

turf in Florida is due to these pests, Dr. Winchester estimates. In early stages, sting nematode-infested turf roots appear cut off 4 or 5 inches beneath the soil surface. Stubby root nematodes cause colorless lesions near root tips, while spiral nematodes cause small lesions all along the roots. Root knot nematodes cause small galls on roots.

Sarolex does not kill weeds, but increased grass vigor caused by the control measure gives grasses a better chance to compete with the weeds.

Applications to St. Augustine-grass also gave good nematode control, Dr. Winchester relates. He says zoysia and centipede grasses infested by root knot nematodes were treated with 1½ pints of Sarolex per 1,000 sq. ft. They maintained vigorous green color a year later while surrounding grass was dead.

The nematocide must be applied at low pressure (35-60 psi) and it must be "drenched" into the soil right after applying to avoid turf injury.

Herbicides Stop Growth Of Crabgrass Seedlings

Crabgrass seed germination is not inhibited by preemergence herbicides, as commonly believed. Rather, these herbicides stop growth of both roots and shoots soon after germination. This leads to death of the young crabgrass seedlings.

This new facet of research is reported by Dr. Clayton Switzer, University of Guelph, Ontario, Canada, who has just completed experiments in this area.

In studying several commonly used preemergence crabgrass herbicides, Dr. Switzer reports that very little herbicide is needed to bring about this growth inhibition, much lower than must be used in practical applications on turf. This, he says, indicates that much of the herbicide is probably inactivated soon after application, possibly by being tightly adsorbed to the soil particles.

Other Canadian research on movement of bensulide, a common preemergence crabgrass weed killer, substantiates this idea. Little downward move-



Mr. and Mrs. Wyn Behrens, publisher and editor respectively of the Marysville Journal-Tribune, appear a bit pensive as they watch sod for the lawn of their new home being laid on a 4-inch concrete base. One neighbor, watching the concrete being poured, thought the Behrens' were making a parking lot.

Sod Over Concrete Proves An Unusual Innovation

Citizens of Marysville, O., were a bit shocked recently when Mr. and Mrs. Wyn Behrens laid their new sod on a concrete base. But the new turf is thriving and neighbors have accepted the idea that turf can be made to grow on about any type surface.

The Behrens' permitted the O. M. Scott & Sons Co. to use the lawn of their new home as a demonstration area to show that a good lawn doesn't necessarily have to be grown on quality topsoil. Scotts has grown sod on

ment of herbicide was found even though large quantities of water were leached through the soil.

Most States Operate Chemical Info Centers

For the operator or grower seeking pesticide chemical information, most state Extension Services operate a full-time center.

Information is available by contacting the Cooperative Extension Service at the state land-grant university.

Such centers have data on regulations, registered uses, toxicities, persistency, degradability, compatibility, and safety pre-

old driveways, atop rocks and in so-called "impossible" soils, and now on concrete.

The turf is kept green with a modest daily watering and the use of a fertilizer every second month. It is weed free. The company believes it will grow well indefinitely.

Naturally, Scotts is not recommending concrete as a base for sod, unless, of course, a pure sand or gravel area has to be sodded. They simply wanted to show proof that good soil isn't a must for quality turf, and still recommend soil as a more favorable environment than concrete.

cautions of pesticide chemicals, and feed and food additives.

Major activities, according to Dr. L. C. Gibbs, coordinator of Pesticide-Chemicals Programs for the United States Department of Agriculture Federal Extension Service, fall into specific categories such as: (1) depth training programs for aerial and ground pesticide-chemical applicators and dealers; (2) development of visual aids and publications for the public; (3) surveys and projects to provide guidelines for developing future programs; (4) program coordination; and (5) dissemination of pesticide information on all aspects of pesticide use, storage, handling, and safety.

Insect Report

WTT'S compilation of insect problems occurring in turfgrasses, trees, and ornamentals throughout the country.

Turf Insects

BURROWING STINK BUGS

Alabama: Adults of *Panagaeus bilineatus* and/or *Tominotus communis* heavy in a 3,000-square-foot lawn of centipedegrass in Greenville, Butler County. These insects caused severe damage to peanuts in several southeastern counties in 1966.

A GROUND PEARL (*Margarodes meridionalis*)

Alabama: Observed in turf in Bullock County.

RHODESGRASS SCALE (*Antonina graminis*)

Texas: Moderate and common on rhodesgrass throughout southern area. Ranged 1.5-3.9 scales per node and have doubled since February. A small ENCYRTID WASP (*Neodusmetia sangwani*) controlled 8.8-33 percent of the scales.

Ornamentals

A CONIFER APHID (*Cinara tujafilina*)

New Mexico: Moderate to heavy on arborvitae at Hobbs, Lea County.

PRAIRIE TENT CATERPILLAR (*Malacosoma lutescens*)

Kansas: Large numbers of early-instar larvae of probably this species, feeding on cherry and plum in Clark and Meade Counties, ranged 1-10 nests per shrub.

A COREID BUG (*Jadera haematoloma*)

Oklahoma: Heavy numbers damaging western soapberry in Durant, Bryan County.

OMNIVOROUS LOOPER (*Sabulodes caberata*)

California: Larvae medium on fashedera plants in Santa Maria, Santa Barbara County. This pest was more widespread and occurred on a wider range of hosts than usual during 1966.

AZALEA LEAF MINER (*Gracillaria azaleella*)

California: Larvae medium on azalea nursery stock in Vista, San Diego County.

BOXWOOD LEAF MINER (*Monarthropalpus buxi*)

Virginia: Medium on American boxwood in Chesterfield, Henrico, Hanover, Goochland, and Charlotte Counties. Heavy on boxwoods at Chatham, Pittsylvania County.

FALSE SPIDER MITES (*Brevipalpus* spp.)

California: *B. obovatus* adults medi-

um on honeysuckle vines in Escondido, San Diego County. *B. essigi* eggs and adults light to medium on fuchsia nursery stock in San Luis Obispo County.

AN OLETHREUTID MOTH (*Laspeyresia cupressana*)

California: Larvae heavily damaged twigs of Italian cypress in San José, Santa Clara County.

ARMORED SCALES

California: *Hemiberlesia rapax* and *Aspidiotus camelliae* heavy on all parts of heather at Mission Beach. *H. rapax* heavy on loquat in La Jolla, San Diego County. *Aspidiotus nerii* heavy on acuba plants locally in Glenn, Glenn County.

BROWN SOFT SCALE (*Coccus hesperidum*)

California: Heavy on leaves of schefflera plants in San Francisco, San Francisco County.

CALICO SCALE (*Leucanium cerasorum*)

California: Locally heavy on deciduous magnolia shrubs at San José, Santa Clara County.

Tree Insects

APHIDS

Alabama: *Eulachnus* spp. infestations heavy on pine; 100-200 aphids infest outer 6-8 inches of each pine limb in most localities throughout east-central area. Heavy honeydew dripping into streets. **California:** *Pterocomma flocculosa* heavy on willow along State highway in Arroyo Grande, San Luis Obispo County. **New Mexico:** *Cinara* sp. problem on ponderosa pine in Albuquerque area, Bernalillo County. **Texas:** *Longistigma caryae* heavy on live oaks throughout Dallas, Dallas County.

A LONG-HORNED BEETLE (*Neoclytus caprea*)

Nevada: Larvae and adults medium on ash in Las Vegas, Clark County. New State record.

EASTERN LARCH BEETLE (*Dendroctonus simplex*)

Wisconsin: Adults numerous in grove of native tamarack in Walworth County. Water table recently altered in area by fill-in operations.

SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*)

Ohio: Collected in Tiffin, Seneca County. This is a new county record.

BOXELDER BUG (*Leptocoris trivittatus*)

Texas: Moderate on boxelder trees at Del Rio, Val Verde County.

A COREID BUG (*Leptocoris rubrolineatus*)

Nevada: Adults active on boxelder and maple in Reno, Washoe County.

EASTERN TENT CATERPILLAR (*Malacosoma americanum*)

Alabama: Widespread hatching and early feeding on cherry continues in southern area.



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TENT CATERpillARS

(*Malacosoma* spp.)

Florida: Late-instar *M. disstria* larvae on oak at Gainesville, Alachua County. **Illinois:** Small nests of *M. americanum* observed in southeastern area.

A SPIDER MITE

(*Oligonychus subnudus*)

California: Eggs and adults heavy on pine in San José, Santa Clara County.

NANTUCKET PINE TIP MOTH

(*Rhyacionia frustrana*)

Alabama: First adult emergence of season occurred in pine tree tips in Mobile and Baldwin Counties. Few adults merged as far north as Dallas County.

A PINE TUSSOCK MOTH

(*Halisodota ingens*)

Colorado: Third-instar larvae abundant and feeding on pine near Elbert, Elbert County.

OYSTERSHELL SCALE

(*Lepidosaphes ulmi*)

California: Heavy on willow along State highway in Arroyo Grande, San Luis Obispo County. Trees weakened by *Pterocomma flocculosa* infestations show greatest damage. **Maryland:** *L. ulmi* heavy on maple at Shadyside, Anne Arundel County.

A SOFT SCALE

(*Ericoccus quercus*)

Oklahoma: Noted on blackjack oak in Midwest City, Oklahoma County.

SOFT SCALES

California: *Ehrhornia cupressi* heavy on cypress in Fresno, Fresno County. *Saissetia coffeae* locally heavy on deodar cedar at San Francisco, San Francisco County.

Compiled from information furnished by the U. S. Department of Agriculture, university staffs, and WTT readers. Turf and tree specialists are urged to send reports of insect problems noted in their areas to: Insect Reports, WEEDS TREES AND TURF, 1900 Euclid Ave., Cleveland, Ohio 44115.

Bacteria Break Down Weed Killers

Soil bacteria break down weed killers about as fast in the laboratory as they do in the field, according to University of Maryland Research Scientist Dr. James Parochetti.

Earlier research has attributed chemical loss to leaching (washing away by water) and volatilization (evaporation). But his study indicates that this is not the case.

Dr. Parochetti added soil separately to two chemicals, IPC and CIPC, and sealed them in laboratory flasks. Thus, no leaching or volatilization could take place. Any chemical loss had to be by microbial activity.

Chemicals broke down in this laboratory test about as fast as they did in field experiments. Dissipation of both chemicals, Dr. Parochetti concluded, was due almost entirely to bacterial action.

Conflicting reports regarding rates of dissipation of these chemicals led to Dr. Parochetti's experiments. Some reports had previously indicated that CIPC persisted longer in the field, and was therefore more effective for weed control. But he found that in both laboratory and field that 90% of both chemicals had dissipated within 4 weeks. However, he did find that CIPC was biologically more active and more toxic to plants. This facet alone would make it appear to last longer in the soil because smaller amounts of it would continue to kill weeds after the IPC had become ineffective.

Suppliers Personnel Changes

Thompson-Hayward Chemical Co., Kansas City, Kans., recently revealed the assignment of Ray Fitzgerald as manager of the company's newly organized north central region. Fitzgerald will manage marketing of T-H products from the company's Minneapolis, Omaha, and Des Moines operations. In another appointment, the chemical maker has added Albert A. Lockhard to the sales staff of its New Orleans, La., office.

Advertisers

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Literature you'll want

Here are the latest government, university, and industrial publications of interest to the readers of *Weeds Trees and Turf*. Some can be obtained free of charge, while others are nominally priced. When ordering, include title and catalog number, if any. Sources follow booklet titles.

Plant Pests of Importance to North American Agriculture, Index of Plant Virus Diseases, Catalog No. A 1.76:307, 1966, 446 pp., \$2.50, Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Pine Tip Moths, by C. R. Jordan, Head, Extension Entomology Dept., Leaflet No. 13, il., September 1964, Georgia Experiment Station, Experiment, Ga.

Applicator for Precision Placement of Chemicals in Soil, by R. F. Dudley and R. L. Ridgway, ARS 42-123, October 1966, 8 pp., il., U. S. Dept. of Agriculture, Agricultural Research Service, Beltsville, Md. 20705.

Common Poisonous Plants of New England, Catalog No. FS 2.2:P75/5, Reprinted 1965, 23 pp., il., 35¢, Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Spittlebug Damage to Coastal Bermuda, by John C. French, Area Extension Entomologist, Leaflet No. 28, il., June 1965, Georgia Experiment Station, Experiment, Ga.

Tyler Corp., Benson, Minn., maker of fertilizer-handling equipment, has chosen Warren Jackson to manage its distribution in Western Canada.

Velsicol Chemical Corp., Chicago, Ill., recently appointed William H. Bricker to the newly created position of general manager for the company's Agricultural Chemicals Division.

Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 1900 Euclid Avenue, Cleveland, Ohio 44115.

Rates: "Position Wanted" 5c per word, minimum \$2.00. All other classifications, 10c per word, minimum \$2.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment.

WANTED TO BUY

HIGH-PRESSURE sprayers, skid or truck mounted, prefer 500-1500 gal. tank capacity. Paul Kucik, 17207 Archdale, Detroit, Mich. KE 3-8589.

Prescription Forests

(from page 23)

converted to new stands of more valuable trees by using pelleted herbicides around the undesirable trees. In his experiments, pelleted herbicides have killed "weed" trees without damaging newly planted seedlings.

Such undesirable species as white, red, and black oaks have been easily killed with the herbicide, fenuron. Others including hickory, dogwood, and ironwood are best controlled with granular dicamba or picloram.

The best practice, Dr. Shipman says, is to plant trees that will not be eaten by deer and rodents, are adapted to the site, and are valuable to the industry. He reports excellent results with Japanese larch, which in some cases grew more than 40 inches during the first year.

In an early attempt to convert forests to desirable trees, Dr. Shipman and associates planted two-year-old red and white pine seedlings among low-quality oaks and hickories. Undesirable hardwoods in the area were killed with pelleted herbicides scattered on the surface. However, deer and rodent damage to the seedling trees was severe. To reduce this type loss, the area was replanted with Japanese larch which is a species not preferred by deer or rodents. Dry, pelleted fenuron and granular dicamba herbicides were then applied to the soil surface by both grid and band methods, and at various concentrations.

First year results showed excellent seedling survival and growth with simultaneous killing of the competing hardwoods. Animal and herbicide damage to the seedling trees was slight.

Most pelleted and granular herbicides are nonvaporous and are low in toxicity to man, animals, and wildlife. When used according to the manufacturer's recommendations, they leave only slight soil and plant residues. And they are capable of being "tailored" to specific soil and plant cover conditions. Dr. Shipman worries however, that care should be taken to keep

these herbicides from washing down onto crop lands.

Pelleted and granular chemicals need no costly equipment for applying. They can be used effectively to eradicate undesirable brush and trees in fields and forests, to improve watershed and wildlife habitats, to control brush along highway and utility rights-of-way, and in forage and pasture renovation.

Bermudagrass Kill Good On Highway Shoulders

Bermudagrass control on asphalt highway shoulders is feasible. Dr. Wayne G. McCully, Texas A&M University Range Science Department, has found any one of four chemicals to be effective. He has successfully used sodium TCA, Polyborchlorate, dalapon, and Borascu.

Sodium TCA is most often used, since Dr. McCully has found it effective for both prevention and control. The other three chemicals are recommended only in presurfacing as a prevention.

Bermudagrass is a problem on asphalt shoulders because it grows in cracks, creating seams and opening the asphalt-sealed shoulder to moisture. During cold periods the water freezes and the resulting expansion and contraction breaks up the asphalt base.

Once grass becomes a problem, sodium TCA sprayed on the shoulder will kill runners and sprouting seeds. Best time for application is spring, followed by a second treatment 30 days later. Effective application rate in the Texas tests proved to be 200 pounds of sodium TCA per acre.

Any of the four chemicals are effective as a control. Dr. McCully recommends that they be used just ahead of the prime coat during the asphalt paving process.

Dr. McCully's research was done cooperatively with the Texas Highway Department, Texas Transportation Institute at A&M, Texas Agricultural Experiment Station, and the U.S. Bureau of Public Roads.

Trimmings

Anyone For Lunch. Marsh grass, paper and algae may help solve the world food problem according to Agricultural Engineer Kenneth A. Harkness at The Ohio State University, Columbus. He says it's time we stopped thinking of agriculture only as corn, soybeans, beef and pork. For example, he says that 100 pounds of newspaper can theoretically yield 24 pounds of food protein, about the same as that in 135 pounds of hamburger. A plot of alfalfa fed to beef yields 80 pounds of food protein. If extracted directly from the plant, the same alfalfa would yield 2500 pounds or 30 times as much protein. Harkness says an essential link in making use of unusual plants may involve microorganisms, bacteria and fungi, to convert them into protein sources. And don't be concerned about eating microorganisms such as fungi and bacteria. Bread, cheese and beer are full of them. So, keep faith. We may find a better use for wood chips and turf clippings.

* * *

There Are Days. Mrs. Samuel Awers came home to find her Milwaukee lawn being ripped apart by a hard-working bulldozer. "I almost dropped," she said. But Michael Conway of D-B Wrecking Co., who assigned his men to dig up a lawn on North 71st St., says his firm is replacing the turf.

* * *

New Biological-Chemical Era. Without weed killers today, farm operators, sod growers and landscape contractors would be forced to move 600 billion tons of dirt by tillage each year. No longer are weed killers just disaster control agents, according to Dr. M. T. Goebel, Du Pont scientist. They are now essential tools of production.

* * *

Creeping Red Fescue. We're happy to report full clearance for the Chewings Fescue and Creeping Red Fescue Commission, housed on the sixth floor of the Weatherly Building, Portland, Ore. Finding that they are simply another commodity commission fully authorized by the Oregon legislature should ease the minds of the good Oregon citizens.

They'll be happy to find that "creeping red" does not connote anything which can be construed as subversive, that Chewings was named after Sir Thomas Chewings, a New Zealander who developed the strain. And that no one has any idea how the name "creeping red" came to be. Also, that creeping red fescue is more likely to be found in highly developed strains known as Pennlawn red, which again isn't red, or Rainier, or Illahee. Furthermore, Oregon has become a major producer and supplier of fescue turf seed. Seed is now a \$6 million plus crop for the state with more than 30,000 acres being grown.

* * *

Tree Spraying Continues. Shorewood and West Milwaukee, Wis., are spraying with DDT to prevent Dutch elm disease. With a loss rate of only 1.7% last year, town trustees voted to spray despite fear of harm to wildlife.

WTT

Business Bible

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