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If you'd like a salesman to call, or if you'd like the name and address of the Hardie dealer nearest you, just let us know. Hardie Sprayers ... 4200 Wissahickon Avenue, Phila. 39, Penna.
**$400 GCSAA Scholarships Awarded Three Iowa Students**

Three $400 scholarships sponsored by the Golf Course Superintendents Association of America were presented recently by Associate Dean of Agriculture, Dr. Louis M. Thompson, at Iowa State University, Ames. Three seniors majoring in horticulture received the checks which came from contributions made by National Golf Day, GCSAA exhibitors, industrial firms and other commercial groups, and the GCSAA general funds.

One recipient, Jack Burns, gained golf turf experience at Washington Park Golf Course in Cedar Falls, at Waverly Golf and Country Club, and for the past year has been superintendent at Homewood Golf Course in Ames. The latter position was maintained while attending Iowa State University. He is experienced in the sod business and has worked for Wright Tree Service in Des Moines.

Larry Vetter, another scholar, has had five seasons’ experience in golf turf maintenance at the Park Lane Country Club in Muscatine. Upon graduation, he will be assistant superintendent at the Minikahdo Golf Club in Minneapolis, Minn.

The third horticulture major receiving a financial boost was Craig Monroe. He has been superintendent at the Charles City Country Club where he has gained golf course maintenance experience for the past seven summer seasons.

**Soil Acidity Affects Health and Vigor of Turf**

Soil acidity can seriously affect the health and vigor of turfgrasses, reminds Joseph Chaves, extension agronomist at the University of Rhode Island’s College of Agriculture. Good lawn grasses will not grow or do well on highly acid soils. This means that liming has to be considered a very important part of a lawn management program.

Chaves notes that high acidity interferes with the work of soil organisms in making nutrients available to plants, and is also the cause of thatch. Thatch is the buildup of undecomposed layers of grass and roots that retards water penetration. Bacteria, that bring about the decomposition of plant residues and make plant nutrients available, prefer a soil that is neutral.

It is quite important that soil for turfgrasses be kept near the optimum growing range of pH 6.5. To do this, Chaves suggests periodic applications of lime based on soil tests.

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**Iowa State University student recipients** of $400 scholarship checks from the Golf Course Superintendents Association of America are these horticultural seniors (l. to r.): Jack Burns, of Waverly; Larry Vetter, Muscatine; and Craig Monroe, Charles City. At right is Professor Edward Cott, acting chairman, Horticulture Department and Extension Turfgrass Specialist at the University. Dr. Louis M. Thompson, associate dean of agriculture, is seated.
Industrial Pollution Big Factor in 1964 Fish Kill

Dr. James Dewey, Chemicals-Pesticides Program Leader for New York State, recently released the following statement, "According to the Public Health Service (PHS-847 (Rev.)., they received 485 official reports of fish kills in 1964 in fresh and marine waters of the United States. This is the largest number of reports ever received and the number of fish killed was also the largest, an estimated 18,387,000. These figures are an increase over the 436 reports of an estimated 7,860,000 fish killed in 1963.

Industrial pollution (193 incidents) accounted for the largest number (12,715,000) of fish killed. Municipal wastes (122 reports) resulted in the death of 4,100,000 fish, while toxic substances from agricultural operations were responsible for the death of 1,522,000 fish (193 reports). Transportation and other operations were responsible for the remaining 43 reports (50,000 fish).

Over half the number of kills and two-thirds of the fish killed were reported in the 3-month period July through September. Roughly 15 percent of the fish found dead were game fish and the rest were nongame fish. An estimated 6 million of the more than 18 million fish killed were of some commercial value.

The following chart indicates the number of fish killed by the various agricultural operations comprising the total for agricultural (1,522,000):

Thus, pesticides were associated with 75% of the agricultural incidents and 19 percent of the total number of incidents reported. However, this 19 percent of the reported incidents accounted for only about 1% of the total fish killed by all pollutants.

Combined industrial operations (e.g., steel and coke operations) were the largest reported cause of fish kills. Sewage was the most serious cause of fish deaths arising out of municipal operations and land drainage the most serious cause arising out of agricultural operations.

<table>
<thead>
<tr>
<th>Source of Pollution</th>
<th>Total Number of Reports</th>
<th>Number of Verified Reports</th>
<th>Number of Fish Killed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pesticides, poisons, etc........</td>
<td>93</td>
<td>74</td>
<td>191,167</td>
</tr>
<tr>
<td>Fertilizers</td>
<td>5</td>
<td>4</td>
<td>67,049</td>
</tr>
<tr>
<td>Manure-silage drainage..........</td>
<td>29</td>
<td>26</td>
<td>1,156,885</td>
</tr>
<tr>
<td>TOTAL</td>
<td>127*</td>
<td>104*</td>
<td>1,415,092*</td>
</tr>
</tbody>
</table>

*The other reports totaled an estimated 106,908 fish.

Rugged construction to match today's more powerful tractor is built into the Model R-84, 7-ft. rotary shredder, says Brillion Iron Works, Inc. Shredder housing, with 12½-inch skirts, is made of ⅛-inch steel plate. Welded angles underneath provide added strength, act as baffles for finer shredding. Two blades of ½ by 4 in. heat-treated spring steel are shaped for high clearance under the center of the machine, and are tilted on the back for better suction and cleaner pickup of knockdowns. Three-knuckle shielded PTO with shear yoke, full-skid shoes, heavy-duty gear box, and reversible wheels are other features. The machine is available either at 540 or 1,000 rpm speeds. Hydraulic control of cutting and transport height ranges from 1 to 14 inches. Additional information on the new R-84 can be had by writing Brillion Iron Works, Inc., Brillion, Wis. 54110.

Versatile pump from versatile SOLO! Use it for irrigation or for spraying, and a host of other jobs. Self-priming, low weight, high output, dustproof, no maintenance... AND robust. Reliable because it's got the famous SOLO engine. For more details, fill out and mail the coupon on page 47.

So light, but oh so strong! The new SOLO 630 Power Saw offers you lightness combined with power, with overstrain-protected crankshaft, easily exchangeable sprocket, and outstanding cutting efficiency. Wonder why so many arborists and vegetation supervisors are joining the swing to SOLO? Fill out the coupon on page 47. and see for yourself!
Efficiencies and economies that can be realized in a long-range plan, and solutions to personnel and labor problems that actually occurred with Florida turfmen, will be presented to members of the Florida Turf-Grass Assn., attending the 5th Annual Trade Show, April 28-29, in Fort Lauderdale. The event is to be headquartered at the Sheraton Hotel and at the Plantation Field Research Laboratory.

Turf and spray men; golf course, cemetery, park and highway supervisors; sod growers; and others of the industry will attend the morning-long management clinic to hear Dr. James R. Watson, director of agronomy division, Toro Mfg. Co., Minneapolis, Minn., and Dr. William Fox, College of Business Administration, University of Florida, Gainesville.

Watson, a nationally known turf authority, will discuss the urgent need for long-range planning and the efficiencies and economies that can be realized in all phases of the turf industry through a coordinated planning effort.

Will Use Case Histories

Fox will conduct an audience-participation discussion of the personnel and labor problems found in the turf field. Working from numerous case histories, which are being selected from FT-GA members, Fox will present the means to solve specific situations and their application in the broad area of labor management techniques.

Meeting in Ft. Lauderdale for the second consecutive year, industrymen will be exposed to more than two full days of exhibits, educational tours of research plots, product and equipment demonstrations and, apropos to the occasion, an entertainment program to completely preoccupy the attending delegate and his family.

A total of 64 booths will offer product and equipment displays at the hotel, with additional exhibits housed elsewhere in the hotel area. The University of Florida's turf research program and the Florida Department of Agriculture's Turf-Grass Certification Program will occupy demonstration sites.

A field laboratory program, slated for Thursday, April 28, will be guided by Dr. Evert O. Burt, associate turf technologist. Guided discussions will be held to review turf research programs conducted during the past year.

Afternoon demonstrations by show exhibitors will simulate every growing condition including putting greens and lawns, mowing procedures, irrigation systems, aerating and verticutting equipment.

During the show other groups have scheduled meetings. Sod growers and the South Florida Association of Golf Course Superintendents will meet in separate luncheons April 29, and the Florida Turf-Grass Trade Association Board of Directors will remain for a meeting Saturday.

The Florida Turf-Grass Trade Show is sponsored by the Florida Turf-Grass Assn. Co-chairman of the event are Dr. Evert O. Burt and Walter D. Anderson, executive secretary of the FT-GA.

More information may be obtained from the FT-GA offices, 4065 University Blvd., N. Jacksonville, Fla. 32211.

T-H and De-Pester Merge

Recent merger of the Thompson-Hayward Chemical Co. with De-Pester Western Inc., greatly improves distribution facilities for Thompson-Hayward, particularly in the Pacific Coast States, reports Robert S. Thompson, president.

E. F. Schroeder, Jr., formerly president of De-Pester Western, has been appointed a vice president of T-H and manager of the newly established western division.
Experimental Herbicides for Weed Control

Described at Annual WSA St. Louis Meeting

New approaches to selective weed control with new and experimental herbicides highlighted talks during the February meeting of the Weed Society of America at the St. Louis, Mo., Sheraton-Jefferson Hotel.

Nearly 800 weed specialists from throughout the United States, Canada, Puerto Rico, and Hungary registered for the Weed Society Conference which also included discussions of public acceptance of the industry, weed and woody plant control on rights-of-ways and other industrial sites, weed control in turf, and aspects of the employment problem in the industry.

Chlorophyll Inhibitor

An experimental herbicide, Rowmate, known chemically as 3,4-dichlorobenzyl methylecarbamate, was described by Union Carbide Corp. scientists, Dr. Richard A. Herrett and Robert Berthold, discoverers of the compound. They reported the material kills susceptible weeds by inhibiting the synthesis of chlorophyll, the green components vital to growth of plants.

Weed control over an extended period under relatively dry conditions is made possible because the herbicide remains in the upper one-quarter inch of the soil profile, the two Carbide scientists explained.

Weed Reports on Siduron

Another new approach to weed control was presented by E. I. duPont de Nemours & Co. senior research biologist, Dr. Mark B. Weed, who told how research indicated the compound siduron prevents crabgrass root growth while not affecting roots of common cool-season lawn grasses. The chemical is the active ingredient in duPont's "Tupersan" siduron weedkiller, introduced in 1965.

Dr. Weed described one test where siduron was positioned in a layer one-half inch below the surface of soil seeded with crabgrass and bluegrass. Crabgrass seed germinated but roots were unable to penetrate the chemical barrier. In contrast, bluegrass roots passed through the siduron layer.

Dr. Weed also reported that repeated yearly applications of siduron had little or no effect on root systems of many established cool-season turf species, even when the chemical is applied at extremely high rates. He based

Heading the Weed Society of America for 1966 are (left to right) F. W. Slife, treasurer; E. G. Rodgers, editor, Weeds; R. Behrens, president-elect and chairman of the program committee; W. R. Furtick, Society president; G. C. Klingman, executive committee; D. L. Klingman, secretary.
Now
HOOKER TRITAC™
the proven
bindweed killer
costs you 40% less

Nowhere can you get proven bindweed control for less than what you pay for Tritac. We’ve cut its price 40%. Yet, you still get the same high quality.

You don’t use a lot, either. As little as four to eight gallons of Tritac will treat an acre for a season or more.

Tritac sinks deep into root zones to control bindweed and many other problem perennial weeds. It can be used along fence rows, roadways, bridge abutments, on industrial sites and other noncrop land.

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Or write us. Agricultural Chemicals, Hooker Chemical Corporation, 404 Buffalo Avenue, Niagara Falls, N.Y. 14302.

AGRICULTURAL CHEMICALS

this conclusion on tests that extended for four years.

One series of plots was treated with siduron at five times the maximum recommended rate, or 60 lbs. per acre per year for three years. Another series was treated with 16 lbs. per year for four years, and a third series received 15 lbs. for one year. Then root samples of three different turf species were removed, observed, and weighed. They showed even the overdoses of siduron had little or no effect on root species, Dr. Weed reported. He said studies indicate the major means by which siduron disappears from the soil is through microbial degradation.

NIA 11092 for Broadleaves

NIA 11092, an experimental industrial herbicide for soil sterilization and brush control on railroad, highway, and utility rights-of-way, shows promise according to a discussion of the chemical developed by Niagara Chemical Division, FMC.

Soil sterilization, according to the report, can be accomplished with 4 to 6 lbs. of NIA 11092, 80 WP per acre, for annual weeds. For fibrous-rooted perennial weeds, from 8 to 12 lbs. of NIA 11092, 80 WP per acre, was recommended. Applications from 15 to 25 lbs. per acre were suggested for long-term residual control of perennial weeds having underground rootstocks.

The compound was described as excellent for brush control (including hardwood and coniferous species) when mixed at a rate of 2.5 lbs. NIA 11092 80 WP plus surfactant or 2 gals. of 1 EC per 100 gals. of water and sprayed to thoroughly wet the foliage.

Experimental SD 11831

Shell Development Co. experimental herbicide SD 11831 was another preemergence selective weed control product spotlighted at the meeting. SD 11831, at a dosage of 1 to 2 pounds per acre, was suggested for weed control in turf.

It was reported that sprinkler irrigation has been an effective means of incorporating SD 11831 following surface applications. For turf work, experimental
granule formulations containing 0.25-1% active ingredient will be available.

Money in Weeds?

Speaking of the opportunities available in the weed control industry, T. J. Sheets, weed control scientist with North Carolina State University, said:

"There are more than twice as many jobs available in the industry than there are people to fill them. Salaries range from 9 to 15 thousand dollars a year in the weed control industry for people with Ph.D. degrees." Sheets commented that many of the jobs require master's degrees or Ph.D. training, but research technicians are also needed.

In charge of the Society's job placement service, Sheets added that the program comes to a climax each year at the annual meeting, when interview rooms are reserved and lists of openings and applicants are provided to bring prospective employers and employees together.

Furtick Elected President

Agronomy professor at Oregon State University, Corvallis, Dr. W. R. Furtick, was elected WSA president for 1966. President elect for the coming year is Dr. Richard Behrens, professor of Agronomy at the University of Minnesota, St. Paul. Elected secretary is Dr. Dayton L. Klingman, Research Branch, United States Dept. of Agriculture, Washington, D. C. New executive committee members at large are Dr. Glenn C. Klingman, North Carolina State University, and Gideon D. Hill, weed control researcher with duPont in Wilmington, Del.

Tree Wound Dressing Is Handy

A new 16-oz. container with a built-in applicator is now used by Seymour Smith & Son, Inc., for distribution of its tree wound dressing.

Use of the tree dressing in this new container makes it easy to apply while tree pruning is in progress. More details can be obtained from the company at Oakville, Conn. 06779.

Merck Acquires Metalsalts

In a statement jointly issued by Merck & Co., Inc., and Metalsalts Corp., it was announced that the latter has been acquired by Merck.

Metalsalts, a privately owned company, has its offices and plant in Hawthorne, N. J., and a subsidiary near Montreal. Its principal products are industrial chemical specialties used extensively to protect against fungus and bacterial growth in many products and in agricultural fields. Metalsalts will continue to operate under its own name with its present staff and facilities.

Henry W. Gadsden, president of Merck, said, "The acquisition provides Merck with a growing research-oriented operation in a field that is new to us."

Frit Fly Is Turfgrass Pest

The frit fly has recently become a pest of turfgrasses, reports Gordon Watts, head of the department of botany and entomology at New Mexico State University.

Watts reveals that the frit fly is now a pest of grasses used on golf greens at University Park and in El Paso. So far, he says, this condition has not been reported as a problem in northern New Mexico. The frit fly, usually smaller than the common fruit fly, has been a problem to European farmers for many years, attacking small grains and corn. It has not attacked these crops in the United States.

Two reasons may account for the recent attacks of the insect pest on turfgrasses. One is that resistance to the insect has been bred out of the grasses used for turf, and the other is that a mutation may have occurred in the insect. Watts stresses that this is a speculation and not a scientific fact.

The frit fly's ability to travel great distances would limit control measures to a local pattern, because of reinfections from migrations of the fly. A safe insecticide such as malathion might be used as a stopgap, Watts advises.
Marlow Adds "Econ-O-Mist"

"Econ-O-Mist" line from ITT Marlow has been increased by the addition of a super-concentrate air-blast sprayer. The improved model has a more efficient 36 in. fan to provide high air volume the company claims. Increased air volume assures complete penetration and coverage of dense trees and treetops. The new super-concentrate air-blast equipment features no drip or runoff, one-man spray operation, 1½ to 6 hours running time between refills, and a corrosion-proof stainless steel tank. The air-blower, which can be mounted on a trailer or 3 point hitch, has a sprayer that is coordinated with ground speed and uses tractor power-take-off. Marlow reports that "Econ-O-Mist" creates up to 25% chemical savings, permits use of 33 times more concentrated liquids and reduces engine fuel costs by 66%. Complete details are available from ITT Marlow, Box 200, Midland Park, N. J.

Universal Introduces Pump

A fertilizer pump equipped with a special seal, claimed to be highly resistant to a wide variety of liquid fertilizer and insecticide preparations, was recently introduced by Universal Motor Co. The lightweight portable unit is said to have a capacity of 7200 gph with either 1½- or 2-inch suction and discharge outlets. Users may choose Briggs & Stratton, Clinton or Lauson power plants.

The company reports that extensive tests disclosed no measurable seal deterioration after extended exposure to a number of liquid fertilizer products.

Write J. F. Dunn, Universal Motor Co., 1552 Harrison St., Oshkosh, Wis., for further details.

Thickening Agent by Hercules Improves Spray Operations

An extra-high viscosity grade of hydroxyethyl cellulose, developed for the thickening of herbicide sprays, labeled "Vistik," is now marketed by Hercules Powder Co.

Said to have been extensively tested under a variety of field conditions, Vikistik enables operators to substantially reduce drift, increase spray effectiveness, and substantially reduce downtime. Tests were made with conventional helicopters and ground spraying equipment.

Vistik solutions can be prepared quickly, are readily dispersible in water, and are applicable in water-soluble, emulsifiable, and suspended herbicides, the company reports. Thickened herbicide sprays form relatively coarse drops giving good foliage coverage that adheres to vegetation with a minimum of drift. Vikistik is used in concentrations of less than 1% in water.

Interested applicators can obtain more information by writing to Cellulose & Protein Products Dept., Hercules Powder Co., Inc., Hercules Tower, Wilmington, Del. 19899.

Morton Offers Seed Guide

A comprehensive, 32-page booklet on seed treatment is now available to members of the turfgrass industry, Morton Chemical Co. announces. Full-color illustrations of plant diseases, their symptoms, and control, are included in the new publication.

This guide was prepared by well-known agricultural experts associated with experiment stations in the United States and Canada.

A free copy may be obtained from James Greer, Morton Chemical Co., 110 North Wacker Drive, Chicago, Ill. 60606.
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WEEDS TREES AND TURF, April, 1966
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New Greens & Fairways

16-8-8

FOR TURF

New Greens & Fairways 16-8-8 Turf Food delivers the deep green color, the even, healthy turf desired by golf course superintendents. Formulated especially for institutional use.

The extra nitrogen puts green-up energy into tired turf. Phosphorus and potash in plentiful amounts produce thick, uniform turf with a healthy root system. Free-flowing for easy spreading. Easy-to-use 50-lb. bags.

Save on spreading costs with the NUTRO spreader. Covers 10,000 square feet in 10 minutes.

For prices and name of nearest NUTRO distributor, write Smith-Douglass Turf & Garden Products, 5100 Virginia Beach Blvd., Box 419, Norfolk, Va.

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New Faces. In these days when good men are hard to find, we're always happy to hear of institutions and associations that have been able to fill posts with qualified appointees. During the past month, news has reached us that Dr. Edgar Beyer has joined the Agronomy Department at the University of Maryland, and Wayne H. Dickson has been appointed Director of Public Relations by the American Association of Nurserymen. Ed Beyer received his M.S. and Ph.D. degrees in plant breeding and genetics at Purdue, and his B.S. degree from the University of Illinois in agricultural science. He'll serve U. of Md. as an assistant professor of agronomy. Wayne has been an editor of a nursery magazine so is well versed in the language of his new assignment. Another Marylander, Wayne received his B.S. degree in public relations from the U. of Md.

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Goof. One of those "slips that pass in the night" caught us with our cities down. In our February issue, we had an advance story on the International Shade Tree Conference Southern Chapter meeting held at the Andrew Jackson Hotel, but somehow or other we put that hostelry in Memphis. The "Meeting Dates" in that same issue had the correct city, which is, of course, Nashville, Tenn. WTT is proofread four times before it goes to press, but apparently every member of the quartet that goes over the galleys and page proofs missed this double-city reference for the ISTC meeting. Our apologies, and assurances that provers will be even more exacting in the future.

Also, our printer switched the heading on this column last month so that instead of being our "Trimmings" it came out as "WTT Mailbox"! It never rains but it pours!

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Laconic Legend. Our Circulation Dept. showed us a card just received from Bill Lyons, Lyons Den Golf, Canal Fulton, Ohio, a man of few words, but ones that are mighty sweet to our editors. He writes: "The current (March) issue is worth the year's price. You are outdoing yourself. Keep up the good work. Send a sample copy to my competitor (whose name Bill also sent us)."

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Soy That Again! Part of Georgia's statewide "Clean Pastures" program, Phase III, is to wipe out weeds that contaminate animal products and poison livestock. Object of a concerted effort is to eliminate bitterweed which, when eaten by cows, imparts an obnoxious flavor to bovine products. Slogan for the Phase III program is: "Make the Bitter Butter Better; Batter Betsy Bitterweed!" James F. Miller, extension agronomist at the University of Georgia, Athens, tells us 27 north-east Ga. dairy counties battered 63% of their bitterweed with 2,4-D this past year. This is certainly proof that action speaks easier than words.