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Mr. Superintendent – Are You An “Endangered Species”?

By STAN FREDERIKSEN
Manager — Turf Products
Mallinckrodt, Inc.
St. Louis, Mo.



Mr. Golf Course Superintendent — is your future as a career turf manager “clouded”? Perhaps much more than you think. Let’s take a look at some very ominous considerations you will have to face in the very near future.

Back in the early '60's, Miss Rachel Carson's book *Silent Spring* was published. It had an everlasting impact upon the world of growing things, including your “thing,” highly maintained fine turf. Undoubtedly its original purpose was a truly noble one — to focus public attention upon the indiscriminate use of chemical pesticides and the adverse effect this could have on man and his world, not to mention the Earth's millions of other living inhabitants.

However, the overreaction by federal, state and local government officials was startling. Federal agencies, armed with powers delegated to them by Congress, began removing from the marketplace pesticides they found had caused some kind of harm, either to people or the “environment.” They also began removing pesticides they felt “might,” even under the remotest possible circumstances cause some sort of problem, whether there had ever been such problem reported in connection with those pesticides or not. Further, the “possibility” of potential harm was not limited to that associated with people. The new phrases “balance of nature” and “endangered species” and others began to appear. One group or another began worrying whether in the next 15 or 20 years the “purple-crested-thing-a-ma-bob” would become extinct because of the impact in the “environment” of chemical pesticides. Strangely enough, some of these groups paid little attention to the very basic question — “Should the world be made safe and adaptable for people? — or for ‘endangered species’?”

Let’s make some observations as to what has happened since *Silent Spring* to bring us to where we are at present, with respect to pesticides and their use.

1. Gone from the market place are many of the important pesticides that helped farmers grow plentiful good crops that you could buy inexpensively. The same pesticides helped you grow beautiful fine turf. Few of these ever caused problems, but (found some government agencies), they “just might” cause problems, and so they were banned.

2. Gone is the incentive on the part of the chemical companies to develop new pesticides to help your career. Why should they? There’s now only one chance in several thousand that any new compound could ever become commercially available as a pesticide.
3. Gone is the source of many of your turf pesticides — that source being pesticides originally researched and developed for food crops. Because turf is such a small segment of the agriculture market, very few, if any, companies would ever embark on a program of research to develop a pesticide just for turf when the chance for its commercial success is so slim. With pesticides for food crops in jeopardy, you can imagine how remote is the possibility of new pesticides for turf.
4. Just after *Silent Spring* appeared, the food pesticides people found their warehouses filled with pesticide compounds that the government had banned for food crop use. When a magazine writer said that, “A \$14 million market has opened up for fungicides on golf course turf,” you can bet the food pesticides manufacturers started moving their erstwhile unsaleable (for food crop use) fungicides over into the turf market, rightly reasoning that “very few people eat grass.” It was at this time (mid 1960's) that you saw entry into the turf fungicides markets, by firms which had never participated in such markets before.
5. Right after “*Silent Spring*,” Monsanto published a resounding rebuttal to the book. To discover what the world would be like without pesticides, read the October, 1962 issue of *Monsanto Magazine* article entitled “The Desolate Year.” It depicts a world without pesticides, overrun with insects and other pests, and presents a frightening picture of how tenuous is the thread that holds civilization together. Without pesticides, the human race could literally be eliminated. The grim fact is that all the pesticides we’ve ever had could only hold antagonistic pests in check. In no way could all of them be eliminated. Witness even today in your continuing battle against turf pests how many insects and fungi have already adapted to pesticides and/or have become entirely resistant to many of them. To reinforce yourself on this particular point, be sure to see the motion picture “The Helstrom

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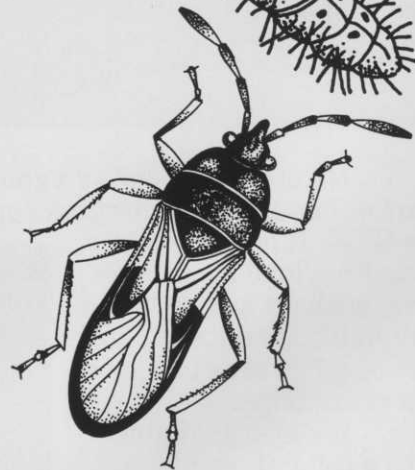
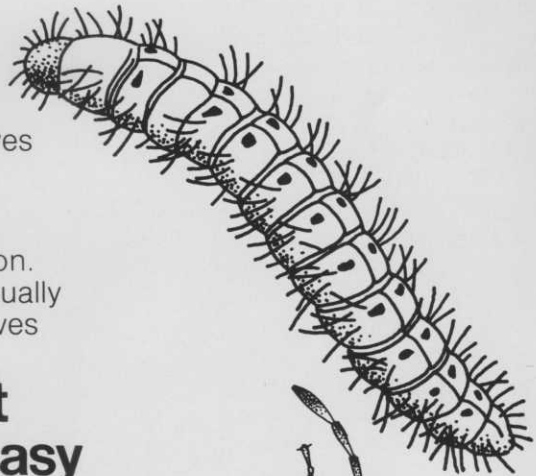
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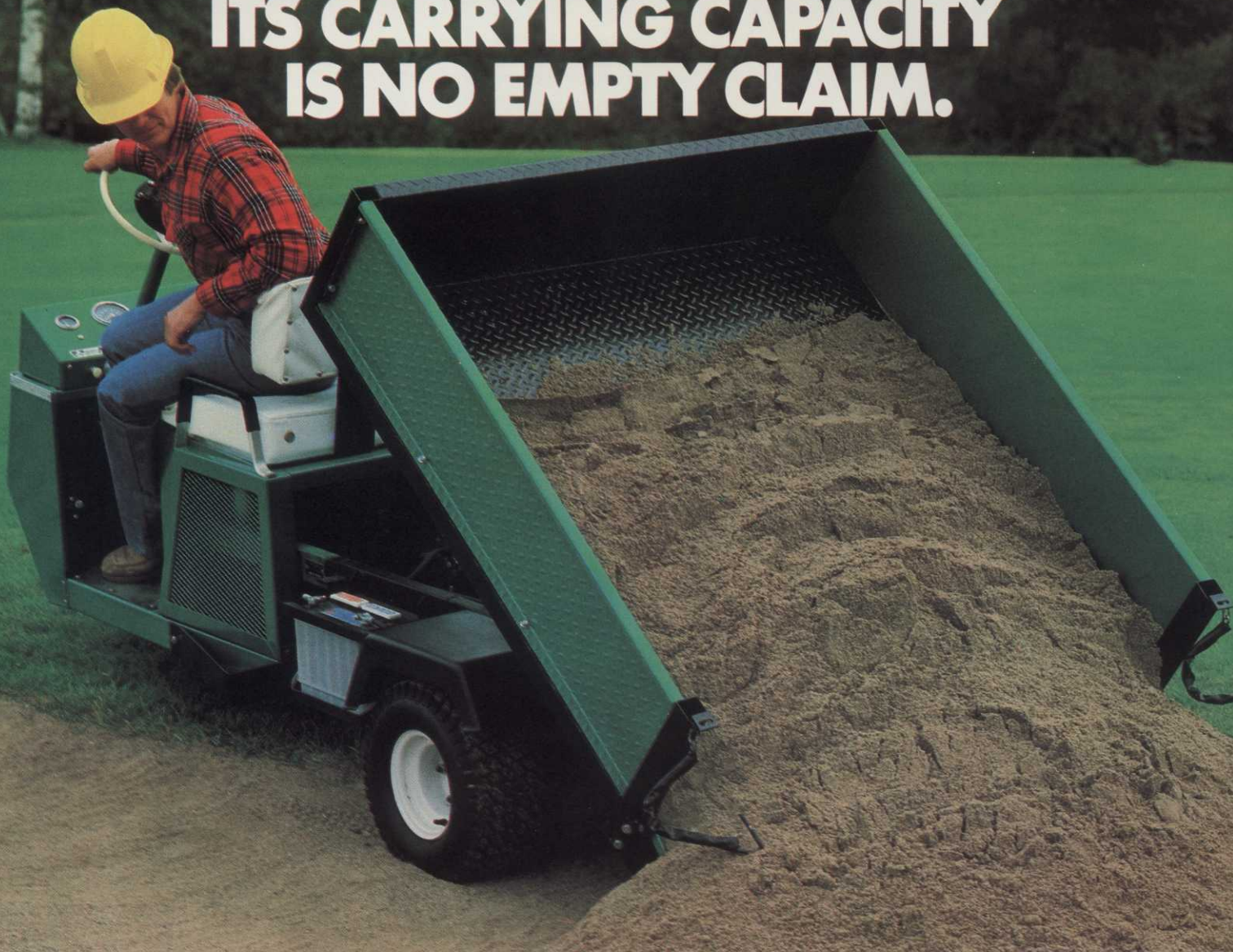
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Palm Beach Pesticide Report

The last issue of this publication had an excellent article by Dr. Roy A. Bair, "Jimmy Blackledge Motivated Turfgrass Research in Florida," a fitting tribute to early pioneers of our industry. Numerous superintendents with courses built in the 1960's were amused by the closing comments "one regret" about Ormond Bermuda — it was released!

The comment referred to the disadvantage of its vitality and invasion from green slopes to putting surface. Many superintendents rate Ormond Bermuda's mite problem as its main drawback. Was this year's mite attack the worst on record? Is this a different mite than in the early 1970's? Is this a mite at all? These questions are asked when several "Ormond" superintendents get together.

Carl McKinney, superintendent of the prestigious JDM Country Club, says, "The mite problem was the worst we have had in the 17 years I have been at this club. We used many different chemicals with little success. We even did one fairway in test plots with different materials, rates, and just topdressing with no true conclusion."

All superintendents with the problem report the mites peaked in late August and early September at a critical time. Herbicide programs with Sencor emphasis were drawing to a successful close at the time of the mite invasion. Thus stressed turf areas were devastated and the final outcome was a larger weed population than before the program started. One fertilizer salesman referred to his September orders as "mite food".

Atlantis Country Club superintendent David Bailey said, "I do not see the same early symptoms of mites as I noticed five or six years ago. The witchbroom effect where the grass curls into a clump was not there this year. I challenge the university for a cure and if the species are the same as before. Now the only early sign is a yellow chloric color and in 24 hours it is past tense. When we saw the old witchbroom effect we had some reaction lead time and a fifty-fifty positive result, but not now. We applied four different products with little positive result. The mites drank the Diazinon Ag 500 and little was achieved with Furadan by FMC. More results were visible with Vydate L a DuPont product and best results were achieved with liquid Nema-cur."

None of the Palm Beach superintendents with the mite problem like to think of it on a dollar basis since inflation already ruined the budgets. But a general answer ranges from \$6,000 to \$9,000 per 18 holes for the chemicals and additional fertilizer. That does not include labor costs. As

one superintendent said, when people pay a quarter million dollars or more for a lot and home overlooking the golf course they want results only. People do not know or care why you do not have Tifway 419, a more mite resistant turf. If you have Ormond count on some hand weeding and spot fertilizing at any cost.

The past herbicide season saw great results with Sencor, a product of Mobay Chemical Company. Weed populations of goosegrass and crowfoot are under control for the first time. One wonders why Dupont Chemical Company which also researched the active ingredient of Sencor does not enter the market. A little "competitive pressure would be welcomed! Sencor will be remembered as "the chemical of the 70's." Used in rates of 1/4 pound per acre with MSMA at 1-2 quarts per acre, it produced excellent results. Several applications are needed at weekly to 10 day intervals. Two and three generations of weeds will appear. Again the Tifway 419 courses have a tremendous advantage because of their growth density. Ormond and Common Bermuda applications must be done with extreme care.

New courses grassed in Tifway 419 were able to open in a clean weedfree condition. Under the heavy fertilizer rates of the growing-in process, control was achieved with nearly no bermuda discoloration. Basagram by BASF has been very popular on sedges. Label rates have been slightly increased with good control at your own risk.

Fungicide programs are at a peak right now. Superintendents with overseeded courses are keeping a watchful eye for pythium. Koban, the most popular treatment, is being joined by other economical controls with Terrazole and Demosan. Most rye overseeded greens have Koban treated seed, a wise investment for the additional nickle per pound seed price. Courses overseeded with Penn-cross Bent are applying phythium control measures to the soil with Dexon and Lesan and then normal control after germination. The more expensive phythium control of bent grass overseed is the reason many courses do not use this superior putting turfgrass. Said one superintendent, do not plan to overseed with bent in the Palm Beaches and take any weekend trips.

Rumor has reached the Palm Beaches of west coast courses using an unusual economical method for control of black algae. It's good old Clorox at one gallon per acre. Now stop, before you rush to Publix grocery for this 90-cent per acre control. You know what it does to your jeans! What is the long term effect on your soil and root system? Remember the bottom line is not going to be 90-cent per acre control unless you and your club are equal to the control cost.

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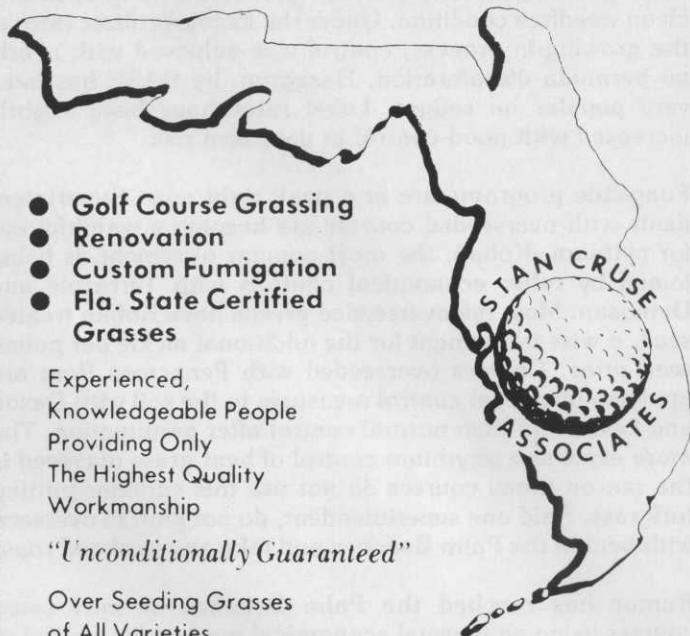
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Chronicle," which shows that practically all insects can adapt to just about any pesticide — and that it may not be too far in the future when insects, not humans, will rule the world! That is, unless mankind can continue its pressure on the pest world through much more pesticide research and a constant flow to the marketplace of more new pesticides.

6. Is pesticide research dead? Maybe not quite, but it's rapidly approaching that state. Dr. John Shred, the famous Connecticut entomologist, told me at a turf conference a couple of years ago that at that time of the year just 12 months before he had, in the first quarter of the year, screened hundreds of chemical compounds for insect control activity. During the current quarter, he told me he'd received candidate insecticide compounds from only two companies.
7. Over-reaction has also shown up at the state and local levels. More and more states, because of pressure from environmentalist groups, are placing their own bans on many pesticides, whether there's any real basis for such action or not, and they are imposing almost intolerable regulations and conditions. An example is California where anyone who even recommends the use of a pesticide must have a permit or license. In the original legislation, a license was needed not only for the state itself, but also for every county of the state in which that pesticide was to be sold and/or recommendations for its use made! It's just about enough to turn off anyone and let the pests take over by default.
8. Another part of the untenable present pesticide situation is the practically impossible maze of registration procedures. Whereas formerly a good pesticide could attain registration in a few weeks, it may now require years — and lots of money. New obstacles have been thrown up, including such things as "feeding studies," "residue studies," "environmental impact studies" and the like. Some companies have received pesticide applications back from the EPA no less than five or six times for "more data" the "dotting of i's," "the crossing of T's," etc. Do you wonder about the increasing prices of pesticides? You shouldn't when you begin to realize the tremendous costs involved just in registration, including the horrendous work involved, the numerous trips to Washington, etc.
9. The crunching halt to pesticide research was mentioned earlier. The true extent of this literally jumps at you when you hear that many companies are completely abolishing their pesticide research facilities and terminating their people. Many experiment stations, formerly strong in agricultural and turf pesticide research, have either cut back or eliminated this from their programs.
10. Again, a persistent reason given for removing long-standing well-and-safely used pesticides from the market is that they "might" (not "will") result in malignancies or "get into the food chain" (another favorite phrase of the environmentalists), or otherwise

(Continued on Page 17)

adversely affect the "ecological balance." It's likely true that indiscriminate airplane spraying of toxic substances over wide areas could pose health problems. But this is far different (for instance) from a qualified turf manager spraying a few ounces of a mercurial fungicide on a tiny (relatively, in area) putting green, where there's *proof* that it can only move *downward* (never laterally), and will tie up into insoluble and therefore innocuous soil compounds that can never contaminate or pollute.

So-o-o-o — Where does all this leave us? Some obvious conclusions:

1. Expect to see very few new pesticides in the foreseeable future.
2. Be ready to get by with far fewer pesticides than you've ever had before. You'll have to take what you can get, and be satisfied. It won't matter that what's available to you just might not work.
3. Watch for alternate methods of pest control. Close at hand may be the era of biological controls — or even the control of pests with sophisticated electronic devices not yet even dreamed of.
4. Pests could increase their activity to where, perhaps, intolerable conditions for the public may force changes in government thinking to the point where the bureaucrats will really have to decide whether to control pests or choose the only other alternative and let the pests overwhelm the people.

If the average turf manager must choose between eliminating some of the management "tools" he now has to work with, it has been determined that the very last thing he'll give up is his store of good pesticides. He simply cannot maintain fine turf, especially putting greens, without good pesticides — at least as of now.

What's to be done? That's mostly up to you. You can either endure the restrictions and regulations, or you can do something about it! Write to your Congressman! Write to your Senator! Work through your association and its fine membership, and let the government know that its actions are jeopardizing **your** career. In order to manage fine turf properly you need good tools — **especially good pesticides!** Just because something "might," at a future time, cause a problem is no reason to ban it if it has never caused a problem before. Mercurial fungicides are a good example. For over 50 years — one-fourth the entire history of the United States — mercurial fungicides have served golf course superintendents well. They are without peer in performance and low in cost-in-use. In all those 50 years there has never been a documented case of injury with these materials when used as directed. And yet there is the threat of a denial of registration of these mercurials. Why? No one really knows. It happens that a number of routine items of commerce, readily available over-the-counter to anyone of any age appear to be far more dangerous than mercurial turf fungicides, used as per their labels. It has been said, for example, that **ordinary aspirin causes**

(Continued on Page 18)

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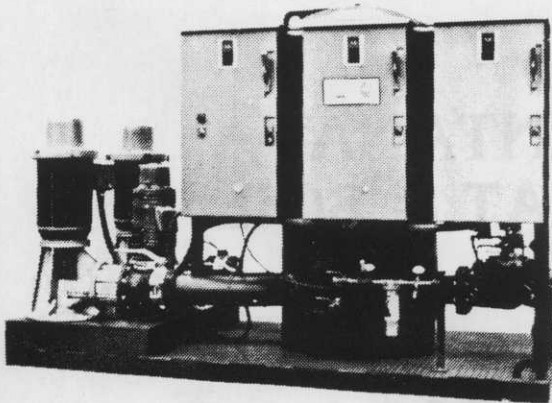
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more deaths every year than all pesticides combined — of any type — and designed for whatever purpose!

What man can do to pollute the Earth is infinitesimal compared to what the Earth does to itself. A recent article claimed that when Mount Krakatoa, the volcano, exploded and sank into the Pacific back in the 1880s, that single explosion threw into the atmosphere more particulate pollutants than has all of Mankind since the world began! By the way, the title of the article is, "The Earth Is Its Own Worst Polluter."

Why is it that you are the key to the future of good pesticides? Because you are the only one government officials will listen to — because you are the one most adversely affected when important pesticides are no more. Thus it is imperative that you let your voice be heard — individually and through your associations. If you don't it might just be you, the *Golf Course Superintendent* who becomes the endangered species.

Electric Charge Boosts Pesticide Application Effectiveness

Dr. S. Edward Law, Agricultural Research Engineer of the University of Georgia, has developed a new system for pesticide applications. Under sponsorship of the University of Georgia and Cotton, Inc., Dr. Law electrically charges pesticide spray droplets which are then attracted to the plant leaf surface. The system can cut pesticide consumption by one-half at a saving of \$1 billion annually for the American farmer. The USGA Research and Education Fund is supporting Dr. Law's work as it relates to turfgrass applications.

When spraying pesticides, compressed air is used from a spray-charging nozzle to propel the electrically charged droplets toward the plant. A negative charge is usually used. As the charged cloud approaches the crop, the constraint to remain at ground voltage induces into the crop an opposite charge to that of the cloud. Thus, the negative particles are drawn down to the plants.

"Of special importance," says Dr. Law, "is the fact that not only is more pesticide deposited on the plants, but it is distributed more evenly." This means less pesticide will be needed for control and low volume spray applications will be ideal.

U.S. Patent rights were granted in January, 1977 and foreign patent applications are already filed. The equipment will be relatively inexpensive and will utilize a solid state power supply that can be run off a tractor battery. Since conventional pesticide applicators usually put only 20 percent of the material onto the target plants, Dr. Law's new technique expands agricultural scientific horizons once more.

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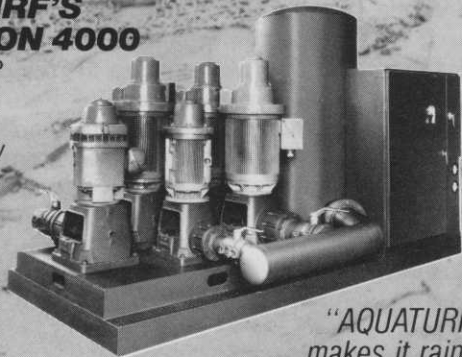
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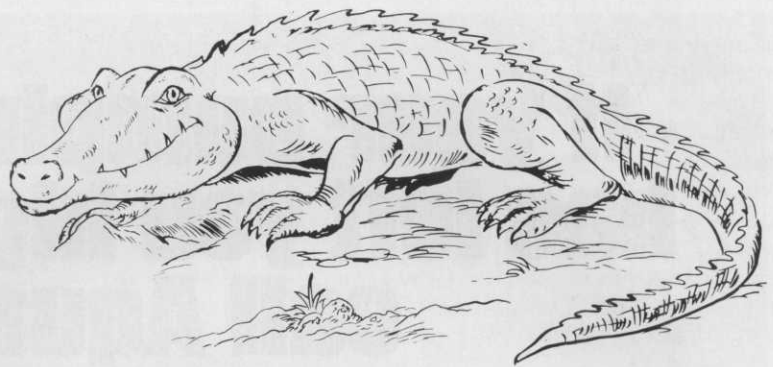
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The Gator Growls



By DALE WALTERS

This is a composite report from several golf courses in southwest Florida concerning which pesticides are in use, why they are used, and problems that have been encountered.

The weather that southwest Florida experiences no doubt has a great effect upon our disease and insect problems. We have warm weather from mid-March through mid-November and the average rainfall is about 60 inches per year. Most of the rainfall comes in the months of June through September and hot, humid weather is common throughout the summer months.

The following insecticides are in general use for our area: Diazinon, Dursban, Toxaphene, Lannate, Malathion, Baygon, Temik, Mocap, Dyfonate, Sevin, Cygon, Lindane and Dansanit.

Diazinon, Dursban and Lannate seem to be the most used insecticides because they give good control of sod webworms and armyworms which are the major insect problem on greens. Lannate probably has proven to be the best for length of residual control. Sevin and Toxaphene are economical to use but residual is reduced with Sevin and Toxaphene has shown some phytotoxicity. It is necessary to alternate the use of insecticides because the sod webworms and armyworms can build up some immunity. There is also a problem with odor from many of the insecticides which usually takes a couple of days to disappear. Bait forms of several of the insecticides as well as sprays are used for control of mole crickets but none give good control. Insecticides are extremely hazardous and need to be handled with care to protect both the applicator and those on the golf course.

The following nematicides have been in general use for our area: Ethylene Dibromide (EDP), Nemagon (DBCP), Nematicur and Dasanit.

Injection of EDP and DBCP have given good control of nematodes; however, DBCP is no longer available. EDP not only gives control of nematodes but is very effective in controlling mole crickets. Nematicur and Dasanit are excellent for reducing nematodes and their application is very easy, but extreme care is necessary in handling these chemicals.

The following fungicides are in general use for our area: Daconil 2787, Dithane M-45, Fore, Captan Kromad, Thiram, Tersan SP, Demosan, Truban, Koban, Benlate, Tersan 1991, Form-A-Turf, Tersan LSR, Dexon.

Several of the listed fungicides are the same as others listed having only different trade names. Daconil 2787 is a highly used fungicide for broad spectrum use and is available in the flowable form which is much easier to handle than the powder and the flowable is better for the sprayer pumps and nozzles. Dithane M-45 and Fore are good broad spectrum fungicides. Form-A-Turf can be phytotoxic but it is inexpensive and seemingly promotes root growth. Thiram and Captan have given control of brown patch but need to be used at higher rates than many other fungicides. Benlate or Tersan 1991 also have given good control of brown patch and dollar spot. Tersan SP, Koban, Truban and Demosan have shown good control of pythium while Dexon did not do as well. Care should be used in handling and applying fungicides as they are hazardous. The eyes need to be protected from spray drift because they are sensitive to many fungicides.

The following herbicides are in general use for our area: MSMA, 2,4-D, Sencor, Buctril, Asulox, Parquat, Kerb, Round-up, Basagran, Trimec, Balan and Dowpon C.

MSMA seems to be the safest broad spectrum herbicide to use on bermudagrass; however, it does not give control of some weeds that we need to eliminate such as goosegrass or crowfoot. 2,4-D gives good control of most broadleaf weeds but it can stunt the bermudagrass. Sencor works well in areas that aren't shaded but slight misapplication can be trouble. Asulox works well on the crowfoot but it takes about six weeks in action and it can burn if the rate is too high. Buctril works well on many broadleaf weeds and has little effect on the bermudagrass. Trimec is another good herbicide to use for a broad spectrum of broadleaf weeds. Basagran, with one or two applications, has excellent control of sedge and is safe to use on bermudagrass. Kerb is good for ridding *Poa annua* but it is very important to get a good control rate. Kerb's residual action is desirable in that there is a margin for error in when to apply it as a pre-emergent. As a postemergent Kerb does well but it also can stunt the bermudagrass to some degree. As a preemergent Balan has also shown control of *Poa annua*. For non-selective herbicides Paraquat, Dowpon C and Round-up seem to be the chemicals most used. Paraquat and Dowpon C give excellent quick kills. Round-up takes up to two weeks to kill but it gives a complete kill of the weed.

The following algicides are in general use for our area: Aquazine, Copper Sulphate, (Lake Dye).

Aquazine is excellent for algae control in lakes that are not used for irrigation. Copper sulphate works well on floating

(Continued on Page 21)



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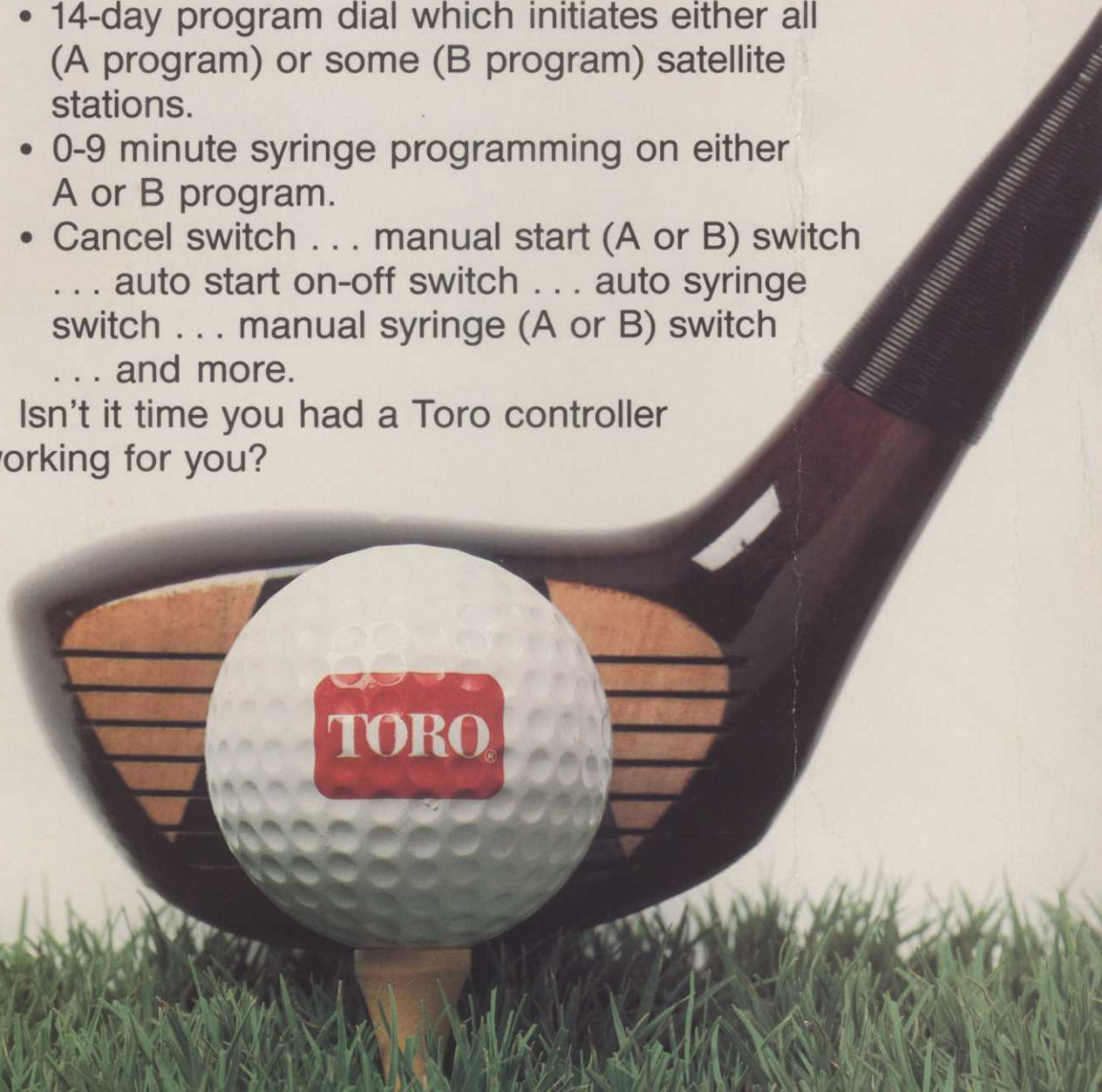




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