not cause serious harm to the trees, unless it occurs several years in succession. Defoliated trees produce new leaves and look normal by early summer. The caterpillars are sometimes a nuisance.

GIANT BARK APHIDS

In December 2001, an unusual outbreak of the giant bark aphid began across most of East Texas and persisted into 2002. This aphid is known to occur in the eastern half of the U.S. and is the largest aphid in North America. The aphids are primarily feeding on oak trees and seem to favor water and live oaks. Aphids suck plant juices and excrete large quantities of honeydew, a clear, sticky, sugary liquid. An unsightly gray-black sooty mold often grows on the

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honeydew. Even with large numbers of aphids present, their feeding is not expected to cause serious harm to the trees.

NANTUCKET PINE TIP MOTH
In Texas, pine tip moth activity has remained static since 1999 with about 75% tip infestation. Some areas were heavily infested while other areas experienced moderate damage. Infestation levels were light early in the year, but increased markedly from July through September after the summer drought began. Mississippi, Tennessee, Virginia, North Carolina, and South Carolina also experienced large acreage of tip moth damage. The small, orange-colored larvae of this insect attack the growing tips of young pine trees. Their feeding rarely causes mortality, but some growth loss does occur. Once trees grow taller than about twelve feet, tip moth seldom attack them.

PINE SAWFLIES
Populations of the loblolly pine sawfly (*Neodiprion taedae linearis)* were up in southern Arkansas with heavy defoliation in parts of Brady, Calhoun, Dallas and Union counties. Tennessee noted that populations of this species increased in scattered areas across the north-central part of the state, but were at lower levels than reported in 2000 in the west. Black-headed pine sawfly (*N. excitans*) defoliated a 60-acre tract in George County, Mississippi, and there were occasional reports from other areas of that state. Defoliation declined significantly in Louisiana, with only scattered occurrences reported from older plantations in Caldwell, Jackson, LaSalle and Winn Parishes. Feeding by this sawfly is not known to directly kill trees. Parasites, predators, and disease usually control high larval populations, so outbreaks tend to be short in duration.

REPRODUCTION WEEVILS
Relatively little weevil activity was noted in 2001. This was probably because most planting in 2001 was replants of trees killed during the 1998 - 2000 drought. These weevils may kill recently planted seedlings by feeding on the tender bark. Wildfires in September of 2000 killed many acres of timber. After salvage operations, many of these areas will be replanted with pine trees. Weevils could be a concern if the harvest-to-planting interval is less than six months. If weevils are expected to be a problem, landowners are encouraged to plant seedlings treated with the insecticide Pounce®.

TEXAS LEAF-CUTTING ANT
In 2001, this insect continued to defoliate young pine trees in East Texas and west central Louisiana. Volcano® Leafcutter Ant Bait was registered for use in Texas in 1999 and in Louisiana in 2000. A single application of Volcano® completely eliminates ant colonies in as little as four weeks. Research by the Texas Forest Service on a new fipronil bait continues.

PINE COLASPIS BEETLE
This beetle caused localized defoliation to pine plantations in central Louisiana, particularly eastern Rapides Parish, in 2001. These insects chew on the needles of pine trees and cause the foliage to appear burned or scorched. No significant damage occurred, but defoliation is unsightly, causing landowner concerns.

ASIAN LONGHORNED BEETLE
An adult beetle was collected in a warehouse at the Port of Houston. Intensive surveys of vegetation in the vicinity of the warehouse revealed no evidence of infestation. USDA Animal and Plant Health Inspection Service (APHIS) personnel conduct detailed inspections of wood packing material from China to find and prevent accidental introduction of this unwanted wood boring beetle to Texas.

GYPSY MOTH
In Arkansas, delimiting trapping was successful in eradicating moths from Carroll and Marion counties in 2000. Delimiting trapping in Newton County caught 3 moths in a single trap. No gypsy moth infestations are known to exist in Texas, Louisiana, Mississippi or Oklahoma. The US Department of Agriculture, Animal and Plant Health Inspection Service in cooperation with the state agencies deploys traps each year and a few male moths are usually caught. Most of the northeastern US, the Lake States, and some localized areas in the Pacific Northwest have established infestations. Gypsy moths that are trapped in Western Gulf region are brought here from infested areas by persons who unknowingly transport pupae or egg masses on their vehicles, camping gear, or other items.

CONEWORMS
In 2001, coneworms continued to cause significant losses to improved seed crops in southern orchards, primarily loblolly pine. In central Louisiana, a bumper crop of longleaf pine cones was harvested; however, inventory samples revealed that 63% of

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the cones were infested with and destroyed by coneworms. Much of this loss occurred between May and July indicating substantial attacks on maturing cones likely due to *D. amatella*. Other samples taken from loblolly orchards in Florida, Texas and Louisiana indicated losses of 15-70% from coneworm. Losses in unsprayed orchards in Texas remained static at about 35-45%. Losses in treated orchards were considerably less.

SEED BUGS
Seed bug damage to seeds in unsprayed pine seed orchard trees was 34% in 2001. This was up from 24% damaged seed in 2000. These insects extract the contents of seeds inside cones. They do this from outside the cone by inserting a long beak between the cone scales to find the seeds. About the only way to detect seed bug damage is to x-ray seeds and observe what is inside the seeds.

GIANT ASIAN DODDER
At least four confirmed sites of giant Asian dodder (*Cuscuta japonica*) have been confirmed in Houston, TX. This parasitic plant grows in a tangled mat over its host and can cause the host plant to die. Giant Asian dodder reproduces by seed and vegetatively and can spread rapidly once it becomes established. Entire trees in Houston have been covered with dodder. The City of Houston is taking a forceful approach to this exotic invasive plant and will initiate an aggressive eradication program in 2002.

ANNOSUM ROOT DISEASE
Localized mortality and growth loss from annosum root disease occurred in Western Gulf in 2001. Most activity was noted in northeast Texas, and southern Arkansas. This disease attacks the roots of pine trees (usually loblolly pine and slash pine) and eastern red cedar. This disease is not considered a serious problem in this region.

FUSIFORM RUST
Moderate levels of fusiform rust occurred on scattered and occasional tracts in the Western Gulf region in 2001. On a regionwide (Western Gulf) basis, fusiform rust infection levels have declined slightly in the past few years. This rust disease infects slash and loblolly pine trees.

PITCH CANKER
About 10% of the pine cones harvested from the Texas state seed orchard in 2001 were damaged by what was apparently pitch canker (unconfirmed). Scattered trees across the remainder of the South were infected, but impacts can be locally significant. In Georgia and South Carolina, pitch canker continues to be associated with pine plantations near chicken and turkey houses. The ammonia released from the brood houses creates conditions on the trees conducive to infection. The damage is usually confined to the area within the plantation nearest exhaust fans. All species of pine (slash, longleaf, shortleaf and loblolly) are affected. Poultry houses are becoming a common sight throughout the coastal plain of Georgia. Thus, problems with pitch canker are expected to increase, especially during droughts. Similar problems have been noted in North Carolina when chicken waste has been used as fertilizer in pine plantations.

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Thought You Might Be Interested to Know . . .

Be Wary of Verbal Claims

(Source: Chemically Speaking, Feb. 2002)

The Pesticide Information Office was recently contacted regarding use of a phenoxy tri-mix that someone had purchased from a NY-based business through an unsolicited telephone sale. The person that purchased the herbicide described to the sales person that he wanted a material for conifer release. The sales person assured him that the material "would do that" and that it would provide six seasons of control. Upon receiving the gallon of material in the mail, the buyer did not see conifer release on the label, and it indeed was absent. Each of the three herbicides in the mix (2,4-D, 2,4-DP, and MCPP) were present at a concentration of about 4.5 percent. Other products that contain these active ingredients are labeled for conifer release. This is an example of a product sale wherein verbal claims were not substantiated by the label, and there has been a history of this type of questionable selling tactic throughout the nation. We urge people to seek information from reputable sources when acquiring pesticides.

EPA Anticipates Speedy Registration for Three New Biopesticides

(Source: USDA-OPMP Newest News, 12-28-01 via Georgia Pest Management Newsletter, Jan. 2002)

Bacillus pumilus strain GB34 is proposed as a seed treatment for soybeans to suppress root diseases caused by *Rhizoctonia* and *Fusarium*. ***Chondrostereum purpureum*** **isolate PFC 2139 is proposed as a biological herbicide to control alders, aspens and other hardwoods in rights of ways and forests.** Review of the latter active ingredient is being conducted as a joint review with the Pest Management Regulatory Agency in Canada. Finally, annosodium silver thiosulfate will be used as preservative for cut flowers.

The Biochemical Classification Committee conducted 24 reviews of potential new active ingredients. Of the 16 compounds that met the criteria for classification as biochemical pesticides, there were: four insecticides, four insect repellents, two deer repellents, one aquatic herbicide, one fungicide, one molluscicide, one nematicide, one plant growth regulator, and one SAR-inducer. Two compounds were determined to be antimicrobials (sent to AD for review) and two compounds were determined to be conventional pesticides (sent to RD for review). One mixture was determined to be a mixture of unidentified microbial active ingredients, but the mixture cannot be reviewed until additional information regarding the nature of the active ingredient(s) is provided. One mixture was determined not to be a pesticide. The Committee was also unable to make a determination on two additional substances (one proposed as a fungicide and the other as an insect repellent) due to insufficient information.

Do You Have a "Critical" Need for Methyl Bromide?

(Source: *Pestic. & Tox. Chem. News,* 30:8 via Chemically Speaking, 1-02)

All uses of methyl bromide will end in the United States on January 1, 2005, except for uses that are recognized as "critical." The big question: what separates a "critical" use from a merely "very important" use? If you consider methyl bromide to be a critical component of your operation, you need to get busy. The United States is developing a package for submission to the Secretariat of the Montreal Protocol in January of 2003; this package and subsequent negotiation will establish the U.S. allocation of methyl bromide. Before that time, U.S. stakeholders will have to work with EPA and other federal agencies to define "critical" (Where is Clinton when you need him?) and to identify critical uses of methyl bromide. For more information, call Amber Moreen at 202-564-9295.

The Perfect Aquatic Weed

(Source: Langeland, K.A. 1996. *Hydrilla verticillata* (L.F.) Royle (Hydrocharitaceae), "The Perfect Aquatic Weed". Castanea 61:293-304)

"Abstract: The submersed macrophyte hydrilla (*Hydrilla verticillata* (L.F.) Royle), which is native to the warmer areas of Asia, was first discovered in the United States in 1960. A highly specialized growth habit, physiological characteristics, and reproduction make this plant well adapted to life in submersed freshwater environments. Consequently, hydrilla has spread rapidly through portions of the United States and become a serious weed. Where the plant occurs, it causes substantial economic hardships, interferes with various water uses, displaces native aquatic plant communities, and adversely impacts freshwater habitats. Management techniques have been developed, but sufficient funding is not available to stop the spread of the plant or implement optimum management programs. Educational efforts to increase public and political awareness of problems associated with this weed and the need for adequate funding to manage it are necessary."

Hydrilla occurs in Europe, Asia, Australia, New Zealand, the Pacific Islands, Africa, South America and North America. It was discovered in two locations in Florida in 1960 and spread rapidly throughout the state. It is now found in all Gulf Coast states, Atlantic Coast states as far north as Maryland and Delaware, and in the states of California and Washington.

The article can be viewed online at http://aquat1.ifas.ufl.edu/hydcirc.html.