

algae. Lake dye is not an algicide but it works well to mask out sunlight in the lakes and prevent algae blooms.

A limitation as to which pesticides we can use and for what purpose has been legislated on us, the pesticide users, especially insecticides and nematicides. Many effective materials that were used in the past are no longer on the market and others will probably be gone in the near future. Probably the biggest limitation in the use of pesticides is economics. The price of material is making the choice for us as to what to use and when it is necessary to use pesticides.

FTGA Tournament Results

Randy Robbins scored a three-stroke victory in the FTGA golf tournament. Superintendent of the Gainesville Golf and Country Club, Robbins used his accuracy on the greens for only 27 putts in his pacesetter score of 70. Ron Hill, CGCS, Amelia Island, also a member of the North Florida Chapter, was runnerup. There were three tied at 75: Dennis Packer, Cape Orlando Golf Club; J. W. Stamps, and Dave Fry.

The tournament site was Turkey Creek Golf and Racquet Club, Alachua. Golfers had high praise for the condition of the course and the smooth, fast putting Tifgreen 328 bermuda greens. The host superintendent was Jeff Hayden and the host professional Roger Krueter.

Selection of the state team ended with the FTGA tournament. The winners of the three statewide golf tournaments and the best overall finisher will make the trip to Anaheim, California. The team will be Roy Hill, CGCS, North Florida Chapter; Fred Klauk, Palm Beach Chapter; Robby Robbins, North Florida Chapter, and Dan Myers, CGCS, West Coast.

The team event will be scored with the three best scores of the four-man teams. The tournament is a 36-hole event prior to the 52nd International Turfgrass Conference and Show. Our next issue will PROBABLY have full details of our CHAMPIONSHIP TEAM victory.

Turfgrass Field Day

A turfgrass research field day will be held on April 1, 1981 at the Agricultural Research Center in Fort Lauderdale. Current research projects on turf management, pest control, and cultivar evaluations will be presented.

All persons interested in turf are invited to attend. Activities will start promptly at 1:00 p.m. Come dressed for the weather.

For further information contact Dr. Bruce J. Augustin, Agricultural Research Center, 3205 S.W. 70th Ave., Ft. Lauderdale, FL 33314. Telephone (305) 475-8990.

Treasure Coast Chapter Formed

As most Florida Golf Course superintendents were busy getting their courses ready for the upcoming season, superintendents from Martin, St. Lucie and Indian River Counties took time from their already overloaded schedules to form the Treasure Coast Chapter of the Florida Golf Course Superintendents Association this past summer.

After two organizational meetings at the Sandpiper Bay Resort in July, 15 area superintendents had laid the strong foundation required to get the ball rolling. As of November 1, the Treasure Coast Chapter had 40 paid members on its roster.

Serving as association president is Adam Yurigan, Jr., superintendent of the John's Island Club in Vero Beach. Other officers include: Lonnie Stubbs, V. P. for internal affairs (Sandpiper Bay Resort); Tom Burrows, V.P. for external affairs (Turtle Creek Club); James Callaghan, secretary (Riomar Country Club); Joe Snook, treasurer (Riverbend Country Club); Craig Baker, director (Indian River Plantation); Leo Cushing, Jr., director (Crane Creek Golf and Racquet Club).

According to President Yurigan, "We may be a small organization but we have a strong nucleus and expect continued growth. Attendance at our monthly meetings has been over 75%. I think that shows a very keen and sincere interest in our association."

The Treasure Coast Chapter meets the first Wednesday of each month and meetings are open to all Florida golf course superintendents.



Officers of the recently formed Treasure Coast Chapter of the Florida Golf Course Superintendents Association are from left to right, Lonnie Stubbs, Bill Mangold, Craig Baker, Adam Yurigan Jr., Joe Snook, James Callaghan and Tim Burrows.

South Florida Pesticide Report

By BRAD KOCHER

As members of the turfgrass industry, specifically golf course superintendents, each of us has a responsibility to our employers, and our members to present the best possible playing conditions on our golf courses. Due to the vast variety of pests which attempt to inhibit our efforts, we find it necessary to use pesticides to control these undesirables.

Through the use of these different pesticides we are put in the midst of a multitude of additional responsibilities. First and foremost is the responsibility to our environment. None of us wish to use a pesticide that will have a long lasting detrimental effect on our surroundings. We must use the correct target pesticide, at the proper time, at the proper rate, under suitable weather conditions, with the proper equipment, and using adequate safety measures.

In respect to the environment and proper timing, a pesticide management practice begun in the early 1970's is termed Integrated Pest Management (I.P.M.) The concept, in part, is concerned with attempting to get away from "time treatments" of pesticides. For example, treating golf course greens every three weeks for armyworm or sodwebworm control on a preventative basis would be considered "time treatment". I.P.M. dictates constant monitoring of turf activity, followed by evaluation and treatment if necessary with as narrow a target pest control as possible.

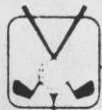
I.P.M. also looks to natural predators for control. The citrus blackfly has been controlled in South Florida largely with the introduction of the *Ametis hesperidum* wasp. Certain virus are instrumental in the control of some pests, and in the Northeast nematodes have controlled the overpopulation of crop damaging grasshoppers. Another variety of wasp has proven somewhat effective in controlling mole crickets. I.P.M. has a great future both from an ecological and financial aspect and should be a valuable tool to us as turf managers.

Certain other responsibilities require us to be as knowledgeable as possible in areas of pesticides. We should know what pesticides are targeted for certain pests and at what rates they should be applied. The most valuable text each superintendent should have is the *Florida Insect Control Guide*. There are sections on insecticides and miticides; ornamental and turf (of particular interest); livestock; forest and shade trees; field crops and pastures; fruits and nuts; household insects; poultry insect control; stored products; vegetables; and miscellaneous. "The *Insect Control Guide* is a compilation of the official insect control recommendations of the Institute of Food and Agricultural Services (I.F.A.S.), University of Florida," and is updated periodically.

Another important publication is the *Farm Chemical Handbook*. It contains sections on the plant food dictionary; applicators guide; pesticide dictionary; buyers guide, and addresses of chemical manufacturers. I have found this publication extremely valuable, and use it quite frequently. The Golf Course Superintendent's Association of America publishes a *Pesticide Usage Reference Manual*. Its text discusses safety, equipment and its uses, and application. All of these publications and others are invaluable in assisting us become more educated pesticide applicators. A list of these publications and how to obtain them will be found at the end of this article.

Having talked with numerous superintendents in the South Florida area I have found a great variety of pesticides used, differing rates, and opinions on the effect of certain pesticides. Most notable are comments from a few superintendents concerning Sencor. We have had a season or two to judge this product and comments range from "excellent" to "I won't use it again". Most everyone is using recommended rates; however, there is a certain degree of unpredictability that has some individuals reverting back to strictly MSMA. I believe, however, that Sencor has found a place in many herbicide programs and with proper

(Continued on Page 23)



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precautions and application methods it will become a valuable herbicide.

Most broadleaf control in fairway and rough areas is done with 2-4-D or Trimec. Reduced rates of 2-4-D are used on greens for broadleaf weed control.

Approximately half of the superintendents surveyed have used Basagran. The ones who have, have found it to be excellent for controlling yellow nutsedge at the recommended (sp) rates. We have used Basagran to eradicate sedge on 328 greens, and on greens overseeded with rye or bentgrass at 1 oz. to 1 gallon of water in a pump-up hand sprayer with no discoloration of turf grass.

Control of sodwebworms and armyworms has been accomplished primarily with alternate applications of several insecticides. The most popular pesticides are Diazinon, Toxaphene, Sevin, Proxol, Dursban and a newer pesticide Primicid. All work well for control of armyworms and sodwebworms.

Although fungicides do not play a major role in Florida turfgrass, they are used more extensively during winter months, particularly on overseeded greens. Manzate 200 or fore in combination with Tersan 1991 is a widely used treatment as is Daconil 2787. Each product provides excellent control for dollar spot or brown patch. Manzate 200 or fore is also effective for algae control on greens.

Mole crickets have become an ever increasing problem in Florida and are being controlled with Mocap 5G or 10G, Diazinon or Baygon 70 W.P. There are also numerous baits with either Dursban, Toxaphen, Baygon or Malathion as the active ingredient. The effected areas should be watered prior to and after application when using the liquid or wettable powder applications. Granular baits should have no water after application. Late afternoon is an excellent time to apply baits and preferably on a night when there is no chance of rain. The treated areas should not be irrigated the evening following application. Any rain or irrigation on baits washes out the active ingredient making them ineffective. Excellent success is also evident with high pressure injections of insecticides for mole crickets. The injection units are sizable initial investment; however, the extra penetration of insecticides into areas where mole cricket activity occurs makes the insecticides much more effective.

Nemacur is the most widely used nematicide with most superintendents treating greens at least once a year just following aerification. Nemacur granules are applied at 3 lbs/1000 sq. ft. with excellent results.

Safety of our applicators is another prime consideration. Applicators should be highly educated in areas of pesticides and know the proper storage, handling and methods of application. They should be familiar with such terms as toxicity, LD 50, caution, warning, danger, oral and dermal dosages, signs of overdoses, danger to environment. They should be given physical exams at least twice a year and should be kept abreast of new and better safety procedures. They should be provided with the proper safety equipment and sprayers that are in excellent working condition. They should be made to feel a sense of pride and accomplishment as well as a strong sense of responsibility. Our sprayers will only be as responsible and knowledgeable as we help to make them and as we are ourselves.

Knowledge and communication are two of the most valuable tools we possess and through effective use of these we will become more proficient in the use of pesticides. Through research, proper labeling of chemicals, and periodic checks on environmental reactions, we will become more effective. We should all be kept abreast of new regulations, new products and application methods and rates. There are state sponsored educational sessions, classes offered at local and state universities, the Florida Turfgrass Association, local, state and national superintendents' associations and vast amounts of literature available to help us to increase our overall knowledge.

Insect Control Guide (\$10.00); *Nematode Control Guide* (\$10); *Plant Disease Guide* (\$15); and *Weed Control Guide* (\$15) can be obtained from Mr. Chick Hinton, Bldg. 664, University of Florida, Gainesville, FL 32611

Farm Chemical Handbook (\$29 + \$2 shipping before January 31; \$35 + \$2.00 shipping after January 31). Meister Publishing, 37841 Euclid Avenue, Willoughby, OH 44094, ATT: Circulation Dept.

Pesticide Usage Reference Manual (\$6.50 to GCSAA members, non-members \$9.75) GCSAA Information Central, 1617 St. Andrews Drive, Lawrence, Kansas 66044

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Long Term Pesticide Effects Under Study

Reprinted from March 1980 Issue of Nursery Business

Increased demand for more production on less land has pushed farmers into a sophisticated agriculture which relies heavily on the use of chemicals to control pests.

Some of the chemicals, or pesticides break down rapidly after use and are considered harmless. Others leave residues for years and could be considered dangerous. They all behave differently.

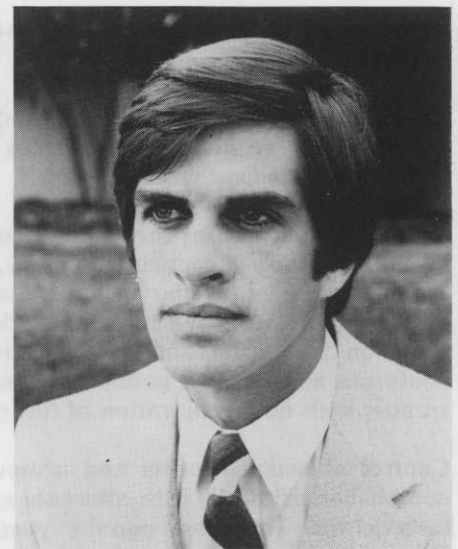
At Clemson University, SC Experiment Station soil chemist K. S. LaFleur is taking a close look at the behavior of pesticides applied to the soil in an effort to determine their long-term effects on crops and consumers.

About 1,200 pesticides, in some 35,000 formulations are registered with the U.S. Environmental Protection Agency. How safe are they?

Before soils can be considered marginally safe, LaFleur says, "they must lose at least 90 percent of applied pesticides."

Because testing a single material for its residual effects is a long, tedious process, LaFleur is constructing a mathematical 'prediction model' designed to evaluate long-term effects of pesticides. The model is based on intense study of 12 of the most representative pesticides, chosen for their diverse chemistry and usefulness in South Carolina.

(Continued on Page 25)



Dr. Batterson Named To Research Center Faculty

Dr. Ted R. Batterson has recently joined the faculty as an assistant professor at the University of Florida Agricultural Research Center in Fort Lauderdale. The position he fills was created with the establishment of the Aquatic Weed Research Center, a functional element of the Institute of Food and Agricultural Sciences (FAS) of the University of Florida, located at Gainesville. He joins an interdisciplinary group of both university and USDA personnel who are jointly cooperating in research concerned with controlling aquatic weeds. His research will in the development and implementation of an integrated approach to noxious aquatic weed control incorporating biological, chemical, and mechanical means.

Dr. Batterson received his B.A. in Biology from Western Michigan University and his M.S. and Ph.D. degrees in Aquatic Ecology from Michigan State University. During his graduate program he served as both a teaching and research assistant. Teaching responsibilities included involvement with courses taught on campus as well as at the Kellogg Biological Field Station. As a research assistant he was actively involved in a variety of projects concerned with the aquatic environment.



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West Coast Pesticide Report

By DAN MEYERS

It seems that other than the pesky mole cricket, this summer was very productive for our area. Weed control programs were good as mother nature did not interrupt as it did last year; June through September we had a little over 20 inches, but we had that much in September last year. There was not much fungus reported. Curvularia was the only major problem and Daconil on the second and third application controlled it.

NEMATODES

Of the 10 superintendents surveyed, nine treated their greens twice/year with Nema-cur for nematodes. The other individual treated three times and also used Dasanit. Bill Hall of Buckhorn Springs and Dick Grill of Lakewood were the only two who had contract injection with DD & EDB. Both are happy with the results.

MOLE CRICKETS

Dick Grill and Bill Hall insected with DD & EDB for nematodes and as a direct result have very little mole crickets. Dick is using the Dursban Bait and Dasanit for any spot problems. Fred Tucker of Timber Oaks and Gary MacDougall of Airco used Baygon in their Hydra-Ject for good control. Fred is considering using Mocap Liquid next year. Dan Morgan of Sun City has just purchased a Hydra-Ject. Reed Lefebvre of Plant City and Marshall Edgren of Carrollwood Village are planning to purchase a Hydra-Ject next year. But this year Reed, Marshall, Frank Deliello of Indian Rocks and Dan Meyers of Temple Terrace used more nematicides for spot treatment than the Baits and Baygon.

In summary it seems there is a growing trend to purchase a Hydra-Ject for the control of nematodes and mole crickets. For those who are unable to do so, spot treating with the three nematicides — Nema-cur, Dasanit and Mocap — is occurring.

One question which has arisen and is being looked into is: what are the possibilities of spraying Mocap Liquid for nematodes and mole cricket control?



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Presently LaFleur can closely predict the degree a pesticide will be absorbed by soil and how it will move in the soil during and after rainfall. He'll next characterize the rates of chemical breakdown by soil organisms and by weathering and then integrate all steps into a model that will reveal individual traits of 'new' pesticides.

The model will help separate the chemicals which pose little or no threat from those which are definitely dangerous.

"Greater sensitivity to danger may add to bias against useful, relatively harmless pesticides," says LaFleur. "Short-lived, low toxicity types should not share the guilt of persistent, toxic or carcinogenic types. The prediction model will help expose the difference."

The 12 pesticides being examined were produced and used "before anyone really knew their long-term effects on us and the rest of the ecosystem. And this is risky."

LaFleur says more sophisticated detection and testing methods have given rise to new awareness of long-term dangers of pesticides previously though relatively harmless.

"People weren't actively looking for hidden dangers, and earlier chemists didn't realize some chemicals are so dangerous. The problem is we just can't keep pace with our own discoveries."



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Golf Courses Use More
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Central Florida Journal

By GARY MORGAN & SUSAN MORGAN

This is our first article in *The Florida Green*, and we are looking forward to every issue and to everyone's participation. We would like to say it is great to be a part of the Florida Golf Course Superintendents Association. We are proud of this association and will strive for continuity throughout the state.

We would like to welcome our new president, Bill Wagner. We know the upcoming year will be very rewarding and prosperous for the State of Florida.

The Central Florida Chapter has made major changes in our by-laws during the past year to come in line with the state association. They are working out well.

As host chapter of the "Fourth Annual Crowfoot Open" we would like to thank all who participated and all our sponsors. Without our sponsors this tournament would not happen. Please support these people as much as possible.

We would like to congratulate The West Coast Golf Course Superintendents Chapter for the fine distinction of being the "Fourth Annual Crowfoot Open" Team champions and the North Florida Golf Course Superintendents Chapter for being the Team Low Gross champions. Fred Klauk is to be congratulated for being the Individual Low Gross champion with a fine 71 on Suntree Country Club's championship golf course. Our Crowfoot committee chairmen, Jim Ellison (The Bayhill Club) and David Miller (Estech Corp.), did a fine job in running the tournament. Tim Hiers, superintendent at Suntree C.C., is to be congratulated on a golf course in excellent shape for the tournament.

Tim recently had the second stop of the PGA Seniors Tour, a new tournament, and again the course was in fine shape.

(Continued on Page 28)

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Tips on Tank-Mixing Pesticides

Tank mixing of pesticides is being done more and more by lawn care people and golf course superintendents to control weeds, insects and diseases. And they save labor in many uses by adding pesticides to fluid fertilizer instead of water as a carrier. Careful tank mixing is important to avoid problems. It works well as many farmers and fruit and vegetable growers have experienced for years.

1. Read the labels carefully for all products you will mix. Follow directions.
2. Do a small scale "jar" test for compatibility as follows.

Place one pint of carrier-water or fluid fertilizer in a quart jar. Add each pesticide or a pre-mix of pesticide in water, one at a time, and shake well with each addition. Use each product in the same proportion to carrier as it will be in the actual tank mix.

Unless labels indicate otherwise, add pesticides in this order: wettable powders first, followed by flowables, water solubles, surfactants and emulsifiable concentrates.

Invert the jar 10 times, then inspect the mixture immediately and after standing quietly for 30 minutes. If a uniform mix cannot be made or if nondispersible oil, sludge or clumps of solids form, the mixture is incompatible and should not be used. Minor separation after 30 minutes, without sludge or clumps and which remixes readily with 10 jar inversions, is tolerable if field spray tank agitation is good and keeps the combination mixed.

3. When you tank-mix in volume, put 2/3 of the carrier in the tank first. Then add pesticides one by one, with wettable powders first. Agitate for thorough mixing after each addition, before pouring in the next. Finish filling the tank with carrier.
4. Keep agitation going at all times on the way to the field, during application and during stops for any reason. Empty the tank preferably on the day of mixing. Do not allow mixture to stand overnight without agitation. Check labels for temperature and humidity data as they affect mixing or delay in use.
5. With any new combination, test your tank mixture on small areas, at varying rates and conditions of use before large scale use. Check you State College or extension agent for test data and on variations in local water supply that may affect performance.
6. Use exact dosage rates for registered tank mixes. Changes may cause crop injury or poor performance on weeds or pests.

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DR. TIM BOWYER, Vice President. 11 years in the turf industry. Agronomist specializing in plant pathology. With several years at University of Georgia Cooperative Extension Service, dealing with golf course superintendents and their unique problems. Author of several turf-related publications.



RICHARD HURLEY, Vice President, 18 years in the business, including 5 years as superintendent. Several years as Director of Research for Lofts Pedigreed Seed. Consultant for turf specialists throughout the country.

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The National Team Championship, a recent PGA tournament, was held in our area at Walt Disney World Course with John McKenzie, C.G.C.S., as host superintendent. The golf course was in great shape and John should be congratulated.

For those of you who don't know, the officers in the Central Florida Chapter are:

Gary Morgan — President — Sherwood C.C.
John McKenzie — Vice President — Walt Disney World
Dwight Singo — Secretary-Treasurer — Big Cypress C.C.
Aris Catsam — Past President — Rolling Hills G.C.
Danny Aylwin — Director — New Smyrna Beach G.C.
Louis Edwards — Director — Fairgreen Golf Club
Bill Galliard — Director — Winter Park G.C.
Edward Harvey — Director — Deer Run G.C.
Wayne Renner — Director — Winter Greens G.C.

Please feel free to call any one of us at any time. We are here to help you — the superintendents — our chapter and the Florida Golf Course Superintendents Association.

Central Florida Pesticide Report

By GARY MORGAN & SUSAN MORGAN

The Central Florida region is a very broad area and probably has all the insect problems and weed problems that everyone has throughout the state, since the area is in the middle of the state and covers deep inland areas to coastal regions. We also experiment with many different chemicals in hope of finding that one chemical that will control the insect or weed that is giving us a particular problem. Since the E.P.A. regulates the distribution and use of our most widely used chemicals, we are forced to find other and newer means of control whether preventative or curative.

Here are some of the methods used by our superintendents and their reasons why. We hope you can use this information in your operation. Please feel free to call any one of us if you have any questions about one of our practices.

Tim Hiers — Golf Course Superintendent
Suntree C.C. Melbourne

Nematodes:

EDB was used on fairways with good results. Also received good residual on Mole Crickets. Treatment was done in early June.

Mole Crickets:

Dursban Bait .5% @ 120 lb/A
Mocap at label rate.

Goosegrass:

Greens — no control needed.
Fairways — MSMA + 2,4-D (3 treatments)
(1) 2qts MSMA/A + 1 pt/A 2,4-D
(2) 2qts MSMA/A + 12 oz/A 2,4-D
(3) 2qts MSMA/A + 8 oz/A 2,4-D
Also used was Sencor + MSMA
1/8 lb Sencor/A + 2 lb/A MSMA

Worms:

Primid at 1½ qts/A — best results
Diazanone AG 500 at 2 qts/A (Green Banks)
Sevin at 10 lbs/A — fair results
Lannate at 2/5 oz/1000 sq ft — fair results

Dwight Singo — Golf Course Superintendent
Big Cypress Golf Club, Winter Springs

Nematodes:

No control this year. Will probably use EDB next year.

Mole Crickets:

Mocap was used at 100 lbs/A. Excellent results with proper water and soil moisture.

Goosegrass:

Fairways — used Sencor and MSMA
3 oz/A Sencor + 2 lb/A MSMA (2 applications)
Greens — 8 lb formulation MSMA + 2,4-D
(1) 24 oz MSMA/A + 8 oz 2,4-D + 2 pt sticker
(2) 24 oz MSMA/A + 2 pt sticker
(3) 24 oz MSMA/A + 8 oz 2,4-D/A + 2 pt sticker

Worms:

Primid at 1 qt/A with 3 weeks residual
Toxaphene at 1 pt/A
Diazanone AG 500 at 1 qt/A

Bob Williams — Golf Course Superintendent
Indigo Golf Club, Daytona Beach

Nematodes:

No control used in fairways.
Scotts Mocap was applied to trap edges at 5 lbs/1000 sq ft. Also good results for Mole Crickets.

Mole Crickets:

Diazanone and Sevin was used with real good control. Soil moisture was real good when chemicals were applied. Diazanone at 1½ gal/A and Sevin at 5 lbs/A with 10 oz/A of Wet in.

Goosegrass:

Only early Spring applications were used.
MSMA + 2,4-D (3 applications)
(1) 2 qt/A MSMA + 1½ pt/A 2,4-D + 1 qt/A Wet in
(2) 2 qt/A MSMA only
(3) 2 qt/A MSMA + 1 pt/A 2,4-D + 1 qt/A Wet in

Worms:

Sevin is used at 4 lb/A. It does a real good job and is also used on St. Augustine lawns.

Louis Edwards — Golf Course Superintendent
Fairgreen Golf Club, New Smyrna
Beach

Nematodes:

EDB was used in May with good results. Not much residual was seen for Mole Crickets. Nematicur was also used on greens at 3 lbs/1000 sq ft with good results.

Mole Crickets:

Mocap at label rates with very good results. Have tried irritants with not much luck.

Goosegrass:

Very little on course. What there is, is hand picked.

Worms:

Sevin is used at 6 lbs/A with excellent results. Finds good residual with Sevin.

Gary Morgan — Golf Course Superintendent
Sherwood C.C., Titusville

Nematodes:

EDB was used on fairways and tees with excellent results at 4 gal/A in April. Nematodes were controlled and excellent residual was found on Mole Crickets.

Mole Crickets:

Dursban .5% Bait is used where needed at 100 lbs/A.

Goosegrass:

6.6 lb formulation MSMA was used on greens and tees at 1 oz/1000 sq ft at 5 day intervals. Good results. Sencor and MSMA was used on Fairways with poor results at 1/4 lb Sencor and 1 1/2 qt/A MSMA. Asulox was used at 5 pts/A with excellent results. Bad burn on Bermuda but it recovered successfully.

Worms:

Primicid at 1 1/2 oz/1000 sq ft. Good results and finding a 4 week residual.

Diazanone AG 500 at 2 oz/1000 sq ft with good results and 2 week residual.

Jim Ellison — Golf Course Superintendent
The Bayhill Club, Orlando

Nematodes:

EDB was used. Excellent control of nematodes and residual on Mole Crickets. Will use same next year.

Mole Crickets:

EDB has such good results that not too much more mole cricket activity was noticed. Any mole crickets found were treated with Dursban .5% Bait.

Goosegrass:

(1) Greens: MSMA 1oz/1000 at 5 day intervals. Hand picking is also done.

(2) Fairways: Sencor + MSMA used. These applications at 1/4 lb/A Sencor + 2 qts/A MSMA each. Each application spaced at 14 to 17 day intervals.

Worms:

(Preventative Program)

Diazanone AG 500 — 2 qts/A

Primicid — 1 qt/A with 2 week residual

Lloyd Clifton — Golf Course Architect and Consultant
Deland

Nematodes:

EDB is liked very much but thinks the phytotoxicity should be strongly looked at. Nematicur on greens at 3 lbs/1000 sq ft.

Mole Crickets:

Use Dursban .5% Bait and other available chemical controls.

Goosegrass:

Greens — MSMA at 1 oz/1000 sq ft at 5 day intervals.
Fairways — MSMA + 2,4-D at 5 day applications (3 applications)

(1) MSMA 2 qts/A, 1 pt/A 2,4-D

(2) MSMA 2 qts/A, 8 oz/A 2,4-D

(3) MSMA 2 qts/A, 8 oz/A 2,4-D

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All About Sprayers

By O.W. "RED" KROMER

A sprayer for application of chemicals is one of the most essential machines for golf course maintenance. Many courses have two or three sprayers, using one exclusively for herbicides and another for fungicides. This means each sprayer is supplied with the proper nozzles and calibrated to apply the correct amounts of spray mixtures. If it is not economically feasible to own two or three machines, then one good commercial type sprayer should be obtained and be adaptable for both hi and low pressures.

Chemical weed control requires the exact amounts of chemical, uniformly applied. At first it may seem complicated to apply a specific amount of chemical per 1000 sq. ft. However, it is quite simple if taken a step at a time. The components of a sprayer and their functions should be thoroughly understood, as well as the variables, which must be controlled to give an accurate spray application.

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First, the sprayer. The tanks should be corrosion resistant, have a large filler opening for cleaning and have jet or mechanical agitator. The pump can be low pressure — roller, gear, rubber impeller centrifugal or turbine — with a capacity in gallons per minute at least 50 percent greater than the nozzle and jet agitator requirement (if a jet agitator is used). This allows for pump and nozzle wear. The ideal machine would have a multiple piston pump with a mechanical agitator. A piston pump machine can be used for hi-pressure machinery cleaning, tall tree spraying or fire fighting and is easily repaired when worn. A sprayer should have an accurate gauge, preferably brass, glycerin filled with not over 100 p.s.i. calibration for accuracy around 30 to 60 lbs. — the low pressure spraying range. If the machine is also a hi-pressure unit, the low pressure gauge can be replaced with a hi-pressure gauge or a valve installed below the gauge to shut it off for hi-pressure spraying.

The pressure regulator should have sufficient capacity so that low pressure can be obtained and be sensitive so it controls the pressure accurately. A dual low and hi-pressure system can be installed on a hi-pressure sprayer, allowing the low pressure regulator and gauge to be used for boom spraying. When the boom is shut off, the hi-pressure system with its regulator and gauge can be used for hand spray gun work. With a dual system, the hi-pressure regulator should be made so it can be triggered to relieve the hi-pressure for low pressure work.

Nozzles must be chosen for size, from the nozzle chart, to give the gallonage rate desired at the recommended pressure and travel speed. Most nozzles are rated at 30 p.s.i. and 4 m.p.h. and 20" spacing. A 20" nozzle spacing is preferred over 10" spacing because it has a larger orifice, therefore it is more difficult to clog. Also it is more accurate and produces larger droplets for herbicide work — larger droplets give better weed kill and are less affected by wind. The matching screen can have coarser mesh allowing the fine particles to pass through the screen and nozzle. The deflector or flooding type nozzle, as it is called (a misnomer), is preferred because it has a cylindrical orifice, which retains its accuracy at least 10 times the life of the original fan type nozzle. In addition to this, it continues to spray a broad fan throughout its useful life, where with the conventional fan nozzle, the spray pattern gets narrower and narrower as the discharge orifice wears, finally shooting a solid stream of much greater volume.

The deflector type has the added advantage of producing larger droplets, which produce better weed kill (by University test) and are less affected by wind.

The boom we prefer is a smooth, stainless tube of sufficient size — 3/4" I.D. or larger so the end nozzles receive the same pressure as the one near the feed hose. It is also preferable if the nozzles come out of the side of the boom instead of the bottom, as this allows dirt particles and precipitated chemical, bypassed by the main screen, to settle to the bottom of the boom rather than going right into the nozzle screen.