VIRGINIA DEPARTMENT OF FORESTRY

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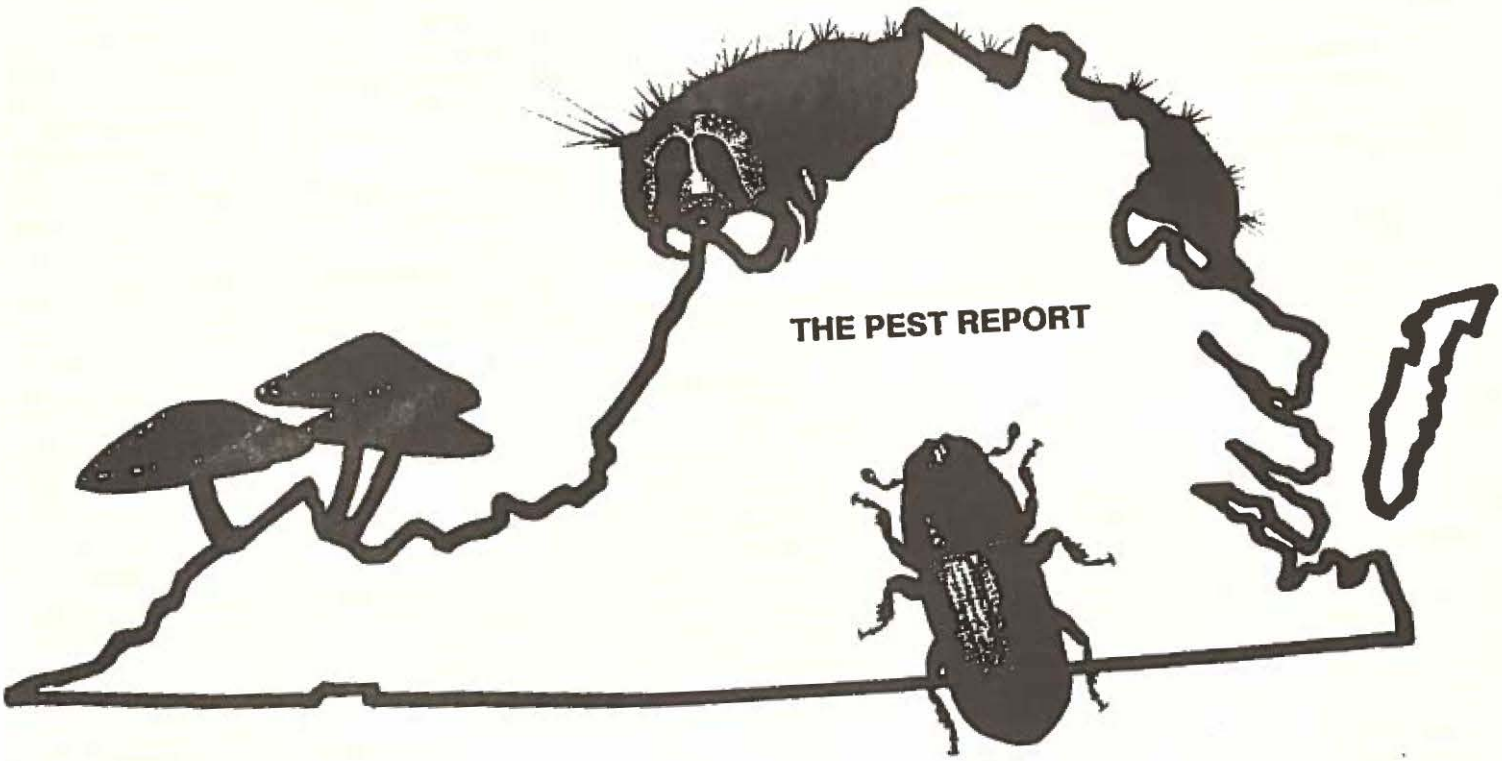

THE PEST REPORT

Department of Forestry
P. O. Box 3758
Charlottesville, VA 22903

PEST REPORT
DEPARTMENT OF FORESTRY
P. O. BOX 3758

(804) 977-6555

PURPOSE: To inform Department of Forestry personnel, interested agencies, organizations, and individuals.

PEST MANAGEMENT STAFF

Chief, Pest Management . . . . . Joel D. Artman
Asst. Chief, Pest Management . . . . . Timothy C. Tigner
Forestry Technician . . . . . John I. Severt
Forestry Technician . . . . . Larry T. Moody
Office Services Specialist . . . . . Sharon H. Hall

NOTE: Over the past year, your Pest Management Branch has received a disappointing number of questions to which answers existed in previous issues of the Pest Report. Please file these reports for future reference. Sharon Hall has done an excellent job of making subjects easy to find.

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UPDATE

It's been a banner year for pests. In addition to the unusually high populations of early spring defoliators mentioned in the **June Pest Report**, there has been an outbreak of **locust leaf miner** that includes several states; other common summer and fall defoliators such as the **fall web worm, buck moth, catalpa sphinx, oak skeletonizer,** and **orange-striped oakworm** have been prevalent too and **dog-day cicadas** seemed unusually numerous in some areas. **Nantucket pine tip moth** damage was reported from several Coastal Plain locations. Almost all of the relatively uncommon insects we see only intermittently were brought in by curious local residents at least once this year--the **saddleback caterpillar** and the red-bud leaf eating Norape larvae, both of which can cause powerful discomfort on contact; the huge, green hickory horned devil larva; several species of tussock moths, hardwood sawflies, and many gall makers. If the tremendous number of swallowtails is any indication, then it's been a great year for butterflies too.

Significant episodes of **ozone damage** to Christmas trees occurred in R-7 and northern R-3 during late June or early July. This, combined with additional stress from soil/root problems, resulted in infestations by the beetle, Pityogenes hopkinsi, and eventually in some tree mortality.

Heavy **gypsy moth** infestations took a big jump south this year. Significant defoliation extended as far as southwestern Rockingham, northern Albemarle, and east through central Culpeper into southern Prince William County. Populations with the potential for heavy defoliation have been found in Nelson and Amherst. Bill Newman discovered an egg mass in our Virginia pine orchard on the Appomattox-Buckingham State Forest. High moth catches and isolated finds of larvae and pupae suggest that Cumberland, Amelia, and Nottoway counties could see big increases anytime. From Dinwiddie south and east, the same applies. The second year of an eradication program in Giles County encountered bad weather and equipment problems, but there is still hope for success.

More than 155,000 acres were sprayed through the VDACS Cooperative Suppression Program in 1989. Roughly three-quarters of this was treated with Dimilin and the rest with Bt. Moderate and heavy defoliation affected about 200,000 additional acres. Defoliation mapping was a cooperative effort by DOF, county and USFS personnel. It was unquestionably the worst year yet for aerial survey weather, but we learn more about this process each year and next year's mapping will be more efficient and effective regardless of weather.

The recent availability of state funds for pest investigations has allowed us to develop contracts with consulting foresters to begin documenting gypsy moth impact. The first contract focuses on characterizing mortality

in a portion of Clarke County where defoliation has been mapped for up to 4 years. The second will collect data and opinions to help us evaluate how gypsy moth defoliation has affected various aspects of forest industry. We plan eventually to expand the collection of forest inventory data to several counties. With solid information about short and long term effects of defoliation, we should be able to refine our recommendations concerning hardwood forest management.

We can all take pleasure in the fact this has not been a great year for the **southern pine beetle**. Other than a few spots, mostly in pitch pine on the George Washington National Forest south of Waynesboro, no significant activity has been reported. States from North Carolina south have been less fortunate, but no where is SPB on a total rampage.

Investigations of **Imidan substitutes** continues. Laboratory bioassays, field evaluations, and a summary of results will be finished by year's end. Plans are under way for one more season of investigation before a major change in our seedling protection program takes place.

A non-forest bug note that might interest some of you: After a long downturn, cotton acreage is expanding again in Virginia because of an effective program to eradicate the **boll weevil**. This huge cooperative effort among governments, scientists, and growers is a notable accomplishment.

Locally significant patches of **hickory mortality** have been reported periodically from several regions over the past decade. Recent inquiries concerning this phenomenon have come from Chesterfield and Prince William counties. Unreported instances probably exist in other places too. Although no single agent has been clearly a primary cause of this mortality, shallow soils, weather stress, hickory bark beetle, hickory borer, and site disturbance have been common elements. Sanitation to remove beetle-infested trees might help if applied over a significant area, but this would only be practical under special circumstances (e.g., a new residential development).

Unusual **defoliation of white and red oaks** was discovered by Chesterfield County Forester, Ted Teague, in mid-September. Investigation showed that whole leaves were falling to the ground because their petiole bases had been partially or completely girdled at the point of attachment. The ground was covered with recently fallen leaves, some green, some brown; but no insect was evident. Judging from the appearance of these leaves, the injury probably occurred in late August and early September. This same phenomenon was discovered later in Fauquier County.

Presumably the causal agent is a small beetle, but none of the references or entomologist I consulted had any relevant information. Maybe next year we can find the critter in action and ask its name.

The estimated timber damage in Southwest Virginia from hurricane **Hugo** is $30.5 million.

Dogwood anthracnose continues to "pop up" in new areas. At first I thought this was a manifestation of more people looking for it, but I now believe it's on the move. Recently, I was at Humpback Rocks on the Blue Ridge Parkway; it is difficult to find a healthy dogwood tree in the area of the Visitor Center.

If you note dogwood trees dying back from the top, it is not dogwood anthracnose. For whatever reason, the disease seems always to start with the lower branches and progress upward. During the winter, affected branches retain their leaves making winter a good time to conduct surveys.

Owners of yard trees have a number of options that are not available to trees in the woods. Affected branches can be removed and destroyed. Doing this removes the fungus and also opens the crown to increased air movement. Trees can be mulched to preserve water and to prevent the need of mowing close to the stem and perhaps creating wounds. Trees can be fertilized with 5-10-10 fertilizer at the rate of 4 pounds per diameter inch. Fertilization should extend from an area two feet away from the main stem to the tree's dripline. During drought, trees can be watered but should be done in such a way as to avoid wetting foliage as that can speed up the activity of the fungus. Finally, fungicides are available that have been pretty effective. Application needs to begin in the early spring with approximately three applications at ten-day intervals when the leaves begin to form. Applications may need to continue if the growing season is wet.

Researchers at the University of Georgia have been screening new fungicides for use with this dogwood program. One material, Lynx, is not currently registered for dogwood anthracnose, but registration is expected during the spring of 1990. This material is environmentally safe and tests to date indicate it is almost 100% effective in protecting dogwood foliage from infection.

Work is also being done on the development of "injectable" fungicides. These materials would be placed in and moved through the vascular system of the tree. More on this as developments progress.

Just recently, the state's **Endangered Plant and Insect Act** was amended to add 13 plant species to the list of endangered plants. The added species are: shale barren rock cress, mat-forming water-hyssop, piratebush, variable sedge, Harper's fimbristylis, Virginia sneeze-weed, swamp pink, long-stalked holly, Peter's mountain mallow, small-whorled pogonia, nestronia, Northeastern bulrush, and Virginia spiraea.

We do not currently know where these rare plants are found. Endangered species programs involve a "catch-22" situation. On the one hand, the listed plants must be protected from any activities which may do them harm, and on the other hand, authorities are extremely reluctant to release the location of listed species for fear they will be collected. So, we often face a situation of" you must protect them, but we're not going to tell you where they are".

The Federal **Endangered Species Program** has altered its first approach and offered a substitute to the originally proposed "cluster" effort. The new proposal is a species-based approach. Under the new proposal, EPA will select species and associated pesticides for review and determine if the highest application rate shown on the label indicates a possible problem. If it does, a "may affect" determination is issued and EPA determines the lowest or threshold level that may affect the species in question. EPA will consult with the Fish and Wildlife Service who will offer a biological opinion. If the opinion finds jeopardy to listed species, a product registrant will be required to change the product label. The revised label will instruct the user to follow information in county bulletins. The bulletins will require users in all counties to comply with the use limitations contained in the bulletin for the county in which they intend to use the pesticide. The bulletins will contain a county map showing the geographic area associated with each species of concern. The bulletins will identify pesticides that jeopardize the listed species and describe use limitations.

January 19, 1991 is the proposed target date for implementing enforceable measures associated with this proposal. We continue to be quite concerned about the quality of the maps that will be available regarding species location. For example, a population of small-whorled pogonia is present in Caroline County on Camp A. P. Hill, military reservation. Will the county map for Caroline County indicate a specific

location that must be avoided, or will a large, general area be identified where activities are banned?

Tired of carrying your garbage bags out at night only to find them trashed by dogs, cats, and other animals the next morning? DuPont is working an answer. The company has just begun testing "Pet Master" garbage bags in the Houston area. The bags contain a varmint-repelling scent that clings to the polyethylene in plastic bags. To relatively dull nosed humans, the bags give off a pine smell, but to animals with more sensitive snouts, the odor is overwhelming. The smell does more than mask the odors of the garbage inside, it actually repulses the animals.

Included with this issue is a copy of form 6.77, **Diagnosis Request**, that was distributed to regional offices last year. If you complete and send this form with your samples, you are more likely to get a prompt and useful reply. A copy is located at the end of this Pest Report.

Since the last Pest Report, John Severt has examined 1545 acres of proposed plantings for **white pine blister rust** hazard. In addition, Ribes eradication was conducted on 110 acres.

PESTICIDE REVIEW

Pyrethroids. The search for safer, more selective and more effective pesticides is a never ending process. Recent proliferation and refinement of pyrethroid insecticides has been a significant step in this process. Pyrethroids originated from attempts to synthesize chemical mimics of the active principles in pyrethrum, a botanical insecticide extracted from chrysanthemum flowers. The number of pyrethroid registrations has increased rapidly in the past several years as they have begun to replace organophosphates, carbamates, and chlorinated hydrocarbons for many uses. Names of some common pyrethroid active ingredients include: permethrin, cypermethrin, fenvalerate, esfenvalerate, fluvalinate, and bifenthrin. Their greatest advantage is generally a very low mammalian toxicity. They can be used more safely around people and livestock than most alternative synthetic insecticides. Because of this, many formulations are used for suppression of household pests, and at least one is registered in most states for application to clothing for protection against ticks, chiggers, and mosquitos. Another advantage, most of the time, is

their relatively long-lasting effectiveness, even after heavy rains; this allows for fewer applications.

A particular disadvantage of most pyrethroids is their toxicity to certain beneficial organisms, including bees, many parasites and predators, and fish. Outbreaks of sucking insects have apparently resulted from pyrethroid applications, presumably through elimination of predators. This has happened in our own seed orchards. The potential for eye and skin irritation has been a problem for some formulations, but new versions have reduced this drawback.

Pyrethroids affect the nervous system, but specific mechanisms are not completely understood. Since no antidote is known, treatment of overexposure would be symptomatic. In some such cases the petroleum derived carriers in some pyrethroid formulations could probably present as much of a hazard as the active ingredient. Eye irritation is treated by flushing with water; skin irritation can be relieved with soap and water, vitamin E oil, or even common vegetable oil.

In sum, low mammalian toxicity, broad efficacy, and relatively long residual make pyrethroids very attractive alternatives to older classes of pesticides; but these advantages must be weighed against undesirable effects on non-target organisms. Pyrethroids are no panacea.

PEST WATCH

Dogwood Anthracnose. Fall and winter are the best times to be on the lookout for dogwood anthracnose. Infected, dead leaves from the previous summer are retained on the branches rather than falling as normal. The problem should be more pronounced in woods trees than in yard trees. Also, it is more obvious in the Mountains and Piedmont than in the Coastal Plain. We would like to be informed of any areas where you note suspected dogwood anthracnose damage.

The wet season lead to a tremendous array of problems caused by foliage-attacking fungi. In addition, activity we normally see terminate in early summer has continued throughout the summer and is still going. Because of this, **fall sanitation** could be extremely important for yard trees. Many of these foliage fungi have the ability to successfully overwinter on fallen foliage; they are, therefore, ready to reinfect new foliage next spring. Collecting and getting rid of fallen foliage could prove beneficial in reducing the inoculum potential for next spring. This would be especially true if other individuals of the same species were not nearby.

Obviously, it would do little good to rake leaves under a yard white oak for the purpose of reducing inoculum potential if the yard is surrounded by forests containing numerous white oaks. Still for individual dogwood trees, maple, etc., the removal of fallen leaves could prove quite beneficial. In addition, if the tree is not tall, dead leaves retained on the tree could be removed as well. One of the characteristics of the "bad" dogwood anthracnose is that infected leaves do not fall normally, but are retained on the tree.

Fall and winter are times when many organisms complete seasonal development, prepare for dormancy, and then relax. This gives people a chance to catch up a little. Many of the late season foliage pests can be ignored because their impact is minor and short-lived. A notable exception is **mite** damage to conifers, which can increase rapidly in the fall and have long lasting effect. Look for chlorotic stippling of foliage and apply a miticide as soon as infestation is confirmed. Check the same plants for renewed activity in the spring.

Insects that overwinter as adults present a nuisance when they choose houses and firewood for retreats. **Elm leaf beetles**, some **wasps**, **boxelder bugs**, and many other kinds of true bugs commonly appear around windows in warm spells throughout the winter. They can be joined by all sorts of creatures when firewood is brought in from outside.

The winter stages of some pests present an opportunity for mechanical control that should not be passed up when it's practical to apply. Remove and destroy **bagworm** bags, **eastern tent caterpillar** egg masses on fruit trees, isolated **gypsy moth** egg masses, and pests (including fungi) that stay on the ground with fallen twigs, leaves, and fruit. Use the dormant season for pruning too. It's generally the best time for pruning and pest removal is often a side benefit.

PEST PRIMER

Subterranean Termites. Termites are good guys most of the time--they decompose and recycle cellulose with the help of tiny organisms in their guts. Few other animals can digest cellulose. People tend not to feel grateful for this service, and yet they go out of their way to feed these reclusive insects by replacing more and more forests with poorly designed, carelessly constructed dwellings with cozily-heated basements

and frames of susceptible wood. Since termites have so few effective

natural enemies that invade their nests, we resort to chemicals for protection against trespass.

There are several kinds of termites in Virginia, but most of our problems come from one or two species of the genus, Reticulitermes, commonly called subterranean termites. Eggs hatch into larvae which develop eventually into worker, soldier, and reproductive forms that make up a colony. Reproductive forms periodically develop wings and join colonizing flights that last only a few days. Because they occur in large numbers and are attracted to lights, these flying forms--or the myriad wings they shed soon after mating--are frequently discovered around windows and doors. This is often the most obvious indication that termites are near. Ants have similar mating flights, but they can be easily distinguished from termites because ant "waists" are very narrow and their hind wings are much smaller than the forewings. Termites' waists are not so restricted, and all four of their wings are very similar in size and appearance. Termite colonies start from just one adult pair that succeeds in finding moist or buried wood to invade. From a few eggs, colonies develop over several years to include thousands of individuals.

Their dependence on a constant supply of moisture forces subterranean termites to remain in damp soil or within a closed, humid, environment. This is the reason they build shelter tubes of soil to bridge gaps between the ground and infested wood, and why they stay inside the wood without breaking through to the surface. Since openings of less than one millimeter across are big enough to let termites in, they can often pass through tiny defects in masonry without needing to build tubes on the outside. This makes it even more unlikely that they will be discovered early.

As with many problems, prevention is the best way to deal with subterranean termites. Careful planning, design, and construction, are generally sufficient; chemical protection is wise additional insurance. The essence of prevention is separating wood in buildings from existing termite colonies and from sources of moisture. Building sites should drain well and be free of wood scraps and residual dead roots in the soil, particularly around foundations; downspouts must drain away from buildings; soil should be kept as far from wooden building materials as is practical (they must never be in direct contact); masonry should form an uninterrupted barrier between soil and wood. These precautions alone would prevent most termite damage.

Proper insecticide treatment at the time of construction is also very effective in preventing infestation. The trick is to get complete coverage of all the soil immediately under and around a building to present an absolutely unbroken chemical barrier between wood and insect. Treatment can be done after construction as well, but with far more

difficulty and cost, and with less assurance of complete coverage. An alternative approach in some circumstances is to use chemically-treated wood. Since the kind and quality of treatment varies, careful site preparation, proper drainage, and good design are still very important.

When chlordane was banned, several pyrethroids (e.g., Demon TC, Tribute, Torpedo) and Dursban TC became the standard termiticides for soil treatment. Any registered brand will work well for several to many years if properly applied. Certificates of inspection, on the other hand--often required in real estate transactions--are generally worth very little. Commonly they state that if you discover active infestation within 30 days of the inspection date then the inspecting company is liable only up to some small dollar amount to cover treatment or repairs. After 30 days, or for more expensive repair, you are out of luck.

Snakes. To listen to our snake calls during the spring and summer, one would think the only snakes in Virginia are copperheads and water moccasins. Many people believe any snake found in Virginia in water is a water moccasin and if it's in Virginia but not in water, it must be a copperhead!

Actually, out of the 35 or 36 species that may be found in Virginia, there are only four poisonous snakes. The timber rattlesnake can be found in any of the more mountainous terrain in the Western Piedmont and Mountains of the Commonwealth. It has two color phases--black and yellow. The color phase is not tied to sex or location; I have found both phases in the same place at the same time. Regardless of the color phase, they will have a totally black tail.

The other rattlesnake in Virginia is the canebrake. Usable habitat for this species runs from approximately Prince George County southeast. Much of the original habitat has now been taken over by people, so the snake is not nearly as abundant as it, perhaps, once was. If you run into a rattlesnake in southeastern Virginia, it has to be this species.

The two remaining poisonous snakes are the water moccasin and copperhead. The copperhead (includes both the northern and southern subspecies) encompasses the entire state. The snake may prefer rocky, wooded mountainous terrain, but it is not limited to such sites. It may be found in the Dismal Swamp and is very much at home almost anywhere in Virginia around farm buildings and abandoned houses where mice are plentiful.

The copperhead has a bad reputation. Nationwide and in Virginia, it bites more people than any other poisonous snake. If treated promptly, however, its bite is seldom fatal. Disability in the form of a stiff hand or fingers, a foot or a leg, however, must not be discounted.

It's uniform copper-colored top of head, slit-shaped eye pupils, and pit (hole) on each side of the head between the eye and nostril, distinguishes the copperhead from other snakes that may often be confused with it. The hour-glass-shaped crossbands of the copperhead are also quite distinctive.

The last one I caught was during the spring of 1989 in Nelson County. I found it dangling from my basset hound's ear. Since this was the first copperhead I had seen on this property at the Rockfish River, I decided to catch and mount it. Catching it proved to be no problem; somewhere to put it was another question. Figuring the ice would cool the speciman, I decided on a cooler in the back of my pickup. However, as I opened the cooler a little later, the snake struck at me and exited the cooler into the bed of the pickup. It was recaught, reiced, and can now be seen in my office next time you're in Charlottesville.

The water moccasin or cottonmouth is probably the one snake in Virginia that confuses the most people regarding its range. People tell me of finding this species in virtually every river, stream, pond, and lake in the state. Actually, the snake is limited to Virginia's southeast counties south of the James River. I believe there is useable range for the snake as far west as Richmond, but, to my knowledge, none have been found in that area.

For the most part, the other snakes reported are specimens of the northern water snake. The two are somewhat similar except the cottonmouth can be positively identified by having pits similar to those described for the copperhead and a single row of scales under the tale. The water snakes have no pits and a double row of scales under the tail. In addition, the cottonmouth, when excited, often vibrates its tail against the ground; the head is bent back and the mouth opened wide to reveal a white (cottonmouth) interior.

Some time ago the State Forester and I were trying to recall any DOF employees who had been bitten by poisonous snakes. The only one we could recall was John Swift, Forester in Amherst County. If John is indeed the only employee ever bitten, it seems to support the historical records. It is generally not the hunter, fisherman, or forester that is bitten by a poisonous snake in Virginia; it is usually the person gathering eggs,

picking garden vegetables, or doing other work in and around buildings containing the rodents that draw and hold snakes such as the copperhead.

White Grubs. Life in the soil is easy to overlook, and it usually is. Among the plant pests that commonly remain forgotten for this reason are white grubs, the larvae of scarab beetles.

This is a very large family of beetles that includes beneficial as well as pest species. On the beneficial side are many dung, carrion and other beetles that help decompose organic matter and recycle nutrients. Included on the pest side are familiar names, such as the Japanese beetle, rose chafer, and June beetle that can cause problems both as adults and as larvae. White grubs damage plants by feeding on their roots. People who manage turf, lawns, and pastures encounter white grubs regularly, but not always at damaging levels. Root injury from white grubs is periodically a problem in corn, grain, potatoes, and commercial berries also. Occasionally grubs are an indirect problem by providing food for moles that invade sod.

Tree roots are hosts to these insects too; both because trees are sometimes preferred, and because they exist in close association with other hosts. One investigation showed that Christmas tree color and growth improved significantly from grass control or insecticide treatment where white grubs were at high densities. Earlier this year, an infestation of white grubs started killing cypress seedlings at our New Kent nursery before control measures took effect. Other commercial tree nursery stock is also an occasional target of these pests. Grubs of the very large Hercules beetle and rhinoceros beetle are traditionally associated with ash trees, although their impact is not known.

Identification of many white grub species is very difficult and often not worth the effort. Just one common genus, Phyllophaga, has almost 100 species. Sampling grub densities can be useful where damage thresholds have been established, as in turf management. Several insecticides are registered for control. Japanese beetle larvae can sometimes be suppressed biologically with milky spore disease.

White grubs are not common forest pests, but they should not be forgotten where trees are managed intensively.

PEST ARTICLE

The American Chestnut--Interest Lives ON!

According to _____ Area Forester with the Virginia Department of Forestry in _____ County, the downfall of the American chestnut tree began about 1904--over 85 years ago. Chestnut trees in the Bronx Zoological Park in New York City began dying. Soon, it was determined that a fungus disease was causing the mortality. Reports of similar sightings as early as 1893 may have been due to the same fungus; it is likely the disease had a good start before the 1904 discovery.

Regardless of when it began, it is generally accepted that the fungus is not native to the United States. It was probably introduced into the New York area on young chestnut trees from Japan or China, perhaps for use in the zoological park according to _____.

The disease became known as chestnut blight and early attempts at control were aimed at eliminating the disease from nurseries, inspecting chestnut nursery stock, quarantines, the establishment of a blight-free zone along the edge of the affected area, and the location and eradication of infections beyond that zone. The early efforts at control were valiant, but neither they nor any other practical means were destined to check the destruction the disease would cause.

In 40 years, the disease spread into approximately 20 states. It has been estimated, according to _____, that the disease destroyed enough timber to construct 100 million homes. The disease has cost billions of dollars and altered a way of life for thousands of Americans.

The fungus rarely attacks the root area of the tree so death of infected trees above ground gives way to spouts that grow until infected and the cycle is repeated. Today, American chestnut is no problem to find, but it is certainly not the range of trees that occupied chestnut sites in years gone by. The American chestnut sprouts are numerous today, but they survive only until infected by the fungus.

According to _____, considerable interest remains in attempting to restore American chestnut in its original habitat. There are several types of chestnuts; some are less susceptible to the fungus than others. There have been and continue to be numerous tree breeding programs among the various chestnut species in an attempt to increase disease resistance while maintaining the characteristics of the original American chestnut. In fact, the largest hybrid planting orchard in the nation is managed by the Virginia Department of Forestry on the Lesesne State Forest in Nelson County. Some progress has been realized, but __ _____ stated, "A tree breeding program takes a long time, it will be years before we can assess both quality and disease resistance of the species' crosses."

Another attempt involved the irradiation of chestnut in the hope the genetic code within the nut would be altered and disease resistance would result The irradiation of the nuts was accomplished at the University of Virginia; they were planted on the Lesesne State Forest. The nuts germinated normally and hopes were high. Soon, however, according to _____, all of the developing trees succumbed to the disease.

More recently, scientists have discovered hypovirulent strains of the blight fungus. These strains are the same as the disease-producing strains, but they are "sick". The hypovirulent or "good" strains are infected with a virus. If the "good" fungus is grown in the presence of a disease-producing or "bad" strain, the two will grow together. The virus from the "good" strain is transferred to the "bad" strain rendering it incapable or less capable of causing disease.

_____ says the same thing occurs in nature. Diseased trees can be inoculated with compatible strains of the "good" fungus and development of infection at the point of inoculation ceases. Early work with "good" strains involved the use of imported cultures from areas where it appeared the "good" fungi were living, reproducing, and spreading naturally, and by so doing, controlling disease spread.

_____ said, "Early work with the "good" fungi in this country was frustrating." A given infection on a given tree could be controlled, but the "good" fungi would not reproduce and spread naturally as they seemed to be doing in their home country. Efforts shifted

somewhat in this country in an attempt to locate "good" strains in the US that, perhaps, could be used with a greater probability of natural reproduction and spread. To date, chestnut researchers have identified a number of native strains that may, some day, become major players in the future of what has been described as "America's perfect tree".

"Each year there are fewer and fewer people who saw and appreciated the pre-blight tree", said _____. "But, I never cease to be amazed at the continuing interest displayed in restoring the species. I suppose remembrances of this tree are among those things passed down from generation to generation. I don't know whether the eventual answer will be from a genetics approach, use of "good" fungi, a combination of the two, or some as yet unidentified factor, but interest remains high and work continues", stated _____.

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DIAGNOSIS REQUEST

Name_____ County_____ Date_____

Species_____ Height _____ DBH _____

Acres_____/Trees_____; Yard_____ Woods_____ X-mas Tree_____

Drainage: excessive ___ moderate ___ poor ___

Parts Affected: bole ____ branch ____ twig ____ bud ____ foliage ____
flower ____ fruit ____ roots ____ all ____

Associated Factors: compaction ____ grade change ____ excavation ____
salt ____ injury ____ fertilizer ____ pesticide ____
septic field ____ utility line ____ paving ____
hail ____ frost ____ wind ____ ice/snow ____ flood ____
drought ____ lightning ____ none ____ other _____
_____

Symptom Pattern (e.g., clustered/scattered, protected/exposed, part/all of crown, new/old foliage, one aspect/several):
_____ no pattern____

Description:_____
_____
_____

.....

DIAGNOSIS REPORT Date_____

Department of Forestry
P. O. Box 3758
Charlottesville, VA 22903