**TREE INSECTS**

**NANTUCKET PINE TIP MOTH**  
*(Rhyacionia frustrana)*

MARYLAND: Adults active and ovipositing in all areas of State east of Washington County. Above normal populations and damage expected this season.

**NORTHERN PINE WEEVIL**  
*(Pissodes approximatus)*

OHIO: Mating observed on stumps of Scotch pine in Portage County area. Feeding on branches and stems of seedlings will continue for brief period before returning to stumps for oviposition. Treatments should be applied.

**EASTERN SPRUCE GALL APHID**  
*(Adelges abietis)*

OHIO: Overwintering females fully developed on Norway and white spruce in Stark County area. Chemical treatments should be applied.

**PINE BARK APHID**  
*(Pineus strobi)*

SOUTH CAROLINA: Infestations heavy on 15 of 100 Pickens County white pine trees. Treatments planned.

**MAPLE LEAFCUTTER**  
*(Paraclemensia acerifoliella)*

NEW HAMPSHIRE: Collections of leaf litter made in Sugar maple (*Acer saccharum*) orchards at Acworth and Langdon, Cheshire County, and at Gilford, Belknap County, indicate low mortality of overwintering forms.

**EASTERN TENT CATERPILLAR**  
*(Malacosoma americanum)*

NEW HAMPSHIRE: Eggs hatched at Durham, Strafford County, NEW YORK: Eggs hatched in parts of Onondaga, Oswego, Madison, and Cayuga Counties. KENTUCKY: Infested several species of trees (mostly wild cherry) in all sections of State. Tents obvious and feeding apparent.

**BENEFICIAL INSECTS**

**LADY BEETLES**

FLORIDA: *Hippodamia convergens* (convergent lady beetle) counts per 100 sweeps averaged 12 adults with some larvae in oats and 4 adults in alfalfa at Gainesville, Alachua County. ARKANSAS: Lady beetle adults found in almost all green vegetation but populations not increasing significantly. Larvae still light. Cool nights probably holding reproduction to light level. OKLAHOMA: *H. convergens* heavy in aphid infested alfalfa in some areas in southwest counties.

**TURF INSECTS**

**SOD WEBWORM**  
*(Crambus triseactus)*

MARYLAND: First spring activity noted in 60 acres of bluegrass in Harford County and 20 acres of sod in Prince Georges County. Larvae ranged 1-2 per square yard of sod in Prince Georges County.

**TEXAS LEAFCUTTING ANT**  
*(Atta texana)*

TEXAS: Damaged lawns in Bexar and Lee Counties.

JUNE 1974
Ohio Names Martin

David P. Martin was named executive secretary for the Ohio Turfgrass Foundation (OTF) at their recent board of trustees meeting. The appointment was necessitated by the resignation of Robert W. Miller.

Miller had been the foundation's only previous executive secretary, having served since 1966. The new secretary's duties include coordinating the 1974 Ohio Turfgrass Conference and Show, publishing several newsletters during 1974 and more clearly defining responsibilities for OTF committees.

San Diego Drip Exhibit Slated for July 11 - 13

One of the newer innovations to appear on the irrigation market has been the drip concept. Little more than a novel idea for watering plants four years ago, it has spawned a highly competitive business among today's irrigation equipment manufacturers.

New drip equipment is appearing on the market almost monthly. A nurseryman or sod grower interested in drip irrigation has some 40 different water emitters from which to choose for his particular drip system operation.

Foy Resumes Position

Dr. Chester L. Foy, Professor of Plant Physiology at Virginia Tech, has been reappointed as associate editor of Weed Science, the official bimonthly professional journal of the Weed Science Society of America (WSSA). Foy has served the society in an editorial capacity intermittently for about 15 years.

Fylking, Official Grass of Expo '74

While Expo '74 World's Fair visitors are admiring the fabulous displays and exhibition centers they will be walking on Fylking Kentucky bluegrass.

Fylking (being unloaded at left) was chosen as the fair's official grass for its beauty and hardiness, two factors necessary to insure pleasant surroundings while withstanding heavy pedestrian traffic from the projected 4.8 million visitors.

The sod was grown by the Rede Turf Sod Farm, Hubbard, Ore., from seed donated by Jacklin Seed Co., Spokane, Washington. The sod is unloaded in preparation for laying throughout the 100-acre site.

The fair, located on two islands and on the banks of the Spokane River in the heart of downtown Spokane, will be transformed to a city park after the exposition.
Why let algae and water weeds limit your pond use?

THIS DOESN'T BELONG!

OPEN THE WAY TO A PROPER WEED-FREE POND ENVIRONMENT WITH

HYDROTOL 47

Without proper control, waterweeds and algae can:

1. Restrict or clog irrigation equipment.
2. Reduce water holding capacity of the pond.
3. Create an imbalance in fish population.*
4. Limit swimming enjoyment.*
5. Tangle fishing lines.*

Hydrotol 47 controls many weed and algae. It provides the proper balance to assure maximum use of this important resource. It helps reduce maintenance, lowers operating costs, increases efficiency and improves the aesthetic value of the pond.

Hydrotol 47 is easy to apply. It is effective, fast acting and biodegradable. It does not accumulate in fish or build up in water or on lake bottoms. It controls most algae, including Chara.

Specify Hydrotol 47 from your farm supplier, or, for more information, write:

AGCHEM-DECCO DIVISION
1713 SOUTH CALIFORNIA AVENUE
MONROVIA, CA 91016
(213) 358-1838

Pennwalt is an equal opportunity employer.

MANUFACTURER OF OUTDOOR EQUIPMENT SINCE 1951

Meet the NEW BOB-CAT "PROS"

• Professional, Heavy Duty
• Mowers, Trimmers, Riding Models
• Backed by 20 years of Power Equipment Experience

21" Push-Type
Designed and built to take the wear and abuse of professional mowing. No clogging or clumping even when mowing wet grass... WE GUARANTEE IT! Get a smoother mowing job on all grasses including St. Augustine, Bahia, Bermuda, and Dicondra.

61" Commercial Riding Mower
Built for professional groundskeeping. Twin hydrostatic transmissions for easy control and outstanding maneuverability. Three full-floating blades, articulated blade deck, blade height control while "on-the-go". Panoramic visibility and a powerful 16 HP B&S engine.

SEND FOR LITERATURE TODAY!

the TUFF-CATS
WISCONSIN MARINE, INC.
Lake Mills, WI 53551
Phone: (414) 648-2331

MANUFACTURER OF OUTDOOR EQUIPMENT SINCE 1951

For More Details Circle (136) on Reply Card

JUNE 1974

The new model RM90 covers a 7 and one half foot cutting swath. The blades overlap for a smooth, clean cut that leaves turf with a freshly manicured appearance. The 3-point hitch hook-up is designed for fast, easy and safe attachment to tractors with 25 to 50 HP ratings. For more details, circle (709) on the reply card.

TREE PRUNER: New Draulics, Inc., Salt Lake City, Utah

This lightweight pruner bites off two inch thick branches instantly. The powerful, sharp jaws cut cleanly and quickly eliminating bruised and crushed branches. The pruner operates from your existing hydraulic system whether you own a truck, tractor, aerial lift or hydraulic power unit. For more details, circle (711) on the reply card.


Here's a golf course irrigation shelter that doesn't look like a big green tombstone. This unit is constructed from tough fiberglass and doubles as a tee bench. The overall height is 8 and one half feet with a roof diameter of 8 feet. It is available in a choice of colors for both roof and body to blend with any landscape. For more details, circle (710) on the reply card.


This fully illustrated product catalog contains a complete and comprehensive description of the entire Rain Bird line of controllers, valves, sprinklers, accessories and hose. An appendix provides a ready source of detailed data on the more complex controllers, along with informative wire sizing and reference charts. For more details, circle (712) on the reply card.
seven subject areas: drip irrigation progress; methods and mechanics; physics and hydraulics; water use; salinity; fertilizing; and crop response.

The Congress program includes A one-day field tour of drip irrigation installations in greenhouses, orchards, vineyards, vegetable fields, and nurseries. The tour will be limited to 250 persons, and preference will be given to out-of-country and out-of-state guests.

The Congress is being co-sponsored by the USDA - ARS and the University of California. Preregistration is $25 for the Congress participants and $10 for their spouses. Deadline for preregistration is June 1. Preregistration fees after June 1 will be $35 and $10. Preregistration materials and a preliminary program for the Congress can be obtained by writing to International Drip Irrigation Congress, P.O. Box 2326, Riverside, CA, 92506.

Nitrogen Saving Solution

Many sod growers are looking for ways to conserve the use of nitrogen fertilizers they have available. One fertilizer-saving answer is a new nitrogen management product to be marketed by Dow Chemical.

According to the company's researchers, the key is in inhibiting the action of soil bacteria that rapidly convert ammonium nitrogen to nitrate ions. These ions are readily leached from the soil or converted to nitrogen gas and lost to the atmosphere. The rate of nitrification depends on weather conditions, soil type and condition, time of fertilizer application and other factors. Losses greater than 25 to 30 per cent fall-applied nitrogen fertilizer are not uncommon.

With the use of N-SERVE, Dow's new product, the ammonium nitrogen is slowly converted into nitrates and is more readily available for plant growth in a controlled amount over a long period of time. Plant losses can be reduced and yields increased because the nitrogen is available longer in the plant root zone.

Waterhyacinth Clearance Announced by Rhodia

The Environmental Protection Agency recently accepted two products manufactured by Chipman Division of Rhodia, Inc., for control of waterhyacinth. The products are Visko-Rhap Oil-Soluble Amine A-3D and Chipman 2,4-D Amine No. 4.

Visko-Rhap is a controlled drift formulation product for use where susceptible crops are growing nearby or in areas where drift may harm ornamental trees and shrubs. 2,4-D Amine No. 4 can be used in areas such as marshes where drift will not cause problems.

Both products can be applied by air, boat or ground sprayer. However, the company advises that you consult your state game and fish or water control agency prior to application.

Swift Forms Trade Unit

Worldwide shortages of fertilizers, fertilizer raw materials and other basic chemicals have necessitated the formation of international trade units by many U.S. companies. Swiftchem International, one of the newer overseas trade units, was established to place Swift in a position to deal directly with key material sources in other countries.

The new overseas trading organization will be a division of Swift Chemical and will headquarter in Chicago.

Edward R. Vrablik, president of Swift, said that “in the near term, growth of domestic fertilizer industry sales volumes will depend upon expanded imports, particularly nitrogen materials and possibly potash and selected grades of complete fertilizers.”
Toro, Spartan Fund Study

In an effort to ensure the continuation of research into the mysteries of turfgrass shade adaptation, the Toro Co., of Minneapolis, and Spartan Distributors, Sparta, Mich., presented Prof. James B. Beard, of the Dept. of Soil and Crop Science at Michigan State University, with a $4,000 grant.

Beard hopes to discover how grass adapts to shade or what can be done to breed grass best suited to growing in the shade.

Stanford Seed Company

CROWNVETCH HQTRS.

PLUS

KENTUCKY BLUEGRASS
Pennstar
Fylink
Nugget
Sydsport
Prato
Merion
Bonnieblue

FESCUES
Creeping Red
Pennlawn
Chewings
Koket

RYEGRASS
Pennfine
Manhattan
Pelo
Pa-Lo-Mo-Ra
Norlea

THE TURF VARIETIES listed above represent just a sampling of the newest scientifically developed grass seeds used by Stanford’s master blenders to create healthier, more beautiful, easy-to-mow, and easy-to-care-for lawns.

CALL TODAY OR WRITE

Post Office Box 230
Plymouth Meeting, Pennsylvania 19462
Phone: 215-825-1240

Post Office Box 366
Buffalo, New York 14200
Phone: 716-825-3300

For More Details Circle (161) on Reply Card

A piece of cake it ain’t. But these signs were designed to celebrate the Westchester Tree Protective Association (New York) on its 40th anniversary. From left: H. Palmer Starner, Harrison, N.Y., Jack Flanagan, Elmsford, N.Y., current president and John Crockett, who designed and made the signs.

Experimental Insecticide Controls Japanese Beetle

Fensulfothion, approved for control of nematodes, proved the best of 15 insecticides tested last year at the USDA Station in Wooster, Ohio for control of Japanese beetles resistant to approved insecticides.

There are increasing reports of Japanese beetle populations developing resistance to cyclodiene insecticides like chlordane, dieldrin and heptachlor. Fensulfothion has not been approved for control of Japanese beetles.

Kenneth O. Lawrence, USDA entomologist in the Agricultural Research Service, recently reported on work conducted in cooperation with Harry D. Niemczyk, entomologist at the Ohio Agricultural Research and Development Center in Wooster. Lawrence spoke at the 1974 meeting of the North Central Branch of the Entomological Society of America.

Ten insecticides were applied on the golf course at Wooster on August 24, 1972. Fensulfothion applied at the rate of 10 pounds per acre gave 100 percent control by October 16. Diazinon was next best with 79 percent control.
Fifteen insecticides were tried against resistant grubs at three locations in April and May 1973, when most of the larvae were in the third stage. Fenvalasothion at 10 and 6.4 pounds per acre gave excellent control.

"Aside from three other experimental compounds," Lawrence said, "nothing approached the activity of fenvalasothion where the thatch layer was a half inch or more thick.

In other 1973 tests on golf courses, fairways were treated with 1, 2.5, and 5 pounds of fenvalasothion per acre. "We consistently obtained excellent and rapid kill," Lawrence said. We showed that spring applications retain efficacy through the summer and will control the new generation.

After one calendar year the 10-pound rate showed evidence of breaking down and killed only 63 percent of the new generation. Furthermore, granules applied at the 1 and 2.5-pound rates at one golf course remained on the surface for periods of 7, 11, and 15 days during the heat of August before rainfall washed the toxicant into the soil.

It was back to school for the distributorship personnel of Hahn, Inc. A recent series of service schools was conducted to train its representatives in the maintenance and servicing of its turfgrass equipment. Hopefully the trainees will use the expertise gained from this advanced course to instruct individual groups of golf course superintendents and other key maintenance people in the care of Hahn equipment.

Take the guesswork out of turf insect control

Diagnostic Aid from TUCO

Many turf insect larvae are night feeders, so the first evidence of their activity frequently is damaged turf. Diagnostic Aid, applied to turf as directed, causes insects to emerge to the surface within 10 minutes. They can be identified and counted to determine the level of infestation and whether an insecticide should be applied. It also can be used after insecticide application to measure the control obtained.

Proxol* 80 SP Insecticide from TUCO

Proxol is the one insecticide developed especially for use on fine turf and ornamentals. Sod webworms and cutworms are two major groups of turf insects controlled by Proxol. It is estimated that each sod webworm larva can chew up 20 square inches of turf in its average life span of 20 to 40 days; the cutworm larva can devour up to 36 square inches. With 300 to 500 larvae generated from each adult in a period of 10 to 21 days, it becomes apparent why early detection and control are desirable. Using Diagnostic Aid and Proxol together lets you program insect control.

*Trademark

One bottle of Diagnostic Aid FREE in each case of Proxol 80 SP.

TUCO Division of The Upjohn Company, Kalamazoo, Michigan 49001
Essentials of Borrowing

By DR. ERIC LAWSON*

WE ALL BORROW money. Our needs may be different and the risks associated have different limitations. For every so-called rule-of-thumb to borrowing, it is possible to find a firm which has violated the rule and benefited. Yet, it is useful to look at the general rules which have wide use.

For short term temporary purposes, a cash budget is a useful device for determining both the amount and length of need.

One problem faced by many growing firms is the need for temporary financing that grows as the firm grows. In fact, it is possible that what was a temporary need for funds one year will become a permanent need later on. Permanent needs should not be financed from temporary sources. Borrowing should not take place unless there is a need — and no more should be borrowed than is needed.

The need for long term funds should be basically determined on the grounds of profitability of the proposed capital projects. No funds, borrowed or otherwise, should be invested in unprofitable projects. Once the prospective profitability has been determined the remaining decision depends on the alternatives and their relative attractiveness.

The small firm generally has few alternatives since it does not have access to the major capital markets. Even so, cost should be a factor to keep in mind. If the funds are available only on excessively prohibitive terms they should be rejected. The ability of the firm to generate the cash flow necessary to meet the requirements is an important consideration — and must be determined.

Small firm credit funds are most readily available from commercial banks. This is particularly true of short term funds. Banks are in the business of making short term loans and the good banks are aggressively seeking new customers.

The ideal arrangement for both the bank and the customer is one in which the customer knows in advance the maximum amount he may borrow during the year, although he may not wish to borrow the maximum amount for a long time, if at all. Many bankers will say that most of their lending experience involves making an unbankable loan application into an acceptable deal. This process generally involves arranging for some kind of security for the loan.

Commercial banks are also a source for long term funds, almost always secured by a mortgage. Frequently a bank knows of other sources, such as an insurance company, where the funds may be obtained if the terms are right. Other sources of long term funds include special industrial corporations, the Small Business Administration and specialized agricultural institutions.

Term loans are available from some commercial banks. Such loans combine short and long term features. They are usually paid off in annual installments over a period of years. In this manner it is possible to match the cash flow of the firm to the loan repayment provisions.

A firm in the market for borrowing should consider that borrowing as a competitive process. It should be prepared to make full disclosure of all pertinent financial information including operating cash and capital budget for the future. The firm should consider as many lenders as possible and use the forces of competition to keep the ultimate terms as favorable to itself as possible.

The borrowing firms should recognize both the advantages and disadvantages of borrowing. The out-of-pocket costs of borrowing should be at a rate that is profitable to borrow. If a firm can use its capital to earn a 15% return it should be able to borrow at 10%. Obviously, if these figures are reversed borrowing should not take place.

The risk associated with borrowing is a basic question that must be answered. In the previous illustration the real question relates to the adequacy of the extra 5%: Is the 5% enough to compensate for the additional risk incurred by the indebtedness? If the answer is no, do not borrow; if it is yes, borrow. This determination must be made by the borrower.

---

Sod Harvester
Vacuum Sweeper

See you there!

NUNES
Sod Harvester

NUNES Manufacturing
2006 Loquot Ave. Patterson, CA 95363 209-892-8776

NUNES Vacuum Sweeper

Stop by our booth and pick up your free "UP WITH GRASS" lapel button and Nunes' literature. Don't miss our Field Day demonstrations.

48 For More Details Circle (147) on Reply Card
These men are from Union Carbide Corporation's Aquatic Environmental Sciences Group and they're part of a unique new program from the firm. The group, known as AES, gathers information on water and offer it to consulting engineers and people responsible for water quality in industries.

Carl Bachtold LEVEL-LIFT Weed Mowers for Compact Tractors

Here's why:
Level-Lift's exclusive lifting action keeps mowers at constant angle — no matter how high you raise it. No power-robbing double cutting, no digging into rough ground. Hand or Power Lift raises mower any height up to 14" — Both hands free for steering and throttle.

Choice Distributor & Dealer Territories Available. Write Today.

CARL BACHTOLD MOWERS, INC.
Route 165 West • Box 124
SIBLEY, ILLINOIS 61773
Phone 217/745-2546
Industrial Roundup Uses Approved by EPA

Monsanto Company's new Roundup herbicide has received Environmental Protection agency registration approval for industrial uses. Roundup is a postemergence, non-selective herbicide which controls a broad spectrum of annual and perennial weeds of both grass and broadleaf species.

The EPA registration permits the use of Roundup for industrial commercial applications, such as the control of weeds along highway, railroad, fuel and power-transmission rights-of-way, airport runway areas and other similar areas with problem weeds.

A company representative said that Roundup effectively controls more than 100 species of annual and perennial weeds, including perennials with well-established root systems such as johnsongrass, quackgrass, dallasgrass, paragrass, Canada thistle, bermudagrass and common mullein.

Further information for the industrial use of Roundup is available by writing to: Agricultural Division, Monsanto Company, 800 N. Lindbergh Blvd., St. Louis 63166.

Chemist Predicts Lasting Fertilizer Shortages

Shortages of one sort or another are plaguing most green industry firms. But diminishing petrochemical supplies are causing across-the-board headaches for large and small firms alike.

A recent issue of Chemical and Engineering News, the weekly news magazine of the American Chemical Society, reported that the current world fertilizer shortage will continue indefinitely, perhaps for the rest of human history.

Although this shortage is serious, it does not mean the world will have widespread famine, says Dr. Raymond Ewell, recently retired vice president for research at the State University of New York at Buffalo, and widely recognized authority on chemical economics.

"A shortfall doesn't necessarily mean that we won't have enough supplies to feed people at somewhere just above a starvation diet," he explains. "But much depends on how our available supplies are divided up."

Ewell cites slowing the world's population growth as the fundamental issue we now face. And he foresees that the rate of world population growth will peak sometime during the 1970's at a little more than two percent a year.

"This will be one of the crucial dates in world history," he states. "For the first time ever, the rate will have begun to decline."

Even so, he adds, the growth rate will decline only very slowly and will probably continue at close to the two percent figure until the year 2000.

Right now, high food prices are serving as a magnet for fertilizer, the article continues. The high demand and rising prices are attracting new investment into the fertilizer industry.

"But the big question," says Ewell, "is whether this will pull in new money fast enough to keep up with demand."

The world will have to spend about $8 billion annually on new fertilizer plants and related facilities now, and about $12 billion by 1980, just to keep pace with increasing demand, he estimates.
TELL ME MORE

This page is provided for your convenience. To obtain additional information on new products, trade literature and advertised products in this issue, simply circle the corresponding number on the perforated card below, fill in your name, business address and mail the card. No postage is required.

FOR MORE INFORMATION FILL OUT AND MAIL TODAY!

ADVERTISED PRODUCTS

101 102 103 104 105 106 107 108 109
110 111 112 113 114 115 116 117 118
119 120 121 122 123 124 125 126 127
128 129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144 145
146 147 148 149 150 151 152 153 154
155 156 157 158 159 160 161 162 163
164 165 166 167 168 169 170 171 172
173 174 175 176 177 178 179 180 181
182 183 184 185 186 187 188 189 190
191 192 193 194 195 196 197 198 199

NEW PRODUCTS

700 701 702 703 704 705 706 707 708
709 710 711 712 713 714 715 716 717
718 719 720 721 722 723 724 725 726
727 728 729 730 731 732 733 734 735
736 737 738 739 740 741 742 743 744

Please send more information on items circled
(Please type or print) 6/74

Name ........................................
Position ...................................
Company ..................................
Street ......................................
City ........................................
State ................. Zip Code ........
Signature ....................

Please describe your type of business ..................................

Note Inquiries serviced until August 20, 1974
Use this convenient card if you wish to receive further information on products and services advertised or described in this issue.

postage will be paid by

WEEDS TREES and TURF

POST OFFICE BOX 6049
DULUTH, MINNESOTA 55806